



East Anglia ONE North Offshore Windfarm

Chapter 21 Land Use

Environmental Statement Volume 1

Applicant: East Anglia ONE North Limited
Document Reference: 6.1.21
SPR Reference: EA1N-DWF-ENV-REP-IBR-000358 Rev 01
Pursuant to APFP Regulation: 5(2)(a)

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Date: October 2019
Revision: Version 1

Prepared by:	Checked by:	Approved by:

Revision Summary				
Rev	Date	Prepared by	Checked by	Approved by
01	08/10/2019	Paolo Pizzolla	Ian Mackay	Helen Walker

Description of Revisions			
Rev	Page	Section	Description
01	n/a	n/a	Final for Submission

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Glossary of Acronyms

AIS	Air Insulated Switchgear
ALC	Agricultural Land Classification
ALO	Agricultural Liaison Officer
AONB	Area of Outstanding Natural Beauty
APHA	Animal and Plant Health Agency
BMV	Best and Most Versatile
CCS	Construction Consolidation Site
CoCP	Code of Construction Practice
CIA	Cumulative Impact Assessment
CRoW	Countryside and Rights of Way Act 2000
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
Defra	Department for Environment, Food and Rural Affairs
DM	Development Management Policies
DMRB	Design Manual for Roads and Bridges
EMF	Electro-magnetic fields
ELS	Entry Level Stewardship
EA	Environment Agency
EIA	Environmental Impact Assessment
ES	Environmental Statement
ESC	East Suffolk Council
ESS	Environmental Stewardship Scheme
GIS	Gas Insulated Switchgear
ha	hectares
HDD	Horizontal Directional Drilling
HLS	Higher Level Stewardship
ICZM	Integrated Coastal Zone Management
LPA	Local Planning Authority
m	Metre
MAFF	Ministry of Agriculture, Fisheries and Food
MW	Megawatt
NPPF	National Planning Policy Framework
NPS	National Policy Statements
NSRI	National Soil Resources Institute
NSIP	Nationally Significant Infrastructure Project
OCoCP	Outline Code of Construction Practice
OELS	Organic Entry Level Stewardship
PIDs	Public Information Days
PRoW	Public Right of Way
SCC	Suffolk County Council
SCDC	Suffolk Coastal District Council
SLA	Special Landscape Areas
SoS	Secretary of State
SMP	Soils Management Plan
SP	Strategic Policies
SWDP	Surface Water Drainage Management Plan
UELS	Upland Entry Level Stewardship
WDC	Waveney District Council

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 Land Use

21.1 Introduction

1. This chapter of the Environmental Statement (ES) considers the potential impacts of the proposed East Anglia ONE North project on land use and agriculture. This chapter provides an overview of the existing land use within the onshore development area, followed by an assessment of the potential impacts of the construction, operation and decommissioning of the proposed East Anglia ONE North project.
2. The focus of this chapter is on land use and agriculture, which assesses the potential impacts on human beings, including landowners, occupiers, local communities and other land users as well as bio-physical elements of soils, the surrounding environment and the productivity of the land. Potential impacts on geology, ground conditions and contamination are considered in **Chapter 18 Ground Conditions and Contamination**.
3. Figures which accompany the text in this chapter are provided in **Volume 2 Figures**. This chapter is supported by **Appendix 21.1** and **Appendix 21.2**. This chapter was produced by Royal HaskoningDHV.
4. Due to the close association between land use, agriculture, ground conditions, groundwater, surface water and ecological receptors, this chapter should be read in conjunction with the related ES chapters (and their appendices and supporting documents). The relevant chapters are:
 - **Chapter 18 Ground Conditions and Contamination;**
 - **Chapter 22 Onshore Ecology;**
 - **Chapter 24 Archaeology and Cultural Heritage;**
 - **Chapter 26 Traffic and Transport;**
 - **Chapter 27 Human Health;**
 - **Chapter 29 Landscape and Visual Impact;** and
 - **Chapter 30 Socio-Economics, Recreation and Tourism.**
5. This chapter has been produced in accordance with the National Planning Policy Framework (NPPF) (2019) and the relevant National Policy Statement (NPS) guidance, specifically pertaining to NPS EN-1, NPS EN-3 and NPS EN-5. More information on this guidance is presented in **section 21.4.1**.

21.2 Consultation

6. Consultation is a key feature 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.
7. To date, consultation with regards to land use and agriculture has been undertaken via the East Anglia ONE North Scoping Report (SPR 2017) and the Preliminary Environmental Information Report (PEIR) (SPR 2019). Feedback received through this process has been considered in preparing the ES where appropriate and this chapter has been updated for the final assessment submitted with the DCO application.
8. The responses received from stakeholders with regards to the Scoping Report and PEIR, are summarised in **Appendix 21.1**, including details of how these have been taken account of within this chapter.
9. 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, June / July 2018 and February / March 2019. A series of stakeholder engagement events were also undertaken in October 2018 as part of phase 3.5 consultation. Details of the consultation phases are discussed further in **Chapter 5 EIA Methodology**.
10. **Table 21.1** shows public consultation feedback pertaining to land use and agriculture. Full details of the proposed East Anglia ONE North project consultation process are presented in the Consultation Report (document reference 5.1), which is provided as part of the DCO application.

Table 21.1 Public Consultation Relevant to Land Use and Agriculture

Topic	Response / where addressed in the ES
Phase 1	
<ul style="list-style-type: none"> • Loss of agricultural land should be taken into account during connection point decision making 	Loss of agricultural land is assessed in section 21.6.1.1 and 21.6.2.1
Phase 2	
<ul style="list-style-type: none"> • Loss of high grade agricultural land 	Loss of agricultural land is assessed in section 21.6.1.1 and 21.6.2.1
Phase 3	
<ul style="list-style-type: none"> • Loss of agricultural land at the substation and onshore cable route • Restrictions to food production 	Loss of agricultural land is assessed in section 21.6.1.1 and 21.6.2.1

Topic	Response / where addressed in the ES
<ul style="list-style-type: none"> • Zone 7 is high grade agricultural land • Avoidance of greenfield land 	
Phase 3.5	
<ul style="list-style-type: none"> • Loss of virgin farmland at Friston • Farms being taken over • Avoid greenfield land, place on brownfield. • Grade 2 productive arable farming land • Breaking up land will lead to reduced efficiency in farming operations and will increase cultivation costs • Loss of food production • Loss of agricultural land due to haul roads 	<p>Impacts associated with loss of agricultural land are assessed within section 21.6.1.1. This section addresses the loss of land with Agricultural Land Classification (ALC) Grade 2.</p>
Phase 4	
<ul style="list-style-type: none"> • Concern regarding loss of agricultural land • Topsoil 'loss' and soil compaction during construction • Concern regarding the degradation of soil quality 	<p>Impacts associated with loss of agricultural land are assessed within section 21.6.1.1.</p> <p>Impacts to degradation of soil resource is detailed in section 21.6.1.4. Soil quality will be maintained through production of a Soil Management Plan, detailed in section 21.3.3</p>

21.3 Scope

21.3.1 Study Area

- The onshore infrastructure for the proposed East Anglia ONE North project will include the following elements:
 - Landfall including cable ducts and transition bays;
 - Onshore cable route which includes the cable trenches, construction consolidation sites (CCS), haul road and spoil storage areas;
 - East Anglia ONE North substation (onshore substation); and
 - National Grid infrastructure.
- The above onshore infrastructure all falls within the onshore development area, shown in **Figure 21.1**. A full description of the above infrastructure is provided in **Chapter 6 Project Description**.
- For the purpose of the assessment, and to aid baseline descriptions, study areas have been determined by a number of factors such as distribution of receptors,

footprint of potential impact and Local Planning Authority (LPA) boundaries. These have been agreed with regulators through the submission of the Scoping Report (SPR 2017).

14. The following study areas have been defined to assess the direct and indirect impacts, on land use and agriculture, associated with the proposed East Anglia ONE North project:
- Direct impact study area: The onshore development area, as shown in **Figure 21.1**, is the largest area over which direct impacts could be experienced;
 - Local level: this study area is used to assess indirect impacts and impacts on individual landowners/occupiers;
 - LPA boundaries provide the study area within which local planning policies are considered. This incorporates the entire district borough which falls under East Suffolk Council. This is the spatial level at which local planning policy is made and at which level development objectives are applicable; and
 - The county boundary is used to assess wider impacts on the agricultural industry. The onshore development area is wholly within the county of Suffolk. Therefore, wider impacts on the agricultural industry are assessed in terms of the resource of Suffolk county.

21.3.1.1 Offsite Highway Improvements

15. Offsite highway improvements may take place at three locations; the A1094 / B1069 junction, the A12 / A1094 junction and Marlesford Bridge. These works are part of the onshore preparation works which may take place prior to the commencement of main construction. Therefore, detailed assessment of these works does not form part of the assessment of construction impacts presented in **section 21.6**. These works are to allow larger construction vehicles to access and navigate certain parts of the public road network. Any modifications to roads would be undertaken in consultation with and in accordance with the requirements of the local Highways Authority in accordance with the requirements of the draft DCO. Further details of the works required are presented in **Chapter 6 Project Description**.
16. The offsite highway improvements at the A1094 / B1069 and A12 / A1094 junctions would involve the temporary moving of street furniture and temporary local widening of the highway (or creation of overrun areas). Offsite highway improvements at Marlesford Bridge would additionally require temporary laydown areas for structural works to accommodate abnormal indivisible loads.

17. The offsite highway improvements will have a small footprint, largely within the existing highway boundary. Given the location, footprint and temporary nature of these works, along with adherence to the best practice detailed in **section 21.3.3**, it is considered that the offsite highway improvements will not give rise to any impacts to existing land use, environmental stewardship schemes, land drainage or common land.
18. With regard to utilities that may be present within or adjacent to the highway boundary at the offsite highway improvement locations, the Applicant would be required to contact potentially affected utility providers and identify the location of existing services on the ground prior to undertaking any works. Major utilities have been covered by identifying protective provisions in the draft DCO, and 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.

21.3.2 Worst Case Scenario

19. 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. Areas provided for onshore infrastructure are maximum footprints with indicative dimensions provided in brackets.
20. **Chapter 6 Project Description** details the project parameters using the Rochdale Envelope approach for the ES.
21. **Table 21.2** identifies those realistic worst case parameters of the onshore infrastructure that are relevant to potential impacts on land use and agriculture 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 activities, and their durations, which fall within the construction phase.
22. As described in **Chapter 5 EIA Methodology**, there are two co-located onshore substation locations for either the proposed East Anglia ONE North project or the proposed East Anglia TWO project. It should be noted that the draft DCOs for both the proposed East Anglia ONE North and East Anglia TWO projects have the flexibility for either project to use either onshore substation location. There is no difference in the scoped in and assessed impacts between the two onshore substation locations, therefore the 'project alone' assessment in **section 21.6**, and associated chapter figures, have been presented on the intended

development strategy of the proposed East Anglia ONE North project using the eastern onshore substation location.

Table 21.2 Realistic Worst Case Scenario

Impact	Parameter	Notes
Construction		
Impacts related to the landfall	<p>HDD temporary working area: 7,000m² (70m x 100m)</p> <p>Transition bay temporary working area (for 2 transition bays): 1,554m² (37m x 42m)</p> <p>Landfall Construction Consolidation Site (CCS) (x1): 7,040m² (88m x 80m)</p> <p>Landfall transition bays approximate quantity of spoil material (for 2 transition bays): 454m³</p>	
Impacts related to the onshore cable route	<p>Onshore cable route: 290,912m² (9,091m x 32m)</p> <p>Jointing bay temporary working area: 570m² (30.6m x 18.6m). Total for 38 jointing bays: 21,660m² (570m² x 38)</p> <p>HDD (retained as an option to cross SPA / SSSI):</p> <ul style="list-style-type: none"> Entrance pit temporary working area (x1): 6,300m² (90m x 70m) Exit pit temporary working area (x1): 2,700m² (90m x 30m) <p>Onshore cable route large CCS (1): 16,500m² (165m x 100m).</p> <p>Onshore cable route medium CCS (2): 14,080m² total (88m x 80m per each medium CCS)</p> <p>Onshore cable route small CCS (2): 6,000m² total (60m x 50m per each small CCS)</p> <p>Total footprint of all onshore cable route CCS: 36,580m²</p> <p>Onshore cable route laydown area: 1,000m²</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): 40,435m²</p> <p>Onshore cable route and substation access haul road (1,570m in length x 9m wide): 14,130m²</p>	

Impact	Parameter	Notes
	<p>Temporary access roads (957m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 5,231m²</p> <p>Onshore cable trench approximate quantity of spoil material: 14,325m³</p>	
Impacts related to the onshore substation	<p>Onshore substation CCS: 17,100m² (190m x 90m)</p> <p>Permanent footprint (used as CCS during construction): 36,100m² (190m x 190m)</p> <p>Substation operational access road: 13,600m² (1,700m x 8m)</p> <p>Onshore substation approximate quantity of spoil material: 24,486m³</p>	
Impacts related to the National Grid Infrastructure	<p>National Grid CCS: 23,350m²</p> <p>National Grid operational substation (Air insulated switchgear (AIS) technology) (used as a CCS during construction): 44,950m² (310m x 145m)</p> <p>Temporary pylon/mast temporary working area (x4): 10,000m² (2,500m² per each temporary pylon)</p> <p>Permanent pylon permanent footprint (x4): 1,600m² (400m² per each permanent pylon)</p> <p>Permanent pylon temporary working area (x4): 8,400m² (2,100m² per each permanent pylon)</p> <p>Overhead line realignment temporary working area: 5,000m²</p> <p>Cable sealing end/Cable sealing end (with circuit breaker) compounds permanent footprint: 10,000 m² (total for three compounds)</p> <p>Cable sealing end/Cable sealing end (with circuit breaker) compounds temporary working area: 30,000m² (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): 5,629m²</p> <p>Permanent access road to sealing end compound: 1,850m² (500m x 3.7m)</p>	<p>Air insulated switchgear (AIS) technology is assessed as the worst case due to a larger footprint. Further detail regarding gas insulated switchgear (GIS) technology is provided in Chapter 6 Project Description.</p>

Impact	Parameter	Notes
Operation		
Impacts related to the landfall	<p>2 transition bays will be installed underground, each with an operational volume of 227m³</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 77m³</p> <p>76 link boxes will be installed underground (2 per jointing bay), each with an operational volume of 4m³</p> <p>Potential ecological mitigation areas (4 areas, total of 61,200m²)</p> <p>No above ground infrastructure</p>	
Impacts related to the onshore substation	<p>Operational footprint: 36,100m² (190m x 190m)</p> <p>Substation operational access road: 13,600m² (1,700m x 8m)</p> <p>Landscaping at the onshore substation and National Grid substation 227,800m²</p>	
Impacts related to the National Grid Infrastructure	<p>National Grid operational substation (AIS technology): 44,950m² (310m x 145m)</p> <p>Pylon operational footprint (x4): 1,600m² (20m x 20m per each permanent pylon)</p> <p>Cable sealing end compound operational footprint: 10,000m² (for three sealing end compounds)</p> <p>Permanent access road to sealing end compound: 1,850m² (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 Chapter 6 Project Description.</p>
Decommissioning		
<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</p>		

Impact	Parameter	Notes
		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.

21.3.3 Embedded Mitigation and Best Practice

23. Embedding mitigation into the project design is a type of primary mitigation and is an inherent aspect of the EIA process. The following section outlines the key embedded mitigation relevant for this assessment.
24. Embedded mitigation pertaining to land use and agriculture ensures that where practicable, steps will be taken to minimise creating isolated land parcels, permanently cutting off farm access routes and disrupting key assets such as utilities.
25. The worst case assumptions and subsequent impact assessment have taken into account the potential proposed embedded mitigation; these are summarised in **Table 21.3**. Any further mitigation proposed within this chapter to minimise residual impacts on land use and agriculture is therefore considered to be additional to embedded mitigation.

Table 21.3 Embedded Mitigation and Best Practice for Land Use and Agriculture

Parameter	Mitigation Measures Embedded into the Project Design
General	
Onshore Development Area	<p>Refinements to the onshore cable route and location of associated infrastructure have taken place throughout the design and refinement process, taking into consideration the locations of sensitive land uses, such as urban land, residential land and major utilities. The Applicant has committed to a narrowed onshore cable route swathe of 16.1m (reduced from 32m) to avoid sensitive land features, namely the Sandlings SPA designated site, important hedgerows and the woodland to the north of Fitches Lane.</p> <p>Land take has been reduced as far as practicable, as detailed further within Chapter 4 Site Selection and Assessment of Alternatives. Reinstatement of land to its original use will be undertaken as far as practical following the completion of the construction works. The onshore development area has been refined to ensure there is no interaction with common land (above or below ground). Onshore development area refinements have ensured that there is no interaction with Thorpeness Common as a response to Section 42 consultation.</p>
HDD at landfall	The landfall location was influenced from the onset of the project design process by the presence of designated sites, specifically Leiston-Aldeburgh

Parameter	Mitigation Measures Embedded into the Project Design
	<p>SSSI. Further detail is provided in Chapter 4 Site Selection and Assessment of Alternatives.</p> <p>The project has committed to the use of HDD (refer to Chapter 6 Project Description) at the landfall. Using the HDD technique at the landfall means that there will be no interaction with Thorpeness Common or other areas of common land (above or below ground). No areas of common land fall within the onshore development area. The final landfall construction methodology will be detailed within the Landfall Construction Method Statement produced post-consent to discharge the requirements of the draft DCO.</p>
Code of Construction Practice (CoCP)	<p>An Outline CoCP (OCoCP) has been included with the DCO application (document reference 8.1) in accordance with the requirements of the draft DCO.</p> <p>The final CoCP, produced post-consent and based upon the OCoCP, will provide a protocol under which management measures outlined in this chapter, and environmental best practice measures, are defined and executed for onshore construction works associated with the proposed East Anglia ONE North project.</p>
Soils Management Plan (SMP)	<p>A requirement of the draft DCO secures the post-consent production of a SMP. This SMP will include:</p> <ul style="list-style-type: none"> • Soils handling, storage and reinstatement by a competent contractor under Defra (2009) Construction code of practice for the Sustainable Use of Soils on Construction Sites; • Topsoil stripping within all construction areas and storage adjacent to where it is extracted, where practical; • Storage of the excavated subsoil separately from the topsoil, with sufficient separation to ensure segregation; • Handling of soils according to their characteristics – e.g. within wooded areas it is unlikely that topsoil resources of any quality could be separated and preserved for reuse. If current wooded areas are to be used for storage it would not be necessary to undertake topsoil stripping. Topsoil from agricultural land may be treated as a single resource for stockpiling and reuse where appropriate; • Where necessary, tree roots would be removed by screening; • Under storage areas, loosening of subsoils is proposed when dry to improve permeability before the topsoil is replaced; • For most after-uses, subsoils may be treated as a single resource for stockpiling where appropriate; • During wet periods, limiting mechanised soil handling in areas where soils are highly vulnerable to compaction; • Restricting movements of heavy plant and vehicles to specific routes and avoidance of trafficking of construction vehicles in areas of the site which are not subject to construction phase earthworks; • Minimising the excavation footprint; and

Parameter	Mitigation Measures Embedded into the Project Design
	<ul style="list-style-type: none"> In circumstances where construction has resulted in soil compaction, further remediation may be provided, through an agreed remediation strategy <p>Further details regarding the SMP are provided in the OCoCP submitted with this DCO application.</p>
Pre-construction Survey	A pre-construction land survey would be undertaken by a qualified Agricultural Liaison Officer (ALO) to record details of crop regimes, position and condition of field boundaries, existing drainage and access arrangements, and private water supplies.
Management of Invasive Species	Best practice soil handling will be implemented to prevent the spread of plant and animal diseases, including following the Environment Agency (EA) (2010) guidance: Managing Invasive Non-native Plants. Further management of invasive species is detailed within Chapter 22 Onshore Ecology .
Drainage	<p>A construction-stage Surface Water and Drainage Management Plan (SWDP) will be developed as part of the Code of Construction Practice (CoCP) that will be produced post consent, as secured under the requirements of the draft DCO.</p> <p>The SWDP will be implemented to ensure ongoing drainage of the working area and surrounding land during the construction phase (to be discussed and agreed with the affected landowners where possible) and ensure drainage reinstatement following the construction phase of the proposed East Anglia ONE North project. The operational drainage strategy will also be defined in the SWDP, which will be developed according to the principles of the sustainable drainage system (SuDS) discharge hierarchy. Further detail is provided in Chapter 20 Water Resources and Flood Risk.</p> <p>Note that management measures of operational stage surface water drainage will be detailed and secured in the final Landscape Mitigation Plan (LMP) produced post-consent to discharge requirements of the draft DCO. The final LMP will be based upon the Outline Landscape and Ecological Management Strategy (OLEMS) submitted with this DCO application.</p>
Utilities	Potentially affected utility providers contacted and the location of existing services would be accurately identified on the ground prior to construction. The Applicant would undertake utility crossings in accordance with industry standard practice as agreed with the utility owners. The continuity of water supplies during the construction works would be ensured.

21.3.4 Monitoring

26. Post-consent, the final detailed design of the proposed East Anglia ONE North project will refine the worst-case parameters assessed in this ES. It is recognised that monitoring is an important element in the management and verification of the actual impacts based on the final detailed design. Where monitoring is proposed for land use, this is described in the OCoCP submitted with this DCO application

(document reference 8.1). Final details of monitoring will be agreed post-consent with the Local Planning Authority and relevant stakeholders.

21.4 Assessment Methodology

21.4.1 Guidance

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

21.4.1.1 Legislation and Policy

28. The following UK legislation is considered the most relevant to land use and agriculture and is considered in this chapter:

- Marine and Coastal Access Act 2009;
- The Commons Act 2006;
- The Environmental Stewardship (England) Regulations 2005;
- Countryside and Rights of Way Act (CRoW) 2000;
- Weeds Act 1959;
- Ragwort Control Act 2003;
- NPPF 2019; and
- Natural Environment White Paper 2011.

29. Further detail is provided in **Chapter 3 Policy and Legislative Context**.

30. NPS (the principal decision making documents for Nationally Significant Infrastructure Projects (NSIPs)), of relevance to the proposed East Anglia ONE North project are:

- Overarching NPS for Energy (EN-1) (Department of Energy and Climate Change (DECC) 2011a);
- NPS for Renewable Energy Infrastructure (EN-3) (DECC 2011b); and
- NPS for Electricity Networks Infrastructure (EN-5) (DECC 2011c).

31. The specific requirements of the NPS in relation to land use and agriculture are summarised in **Table 21.4**. This table addresses where in this chapter specific requirements from the NPS are addressed. Where any part of the NPS has not been followed within the assessment an explanation as to why the requirement was not deemed relevant, or has been met in another manner, is provided.

Table 21.4 National Policy Relevant to Land Use and Agriculture

NPS Requirement	NPS Reference	ES Reference
<p>The ES [Environmental Statement] should identify existing and proposed land uses near the project, any effects of replacing an existing development or use of the site with the proposed project or preventing a development or use on a neighbouring site from continuing. Applicants should also assess any effects of precluding a new development or use proposed in the development plan.</p>	<p>EN-1 Section 5.10.5.</p>	<p>Sections 21.5 and 21.6.</p>
<p>During any pre-application discussions with the Applicant the LPA [Local Planning Authority] should identify any concerns it has about the impacts of the application on land use, having regard to the development plan and relevant applications and including, where relevant, whether it agrees with any independent assessment that the land is surplus to requirements.</p>	<p>EN-1 Section 5.10.7.</p>	<p>Local Planning Authority has identified their concerns through to provision of Scoping Responses as shown in Appendix 21.1 Land Use Consultation Responses and section 21.2.</p>
<p>Applicants should seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3 of the Agricultural Land Classification) and preferably use land in areas of poorer quality (grades 4 and 5) except where this would be inconsistent with other sustainability considerations. Applicants should also identify any effects and seek to minimise impacts on soil quality taking into account any mitigation measures proposed. For developments on previously developed land, Applicants should ensure that they have considered the risk posed by land contamination.</p>	<p>EN-1 Section 5.10.8.</p>	<p>See sections 21.6.1.4 and 21.6. See also Chapter 18 Ground Conditions and Contamination.</p>
<p>The general policies controlling development in the countryside apply with equal force in Green Belts but there is, in addition, a general presumption against inappropriate development within them. Such development should not be approved except in very special circumstances. Applicants should therefore determine whether their proposal, or any part of it, is within an established Green Belt and if it is, whether their proposal may be inappropriate development within the meaning of Green Belt policy.</p>	<p>EN-1 Section 5.10.10.</p>	<p>No areas of Green Belt have been identified within the onshore development area.</p>
<p>An Applicant may be able to demonstrate that a particular type of energy infrastructure, such as an underground pipeline, which, in Green Belt</p>	<p>EN-1 Section 5.10.12.</p>	<p>No areas of Green Belt have been identified</p>

NPS Requirement	NPS Reference	ES Reference
policy terms, may be considered as an “engineering operation” rather than a building, is not in the circumstances of the application inappropriate development. It may also be possible for an Applicant to show that the physical characteristics of a proposed overhead line development or wind farm are such that it has no adverse effects which conflict with the fundamental purposes of Green Belt policy.		within the onshore development area.
Ensure that Applicants do not site their scheme on the best and most versatile agricultural land without justification. It should give little weight to the loss of poorer quality agricultural land (in grades 3b, 4 and 5) except in areas (such as uplands) where particular agricultural practices may themselves contribute to the quality and character of the environment or the local economy.	EN-1 Section 5.10.15.	See section 21.6.2.1.

21.4.1.2 Local Planning Policy

32. EN-1 states that the Planning Inspectorate will also consider Development Plan Documents or other documents in the Local Development Framework to be relevant to its decision making.
33. The onshore development area is within the administrative area of Suffolk County Council. There are no relevant land use and agriculture planning policies from Suffolk County Council (SCC).
34. The onshore development area is also within the administrative area of East Suffolk Council Local Planning Authority. East Suffolk Council (ESC) is the merger of Suffolk Coastal District Council (SCDC) and Waveney District Council (WDC), which became effective from 1st April 2019.
35. ESC published their Suffolk Coastal Final Draft Local Plan for a final stage of consultation in January 2019 (ESC 2019). This plan sets out strategic planning policies within East Suffolk and how the Local Planning Authority addresses the NPPF on a local basis. The Suffolk Coastal Final Draft Local Plan incorporates ‘saved’ policies from the 2006 and 2013 revisions of the Local Plan and includes core strategies such as the Suffolk Minerals Core Strategy and Suffolk Waste Core Strategy (more detail on these is given in **Chapter 18 Ground Conditions and Contamination**). Strategic Policies (SP), Development Management Policies (DM) and Objectives from this plan that are relevant to land use and agriculture are detailed in **Table 21.5**.

Table 21.5 Relevant Local Planning Policies

Document	Policy	Policy/Guidance Purpose
East Suffolk Council (ESC)		
ESC (2019) Suffolk Coastal Final Draft Local Plan	AP28 (saved policy)	<p>Areas to be Protected from Development</p> <p>Development will not normally be permitted where it would materially detract from the character and appearance of:</p> <p>(i) those areas identified on the Proposals Map to be protected from development, or further development; and</p> <p>(ii) other sites, gaps, gardens and spaces which make an important contribution in their undeveloped form to a Town or Village, its setting, character, or the surrounding landscape or townscape.</p> <p>Outside of the physical limits boundaries of Towns and Villages, the area is defined as Countryside.</p>
	Strategic Policy SP1 – Sustainable Development	Aims to deliver sustainable communities through better integrated and sustainable patterns of land use, movement, activity and development. This SP gives priority to re-using previously developed land as opposed to greenfield sites
	Strategic Policy SP14 – Biodiversity and Geodiversity	To promote a spatial strategy that protects and enhances as far as possible the distinctive and valued natural and historic landscape, and the built environment of the district. To ensure, in particular, that where strategic new development takes place appropriate compensatory and mitigatory measures are secured to ensure that any adverse impacts are limited and that it does not result in coalescence of settlements.
	SCLP12.23 Strategy for Aldeburgh	New development is anticipated to occur through the development of previously developed land including infilling. The strategy aims to maintain the town’s close-knit historic character and retain the sensitive environment, particularly the setting and along the edges of the town
	Sections 12.186 – 12.192	Protect and enhance the setting of the town

Document	Policy	Policy/Guidance Purpose
	Strategy for Leiston	
	Strategic Policy SP30 – The Coastal Zone	<p>Sets out ESC’s commitment to promote Integrated Coastal Zone Management (ICZM). Development which is consistent with ICZM plans and contributes to the sustainable future of coastal and estuarine environment will be supported as will investment and resources from the private sector for coastal defence and adaption measures.</p> <p>Development will be resisted where it conflicts with the ‘<i>adopted Strategic Flood Risk Assessment, the Shoreline Management Plan and Estuarine Plans as endorsed by the Council</i>’ (SCDC 2013).</p>

21.4.1.3 Assessment Guidance

36. There is no specific industry guidance on assessing the impacts of projects on land use and agriculture, therefore a methodology has been developed for this assessment based on the following sources:
- Highways Agency (2001) Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 6 (Land Use) and Part 11 (Geology and Soils); and
 - Ministry of Agriculture, Fisheries and Food (MAFF) (1988) Agricultural Land Classification of England and Wales: Guidelines and Criteria for Grading the Quality of Agricultural Land (Revised Guidelines).
37. In addition to the sources of guidance outlined above there are a number of documents that provide best practice guidance on soil handling and construction management. These offer guidance on methods to reduce the impact on soils and land use and agriculture, particularly during construction. They are:
- Department for Environment, Food and Rural Affairs (Defra) (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites;
 - Defra (2016) Waste Management Duty of Care Code of Practice;
 - MAFF (2000) Good Practice Guide for Handling Soils;
 - MAFF (1991) Practical Guide to Preventing the Spread of Plant and Animal Diseases;

- Environment Agency (2010) Managing Invasive Non-native Plants;
- Natural England (2012) Agricultural Land Classification: Protecting the Best and Most Versatile Agricultural land; and
- Defra (2003) Biosecurity Guidance to Prevent the Spread of Animal Diseases.

21.4.2 Data Sources

38. The following data were used to inform the land use and agriculture impact assessment (**Table 21.6**).

Table 21.6 Data Sources Features

Data	Source	Year	Coverage	Confidence	Notes
ESC (2019) Suffolk Coastal Final Draft Local Plan	ESC	2019	Onshore development area	High	n/a
Environmental Stewardship Schemes	Natural England	2019	England and Wales	High	Locations and Details
ALC land classifications	Natural England	2012	England and Wales	High	Locations and Details
Common Land	Natural England	2011	England and Wales	High	Locations and Details
'A' Roads, Railway Lines and Urban Areas	Ordnance Survey	2018	England and Wales	High	Locations and Details
Utilities	EMAP	2018	Onshore development area	High	Locations and Details
Animal Burials	APHA	2018	Onshore development area	Medium	Information on animal burials, records of outbreaks or occurrences of notifiable or quarantine plant pest diseases.
Invasive Species	Biological records and Phase 1	2018	Onshore development area	High	Locations and Details

Data	Source	Year	Coverage	Confidence	Notes
	Surveys (site walkover)				
Soil Survey of England and Wales	National Soil Resources Institute	2014	East Anglia	High	Locations and Details
Agricultural Activities	Land agents and public consultation events	2018 and 2019	Onshore development area	Medium	High level qualitative data on agricultural activities in Suffolk and specific to the onshore development area

21.4.3 Impact Assessment Methodology

39. The generic assessment methodology that is applied throughout the ES is explained in detail in **Chapter 5 EIA Methodology**. The following sections describe more specifically the methodology, used to assess the potential impacts of the proposed East Anglia ONE North project on land use and agriculture, following the characterisation of the existing environment.
40. Two key groups of impact have been identified for the purpose of defining receptor sensitivity and impact magnitude in this chapter:
- Impacts on land use and tenure: these are the potential impacts of the project on human beings, including landowners and occupiers, local communities and other land users; and
 - Impacts on agricultural productivity and soil resources: These are potential project impacts on the bio-physical elements of the soils, the surrounding environment and the productivity of the land. The focus of this chapter is on agricultural productivity. Soil resources are discussed briefly and covered in greater detail in **Chapter 18 Ground Conditions and Contamination**.
41. Whilst there are clear links between the two impact groups, the assessment of receptor sensitivity and magnitude of effect will differ. The potential impacts will be assessed as a function of the sensitivity of a receptor and the magnitude of the effect. Examples of these are given in the following sections.

21.4.3.1 Sensitivity

42. The sensitivity of receptors is based on the capacity of receptors to tolerate change and whether or not increased risks would be acceptable within the scope of the prevailing legislation and guidelines. The degree of change that is considered to be acceptable is dependent on the susceptibility of the receptor to

the change that the proposed East Anglia ONE North project would potentially have.

43. Guidance for the definitions of levels of sensitivity is provided in **Table 21.7**.

Table 21.7 Sensitivity Definitions for Land Use Receptors

Sensitivity	Land Use and Tenure	Agriculture and Soils
High	Receptor has no or very limited capacity to accommodate changes to the land use such as loss of land areas, soil degradation etc.	
	Higher level ESSs; Future planning applications for large scale planning uses; Internationally and nationally designated planning policy areas; or Land uses that are not possible elsewhere or regionally scarce and cannot be adapted or replaced e.g. the ecosystem service functions of soils.	ALC Grade 1 or 2 land; Farming practices with specific requirements; Land with Notifiable Weeds (risk of spread); Land with notifiable Scheduled diseases (risk of spread); or Soil vulnerable to structural damage and erosion or unrecoverable or not adaptable to changes.
Medium	Receptor has limited capacity to accommodate changes to the land use such as loss of land areas, soil degradation etc.	
	Entry level ESS; or Local designated planning policy areas.	ALC Grade 3; or Seasonally susceptible to structural damage or erosion.
Low	Receptor has moderate capacity to accommodate changes to the land use such as loss of land areas, soil degradation etc.	
	No designated planning policy areas; No ESS's but under other environmental management; Land used for ordinary agriculture or horticulture; or Large agricultural holdings.	ALC Grade 4 land; Arable or pasture grassland; or Medium to coarse material, some resistance to structural damage the majority of the year.
Negligible	Receptor generally tolerant of changes to the land use such as loss of land areas, soil degradation etc.	
	No designated planning policy areas; or No ESS.	ALC Grade 5 land;

Sensitivity	Land Use and Tenure	Agriculture and Soils
		Non-agricultural and urban, non-arable or pasture grassland; or Greater resistance to soil structural damage.

21.4.3.2 Magnitude

44. Impact magnitude on a receptor has been defined with consideration of the spatial extent, duration, frequency and severity of the effect. The following definitions apply to the time periods used in the magnitude assessment:

- Long term: Greater than five years;
- Medium term: Two to five years; and
- Short term: Less than two years.

45. For the purposes of this assessment, construction related impacts that do not extend beyond the construction phase of the proposed East Anglia ONE North project; a short-term magnitude will be assigned.

46. Impact magnitude is assessed qualitatively according to the criteria defined in **Table 21.8**.

Table 21.8 Definitions of Magnitude Levels for Land Use Receptors

Magnitude	Land Use and Tenure	Agriculture and Soils
High	Permanent (>10 years) / irreversible changes, over the whole receptor, affecting usability, risk, value over a wide area, or certain to affect regulatory compliance.	Permanent loss of over 20 hectares (ha) of the best and most versatile (BMV) agricultural land (grades 1, 2 and 3) or more than 60% total regional resource (Natural England 2012a); or Full recovery of land would take more than 10 years.
Medium	Moderate permanent or long-term (5-10 years) reversible changes, over the majority of the receptor, affecting usability, risk, value over the local area, possibly affecting regulatory compliance; Existing land use would not be able to continue on less than 5ha of land; or Noticeable changes to the existing land use although it may continue.	Medium to long term loss of more than 20ha of the BMV agricultural land or more than 60% of the regional resource; Permanent loss of more than 10ha of ALC (grade 3) agricultural land or more than 10% of the regional resource; Full recovery of land is expected within 5 to 10 years; or

Magnitude	Land Use and Tenure	Agriculture and Soils
		More than 20ha of soil is temporarily unsuitable for agriculture.
Low	Temporary change affecting usability, risk or value over the medium-term (<5 years); or Temporary change affecting usability within the site boundary; measurable permanent change with minimal effect usability, risk or value; no effect on regulatory compliance.	Short term loss of more than 20ha, or permanent loss of more than 10ha of ALC Grade 4 land or more than 10% of regional resource; Full recovery of land is expected within 5 years; or Less than 20ha of soil is temporarily unsuitable for agriculture.
Negligible	Minor permanent or temporary change, undiscernible over the medium to short-term, with no effect on usability, risk or value.	No material change to the soil resource has been identified; or Small area <1,000m ² is permanently lost from agriculture.

21.4.3.3 Impact Significance

47. Following the identification of receptor sensitivity and magnitude of the effect, it is possible to determine the significance of the impact.
48. The matrix which will be used as tool to aid this assessment is presented in **Table 21.9**. The assessment of impact significance is qualitative and reliant on professional experience, interpretation and judgement. The matrix should therefore be viewed as a framework to aid understanding of how a judgement has been reached, rather than as a prescriptive tool.

Table 21.9 Impact Significance Matrix

		Negative Magnitude				Beneficial Magnitude			
		High	Medium	Low	Negligible	Negligible	Low	Medium	High
Sensitivity	High	Major	Major	Moderate	Minor	Minor	Moderate	Major	Major
	Medium	Major	Moderate	Minor	Minor	Minor	Minor	Moderate	Major
	Low	Moderate	Minor	Minor	Negligible	Negligible	Minor	Minor	Moderate
	Negligible	Minor	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Minor

49. As with the definitions of magnitude and sensitivity, the matrix used for a topic is clearly defined by the assessor within the context of that assessment. The impact significance categories are divided as shown in **Table 21.10**.

Table 21.10 Impact Significance Definitions

Value	Definition
Major	Very large or large change in receptor condition, both adverse or beneficial, which are likely to be important considerations at a regional or district level because they contribute to achieving national, regional or local objectives, or, could result in exceedance of statutory objectives and / or breaches of legislation.
Moderate	Intermediate change in receptor condition, which are likely to be important considerations at a local level.
Minor	Small change in receptor condition, which may be raised as local issues but are unlikely to be important in the decision making process.
Negligible	No discernible change in receptor condition.
No change	No impact, therefore no change in receptor condition.

50. Note that for the purposes of this ES, major and moderate impacts are deemed to be 'significant'. In addition, whilst minor impacts are not significant in their own right, it is important to distinguish these from other non-significant impacts as they may contribute to significant impacts cumulatively or through interactions.
51. Embedded mitigation will be referred to and is included in the initial assessment of impact. If the impact does not require further mitigation (or none is possible) the residual impact will remain the same. If, however, mitigation is required there will be an assessment of the post-mitigation residual impact.

21.4.4 Cumulative Impact Assessment

52. The proposed East Anglia ONE North project Cumulative Impact Assessment (CIA) will 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 worst case scenario of each impact is then carried through to the traditional CIA which considers other developments which have been screened into the CIA.
53. For a general introduction to the methodology used for the CIA please refer to **Chapter 5 EIA Methodology**. Further detail of the CIA in regard to land use and agriculture is given in **section 21.7**.

21.4.5 Transboundary Impact Assessment

54. There is no pathway to transboundary impacts as the onshore development area is not sited in proximity to any international boundaries. Therefore, transboundary impacts on land use and agriculture are scoped out of this assessment and will not be considered further.

21.5 Existing Environment

55. This section describes the existing environment in relation to land use and agriculture. It is based on a desk-based study of data sources identified in **section 21.4.2** and **Table 21.6** as a basis for the impact assessment.
56. The land use within the onshore development area is predominantly agricultural, the majority of which is arable and a small amount of grazing pastures. There are also areas of 'non-agricultural' land, comprised of woodland and small waterbodies (such as rivers and ponds) (**Figure 21.2**). The largest urban areas within, or adjacent to, the onshore development area are Leiston, Aldringham, Friston, Knodishall and Coldfair Green. A key guiding design principle taken forward into the site selection process was that urban areas were to be avoided.

21.5.1 Land Use Policies and Designations

57. A review of the Suffolk Coastal Final Draft Local Plan (ESC 2019) was undertaken to identify any parcels of land that are allocated for, or restrict, future development or changes of use. This included a review of the proposals map for allocations for the Local Planning Authority.
58. The relevant planning policies in relation to land use and agriculture are outlined in **section 21.4.1.2**. Nature conservation, heritage and landscape designations are discussed in detail in **Chapter 22 Onshore Ecology**, **Chapter 24 Archaeology and Cultural Heritage** and **Chapter 28 Seascape, Landscape and Visual Amenity** of the ES respectively.
59. Upon a review of the Suffolk Coastal Final Draft Local Plan (ESC 2019), Special Landscape Areas (SLAs) are considered in **Chapter 28 Seascape, Landscape and Visual Amenity** and conservation areas are considered in **Chapter 24 Archaeology and Cultural Heritage**.
60. No planning designations discussed in the Suffolk Coastal Final Draft Local Plan (ESC 2019) are located within the onshore development area. Therefore, no impacts are predicted on planning designations due to the proposed East Anglia ONE North project and therefore the potential impact on land use policies and designations is not considered further within this assessment.

21.5.2 Agricultural Activities

61. This section describes the baseline environment in terms of agricultural land cover within the onshore development area. It describes the crops grown and agricultural practices adopted where these are known. It should be noted that this assessment is based on high level datasets (shown in **Table 21.5**) and ecological walkover surveys (further details of which can be found in **Chapter 22 Onshore Ecology**), which are only accurate at the time of data collection. They

should only be considered indicative of the land uses found within the study areas.

62. The primary land use within the onshore development area is agricultural, (arable and pastoral farmland) with some areas of woodland and improved grassland (**Figure 21.2**).
63. Agriculture in Suffolk is primarily arable or mixed use with farms ranging in size from less than 5ha to more than 100ha (Defra 2013a). Soil types vary from heavy clays to light sands and can support crops such as winter wheat, winter barley, sugar beet, oilseed rape, winter and spring beans and linseed, and smaller areas of rye, oats and other root vegetables can be found. Pigs and poultry are also very important to agriculture in Suffolk, with over 20% of the UK's outdoor reared pork originating in Suffolk (Invest in Suffolk 2018). This reflects the type of agricultural land typical of Suffolk County with a prevalence for root crops and vegetables.
64. For the purposes of this assessment, the agricultural industry is discussed in terms of Suffolk County as a whole.
65. Agriculture in Suffolk was worth £330 million in crops and livestock output in 2004 (Transforming Suffolk Strategy 2008 – 2028). The agricultural sector (including growing, production, processing and distribution) has since exhibited growth and is estimated to be worth £400 million, and thus continues to play an important part of the county's economy (Invest in Suffolk 2018).
66. Agriculture accounted for 2,688 businesses in Suffolk in 2018 and employed just over 8,200 people (Invest in Suffolk 2018). Cereal crop farming accounts for almost half of the agricultural land in Suffolk; the majority being wheat but also barley and other crops including biofuels (Suffolk County Council 2011). Suffolk's farmland accounts for over a fifth of the agricultural land in the East of England.

21.5.3 Agricultural Land Classifications

67. Agricultural land in England and Wales is classified according to the quality and versatility of the soil in a nationally recognised grading system (the Agricultural Land Classifications). The grading system was produced by the former Ministry of Agriculture, Fisheries and Food (MAFF, now Defra) and is described in **Table 21.11**. Grade 1 represents best quality agricultural land through to Grade 5 which represents agricultural land of the poorest quality.

Table 21.11 ALC Grades and Descriptions (MAFF 1988)

Grade	Description
Grade 1 – Excellent Quality Agricultural Land	Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.
Grade 2 – Very Good Quality Agricultural Land	Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.
Grade 3 ¹ – Good to Moderate Quality Agricultural Land	Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.
Grade 4 – Poor Quality Agricultural Land	Land with severe limitations, which significantly restrict the range of crops and / or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.
Grade 5 – Very Poor Quality Agricultural Land	Land with very severe limitations, which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.
Urban	Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religious buildings, and cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

68. The onshore development area covers Grade 2 (very good), Grade 3 (good to moderate) and Grade 4 (poor) agricultural land. The onshore substation and National Grid infrastructure land covers agricultural land of Grade 2 and Grade 3 quality. This is shown on **Figure 21.3**.
69. The percentage of land of different ALC grades within the onshore development area is presented below in **Table 21.12**. Note that the onshore development area covers a total of 317.58ha.

¹ No sub-grades of ALC Grade 3 (3a or 3b) have been identified within the onshore development area, therefore only ALC Grade 3 is considered in the assessment.

Table 21.12 Percentage of Land of Different ALC Grades within the Onshore Development Area

ALC Grade	Hectares	% ALC Grade land within Onshore development area	ALC Grade land within Onshore development area as a % of total ALC Grade land in Suffolk
Grade 1	0	0	0
Grade 2	85.48	26.9	0.08
Grade 3	114.6	36	0.06
Grade 4	94.8	30	0.2
Non-Agricultural Land (Includes urban, woodland, agricultural buildings and open water)	22.7	7.1	n/a

70. To conclude, **Table 21.12** shows that the biggest percentage of agricultural land within the onshore development area is Grade 3 and Grade 4 respectively. In total, 65.9% of the onshore development area is moderate to poor quality agricultural land (Grade 3 and Grade 4). There is no agricultural land of the highest quality within the onshore development area.

21.5.4 Soil Type

71. This section provides a description of the soils found within the onshore development area, including the type, drainage, texture, fertility and moisture.
72. Reference should be made to **Chapter 20 Water Resources and Flood Risk** for further details on soils in relation to flood risk and water. Any impact on the soil resource is not predicted to extend beyond the onshore development area. It should be noted that the published soil data provide generic characteristics and is indicative of the soil type present. The precise soil type and characteristics will differ between and within individual fields and will be captured within the SMP.
73. The soils within the onshore development area are dominated by freely draining slightly acid sandy soils. The soils are from low natural fertility (without the addition of fertilizers).
74. **Table 21.13** provides additional detail on the characteristics of the soil types found within the site according to published information (National Soils Research Institute (NSRI) undated).

Table 21.13 Characteristics of the Soil Types within the Onshore Development Area

Freely Draining Slightly Acid but Base-Rich Soils	
Typical Habitats (Semi-natural vegetation)	Base-rich pastures and deciduous woodlands
Texture	Loamy
Drainage Type	Freely draining
Natural Fertility	Moderate to high
Slowly Permeable Seasonally Wet Slightly Acid but Base-Rich Loamy And Clayey Soils	
Typical Habitats (Semi-natural vegetation)	Lowland seasonally wet pastures and woodlands
Texture	Loamy
Drainage Type	Impeded drainage
Natural Fertility	Moderate
Freely Draining Slightly Acid Sandy Soils	
Typical Habitats (Semi-natural vegetation)	Freely draining slightly acid sandy soils
Texture	Sandy
Drainage Type	Freely draining
Natural Fertility	Low
Freely Draining Slightly Lime-Rich Sandy Soils	
Typical Habitats (Semi-natural vegetation)	Sand dune vegetation ranging from pioneer dune systems through to low shrub
Texture	Sandy
Drainage Type	Freely draining
Natural Fertility	Low
Fen Peat Soils	
Typical Habitats (Semi-natural vegetation)	Wet fen and carr woodlands
Texture	Peaty
Drainage Type	Naturally wet
Natural Fertility	Mixed

75. The NSRI provides a classification for Expected Crops and Land Use based on land uses and land cover commonly associated with individual soil types. Those relevant to the onshore development area are:
- Suitable for range of spring and autumn sown crops; under grass the soils have a long grazing season. Free drainage reduces the risk of soil damage from grazing animals or farm machinery. Shortage of soil moisture most likely limiting factor on yields, particularly where stony or shallow;
 - Mostly suited to grass production for dairying or beef; some cereal production often for feed. Timeliness of stocking and fieldwork is important, and wet ground conditions should be avoided at the beginning and end of the growing season to prevent damage to soil structure. Land is tile drained and periodic moling² or subsoiling will assist drainage;
 - Cereals, roots, potatoes and field vegetables provided groundwater is controlled. Ease of working and winter harvesting, which can be damaging to structure, dependent on texture and drainage of subsoil. Irrigation needed on lighter soils;
 - Suitable for wide range of spring and autumn sown crops including irrigated roots, potatoes and field vegetables; lime and fertiliser rapidly leached; shortage of soil moisture will limit yield without irrigation; and
 - Reasonably flexible but more suited to autumn sown crops and grassland; soil conditions may limit safe groundwork and grazing, particularly in spring.

21.5.5 Environmental Stewardship Scheme

76. Environmental Stewardship Schemes (ESS) provide funding and advice to farmers, tenants and other land managers to encourage effective environmental management of land (Natural England 2011). They were a key tool for the delivery of the Rural Development Programme for England 2007-2013, funded by the European Union and UK Government. The 2014-2020 Rural Development Programme of England attempts to build on and enhance the Environmental Stewardship programme, by providing funding to protect 14,000ha of woodland and targeting specific biodiversity and water objectives (European Commission 2017). The schemes are administered by Natural England for Defra.
77. There are three levels to the scheme:
- Entry Level Stewardship (ELS) – includes Uplands ELS (UELS): simple and effective land management agreements with priority options;

² Moling is a trenchless method used to lay drainage channels. A mole plough is pulled along by tractor and forces its way through the soil along the desired path of the channel, this avoids the need to dig a trench.

- Organic (OELS) – includes Uplands OELS: organic and conventional mixed farming agreements; and
 - Higher Level Stewardship (HLS): more complex types of management and agreements tailored to local circumstances.
78. The onshore development area crosses two parcels of land which are signed up to ESS. The ESS which is overlapped by the onshore development area to the east of the Aldeburgh road is an area of ‘Entry Level with Higher Stewardship Scheme’ (120ha). The ESS which overlaps the western extent of the onshore development area is similarly an ‘Entry Level with Higher Stewardship Scheme’ (3.6ha).
79. In total, 38.9% (123.6ha) of the onshore development area is covered by ESS. These are shown in **Figure 21.4**.
80. Elements of construction, operational and decommissioning phases of the onshore infrastructure such as trenching, cable installation and the creation of access roads could potentially impact on land under an ESS agreement and will be considered further in the assessment.
81. It should be noted that the mapping from Natural England identifies the parcels of land that are subject to agreements and was last updated by Natural England in January 2019. It does not identify the specific areas of land that are under specific management (e.g. the location of wildlife friendly strips within parcels of land).

21.5.6 Notifiable Scheduled Diseases

82. The potential exists for cable installation to transmit agricultural crop and animal diseases between adjacent land holdings and fields, since installation activity would cross between these land holdings and fields.
83. However, no records of animal burials or notifiable scheduled diseases were identified within the onshore development area during consultation with the Animal and Plant Health Agency (APHA). Therefore, potential impacts of the transfer of notifiable scheduled diseases are not considered further within this assessment.
84. Should any animal remains be discovered during the construction phase that indicate a potential burial site, the main works contractor would cease all work in the vicinity and immediately advise the Animal Health Regional Office accordingly. This is detailed within the OCoCP submitted with this DCO application (document reference 8.1) and is secured under the requirements of the draft DCO.

21.5.7 Injurious Weeds and Invasive Plant Species

85. The Extended Phase 1 Habitat Survey and biological records check did record one instance of Himalayan Balsam within the onshore study area. Refer to **Chapter 22 Onshore Ecology** for the full Extended Phase 1 Habitat Survey report. Appropriate construction methods will be implemented to ensure that this species is managed appropriately. Management measures pertaining to invasive species are detailed further within the Outline Landscape and Ecological Management Strategy (OLEMS) (document reference 8.7), submitted with this DCO application and secured under the requirements of the draft DCO.
86. Potential impacts of the transfer of injurious weeds and invasive plant species are not considered further within this assessment.

21.5.8 PRow and Cycle Routes

87. Recreational land uses include the Suffolk Coast Path, which runs along the coastline between Felixstowe and Lowestoft and is present within the onshore development area at the coast between Sizewell and Thorpeness. Inland there are numerous Public Rights of Way (PRowS), bridleways and other footpaths.
88. **Chapter 30 Socio-Economics, Tourism and Recreation** provides a detailed summary of existing PRowS and cycle paths in the locality of the proposed East Anglia ONE North project and addresses the potential impacts on PRowS. An Outline PRow strategy (OPRowS) (document reference 8.4) has been submitted with the DCO application and secured under the requirements of the draft DCO. They are not considered further within this chapter of the ES.

21.5.9 Utilities

89. There are a number of utilities present within the onshore development area, including telecommunications, buried and above ground electricity cables, gas and public water mains. The locations of known utilities are shown in **Figure 21.5**.
90. **Table 21.14** provides information on the utilities of major and national importance that cross the onshore development area. Details regarding the source of this information are listed in **Table 21.6**.

Table 21.14 Major Utilities Crossing the Onshore Development Area

Utility Type	Provider
Drainage and Sewage Treatment Works	Anglian Water
Electric	National Grid/UK Power Network
Overhead Electric	National Grid/UK Power Network
Water	Essex and Suffolk Water

Utility Type	Provider
Gas	Cadent Gas Ltd
Telecoms	BT Openreach
Telecoms	Interoute Communications
Telecoms	Vodafone
Telecoms	Virgin Media

21.5.10 Common Land

91. Under the CRoW Act 2000 the public are not restricted to paths, but can freely walk on mapped areas of mountain, moor, heath, downland and registered common land. Common land is shown on **Figure 21.6**.
92. The onshore development area has been designed to ensure there is no interaction with common land (above or below ground).
93. There are three areas of common land that are either immediately adjacent to or on the boundary of the onshore development area (including Thorpeness Common), and a further three areas of common land in the vicinity of the onshore development area. Any overlap of the onshore development area with these six areas of common land in proximity to the onshore development area is due to the scaling on **Figure 21.6**. The onshore development area will not encroach on these six areas of adjacent common land.

21.5.11 Anticipated Trends in the Baseline Conditions

94. The baseline review of land use and agriculture in **section 21.5** shows that the primary land use within the onshore development area is agricultural, (arable and pastoral farmland) with some areas of woodland and improved grassland.
95. **Chapter 22 Onshore Ecology** notes that species associated with farmland environments have declined over the short and long term, with farmland birds and butterflies both declining. Soil erosion is expected to occur naturally over time, depending on weather conditions (exacerbated by climate change) and farming practices.
96. Consequently, the quality and availability of agricultural land could reasonably be expected to decline over time, with some potential offsets by advances in agricultural innovations and technology.

21.6 Potential Impacts

97. This section outlines potential impacts on land use and agriculture as a result of the proposed East Anglia ONE North project. Each impact is described and assigned a significance using the assessment methodology described in **section 26** and **Chapter 5 EIA Methodology**.
98. The onshore substation and National Grid infrastructure may have different impacts in terms of type and magnitude than those of the onshore cable route and landfall, the magnitude of these are discussed separately or under the same impact where relevant.

21.6.1 Potential Impacts during Construction

99. Reference should be made to **Chapter 6 Project Description** for full details of the activities proposed during the construction phase. However, in summary, the activities considered likely to impact on land use and agriculture are as follows:
- Creation of CCS to support construction;
 - Construction of onshore infrastructure including landfall, onshore cable route, transition bay and jointing bay locations – installation techniques may include HDD;
 - Construction of the onshore substation and landscaping;
 - Construction of National Grid infrastructure;
 - Construction of new access tracks and haul road;
 - Stockpiling of topsoil and subsoil; and
 - Disposal of excess soil offsite to a suitably licensed facility.
100. The following section considers the potential proposed embedded mitigation (**Table 21.3**), other mitigation measures suggested within the section are considered to be additional. An OCoCP is secured under the requirements of the draft DCO and has been included with the DCO application (document reference 8.1) which will set out in full the embedded and additional mitigation to be applied.

21.6.1.1 Impact 1: Land Taken out of Existing Use

101. Land would be directly taken out of existing use or isolated due to construction activities and effectively taken out of use. Due to health, safety and technical requirements during construction, works areas would be fenced off and not accessible to landowners or occupiers for the duration of the construction period. The exact timing and duration of works at any location are not known at this time. However, along the onshore cable route (as described in **Chapter 6 Project Description**) the onshore cable route will be constructed in 4 sections concurrently, each with a length of 500m to 2km. Within these sections works will

be sequential therefore in most cases land will not be taken out of existing use for the full construction duration.

21.6.1.1.1 Landfall and Onshore Cable Route

102. **Section 21.3.2** addresses the worst case scenario and **Table 21.2** details land take as a result of the proposed East Anglia ONE North project construction footprint. The onshore development area is 314ha in size. However, the actual construction land take area for the construction phase of the proposed East Anglia ONE North project onshore cable route and landfall will be approximately 434,542m² (43.4ha).
103. Further to the construction works footprint, the Applicant has identified four potential ecological mitigation areas along the onshore cable route (shown on **Chapter 6 Project Description Figure 6.6**). These areas are currently being used as agricultural land, however during the construction phase they could be used for woodland planting or temporary replacement suitable habitat for protected species (for example used as a turtle dove seeding area, as detailed in **Chapter 23 Onshore Ornithology**). The combined area of these four potential ecological mitigation areas is 6.12ha.
104. Therefore, a total of approximately 49.52ha of agricultural land could be taken out of existing use for the construction phase of the proposed East Anglia ONE North project onshore cable route and landfall as part of either the construction footprint or as a potential ecological mitigation area.
105. The area of land from which landowners, occupiers or the public would need to be excluded will be minimised as far as possible. Access for farm vehicles to land severed by the works would be maintained where practicable in consultation with and subject to agreements with individual landowners and occupiers. Where necessary, crossing points would be agreed pre-construction.
106. At this stage, it is not possible to calculate the area of land that would become isolated or inaccessible, as access to individual fields would be determined as part of detailed design and pre-construction planning. It is however likely that relatively small areas or strips of land would be affected.
107. Based on the information provided in **section 21.5**, the majority of the construction footprint would be within areas currently associated with agricultural production.
108. Other land uses encompassed by the onshore development area include roads and associated verges, field boundaries and watercourses.

109. The total area of farmed land in Suffolk is 283,701ha (Defra 2013b). The footprint of the onshore development area constitutes 0.1% of the county resource and the construction footprint of the onshore cable route and landfall (including those potential ecological mitigation areas) represents 0.01% of this resource.
110. The precise duration of impacts on land take is dependent on the timing of the construction sequence.
111. Where possible, reinstatement of hedgerows and their associated features (banks and ditches), and drainage systems would occur following the installation of each section of cable. Removal of trees or interference with roots would be avoided where possible (for further details see **Chapter 22 Onshore Ecology**). Any land temporarily lost (through lost accesses) would be consulted on with landowners and the Local Planning Authority. The exact timing and duration of works at any location are not known at this time.
112. The sensitivity of the receptor is considered to be medium, because although the quality of the land varies from ALC Grades 2 – 4, the majority of the land area is either Grades 3 or 4 (see **Table 21.12**). The magnitude of effect is considered to be negligible given that there is no permanent change to land use for the onshore cable route and landfall, with only temporary restriction to agricultural activities, and based upon the areas of land taken ranging from ALC Grades 2-4. Furthermore, the area affected along the onshore cable route is minimal as a percentage of the county resource. Therefore, the impact significance is considered to be **minor adverse**.
113. During construction, it is unavoidable that land along the onshore cable route would temporarily be taken out of its existing use, however the embedded mitigation measures (such as site selection and providing temporary means of access), (see **Table 21.3**) reduce the potential impacts as far as practicable. No further mitigation measures are recommended however affected landowners will be consulted with to agree the necessary compensations. Potential impacts on ecological features such as hedgerows and trees and any associated mitigation are considered further in **Chapter 22 Onshore Ecology**.

21.6.1.1.2 Onshore Substation and National Grid Infrastructure

114. **Section 21.3.2** addresses the worst case scenario and **Table 21.2** details land take as a result of the proposed East Anglia ONE North project construction footprint. The onshore development area is 314ha in size. However, the actual construction land take area for the construction phase of the proposed East Anglia ONE North project onshore substation and National Grid infrastructure is 23.2ha.

115. The Applicant has developed an Outline Landscape Mitigation Plan (OLMP), submitted with this DCO application as part of the OLEMS, in consultation with the Local Planning Authority which includes screening planting and attenuation ponds. Therefore, a further 22.78ha of predominantly agricultural land has been identified to be used as landscaping around the onshore substation and National Grid substation. Post-consent, the final LMP will be agreed with the Local Planning Authority.
116. Therefore, a total of approximately 46.28ha of agricultural land could be taken out of existing use for the construction phase of the proposed East Anglia ONE North project onshore substation and National Grid infrastructure as part of either the construction footprint or as part of the proposed landscaping.
117. The area of land from which landowners, occupiers or the public would need to be excluded will be minimised as far as possible. Access for farm vehicles to land severed by the works would be maintained where practicable in consultation with and subject to agreements with individual landowners and occupiers.
118. At this stage, it is not possible to calculate the area of land that would become isolated or inaccessible, as access to individual fields would be determined as part of detailed design and pre-construction planning. It is however likely that relatively small areas or strips of land would be affected.
119. Based on the information provided in **section 21.5**, the majority of the construction footprint would be within areas currently associated with agricultural production.
120. The total area of farmed land in Suffolk is 283,701ha (Defra 2013b). The footprint of the onshore development area constitutes 0.1% of the county resource and the construction footprint of the onshore substation and National Grid infrastructure (inclusive of landscaping) represents 0.01% of this resource.
121. The sensitivity of the receptor is considered to be high, on a precautionary basis, because the quality of the land is ALC Grades 2 – 3. The magnitude of effect is considered to be negligible given that land will be reinstated following the construction phase. Areas of land where reinstatement is not possible are assessed as an operational impact, please refer to **section 21.6.2.1.2**. Therefore, the impact significance is considered to be **minor adverse**. No further mitigation measures are recommended however affected landowners will be consulted with to agree the necessary compensations.

21.6.1.2 Impact 2: Impacts to ESS

122. During the construction period, there would be the potential for impacts on ESS. The effect on individual landowners / occupiers is likely to be specific to their own scheme, which would need to be discussed between the Applicant, landowners, occupiers and Natural England prior to construction. For the purposes of the ES, this assessment looks at the impacts in general terms rather than on an agreement by agreement basis. Two potential connected impacts are anticipated as a result of this:

- Ecological – in terms of the loss of the agreements and the substantive agri-environmental objectives of the scheme; and
- Financial - in terms of the loss of the agreements and the impact on overall farming income.

123. In total, 38.9% (123.6ha) of the onshore development area falls under an ESS (see **Figure 21.4**).

21.6.1.2.1 Landfall and Onshore Cable Route

124. During construction, there would be the potential for impacts from the landfall and onshore cable route on ESS, as described in **section 21.6.1.2** above. One ESS falls within the onshore development area which would overlap with construction associated with the landfall and onshore cable route. The size of the ESS which overlaps with this construction is 120ha.

125. There is potential for disruption to the affected ESS as a direct result of loss of land during construction affecting such features as field margins. A number of landowners within an ESS would be affected by the proposed East Anglia ONE North project. The area of ESSs which fall within the onshore development area which would overlap with construction associated with the landfall and onshore cable route (including proposed ecological mitigation areas) represents approximately 0.16% of Suffolk county resource (72,177ha). Following the completion of construction, this area of ESS would be reinstated and therefore not inhibit similar agreements being re-established.

126. It is considered that the overall magnitude of effect would be negligible due to the size of area affected in terms of regional resource of land under ESS and the extent of the ESS itself which falls within the onshore development area. The sensitivity of receptors is considered to be medium (**Table 21.7**) due to the size of the area affected and the level of the ESS being a lower, entry level area.

127. Overall, the significance of the impacts to land within Environmental Stewardship is considered to be **minor adverse**. The Applicant will consult with affected landowners to agree the necessary compensations.

21.6.1.2.2 Onshore Substation and National Grid Infrastructure

128. During construction, there would be potential for impacts from the onshore substation and National Grid infrastructure on ESS, as described in **section 21.6.1.2** above. One ESS falls within the onshore development area which would overlap with construction associated with the National Grid infrastructure, specifically the overhead line realignment works and the permanent access road to the onshore substation and National Grid substation. The landscaping surrounding the onshore substation and National Grid substation does not overlap with this ESS. The size of the ESS which overlaps with this construction is 3.6ha.

129. Permanent loss to the ESS due to the permanent access road to the onshore substation and National Grid substation is considered as an operational impact.

130. In terms of construction associated with the overhead line realignment area which overlaps with the ESS, there is potential for a certain amount of disruption to the affected ESS as a direct result of loss of land during construction affecting such features as field margins. The area of ESS which fall within the onshore development area which would overlap with construction associated with the National Grid infrastructure represents approximately 0.004% of Suffolk county resource (72,177ha). Following the completion of construction, this area of ESS would be reinstated and therefore not inhibit similar agreements being re-established.

131. It is considered that the overall magnitude of effect would be negligible due to the size of area affected in terms of regional resource and the extent of the ESS itself which falls within the onshore development area. The sensitivity of receptors is considered to be medium (**Table 21.7**) due to the size of the area affected and the level of the ESS being a lower, entry level area.

132. Overall, the significance of the impacts to land within Environmental Stewardship is considered to be **minor adverse**. The Applicant will consult with affected landowners to agree the necessary compensations.

21.6.1.3 Impact 3: Impacts to Land Drainage

21.6.1.3.1 Landfall, Onshore Cable Route, Onshore Substation and National Grid Infrastructure

133. Construction works such as excavation and stockpiling of soils has the potential to cause an impact to the natural and artificial field drainage systems. Drains are

likely to be at a depth of between 0.5m – 1.5m, made of ceramic, plaster or other appropriate materials and therefore would be impacted by any excavation works planned through agricultural fields. It would be necessary to truncate the drainage systems temporarily during excavation and installation and reinstate following construction.

134. Given the soil types found along the onshore cable corridor, 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 (**Table 21.7**).
135. Embedded mitigation measures are proposed in **Table 21.3**. Embedded mitigation includes implementation of the final CoCP. These would include provisions for a SWDP. The OCoCP has been submitted for consultation with the DCO application for the proposed East Anglia ONE North project.
136. The magnitude of effect is considered to be negligible as the impact will be short term (only during the construction phase of the proposed East Anglia ONE North project) and the embedded mitigation measures provided in the SWDP. Refer to **Chapter 20 Water Resource and Flood Risk** for further detail regarding land drainage qualities.
137. Taking into account the embedded mitigation described above, the impact significance, due to the negligible magnitude of effect but high sensitivity of the receptor, is therefore considered to be **minor adverse**.
138. Further mitigation measures, as secured within the CoCP and detailed within the OCoCP submitted with this DCO application, may include:
 - The use of a specialist drainage contractor to undertake surveys and create drawings prior to and post-construction to locate drains and ensure appropriate reinstatement.

21.6.1.4 Impact 4: Degradation to Natural Resource

21.6.1.4.1 Landfall, Onshore Cable Route, Onshore Substation and National Grid Infrastructure

139. The following activities proposed during the construction phase have been identified as having the potential to degrade the existing soil resource:
 - Removal of trees and vegetation;
 - Topsoil stripping, earthworks and landscaping within the construction footprint;
 - Construction and operation of the haul road;

- Construction and operation of the CCS;
 - Storage of topsoil and subsoil; and
 - Reinstatement of subsoil and topsoil.
140. There is the potential for soils to be compacted and soil structure to deteriorate during the construction phase of the proposed East Anglia ONE North project. The result would be reduced biological activity, porosity and permeability and increased strength. It can also lead to reduced water infiltration capacity and increased risk of erosion (European Commission 2008). The effect of all of these impacts is usually reduced fertility and crop yields, should the site be returned to agricultural use in the future.
141. A range of embedded mitigation measures may be employed to reduce the effect of the construction activities on the soil resource. These are detailed further within the OCoCP submitted with this DCO application, and include:
- Soils handling, storage and reinstatement by a competent contractor under Defra (2009) Construction code of practice for the Sustainable Use of Soils on Construction Sites;
 - Topsoil stripping within all construction areas and storage adjacent to where it is extracted, where practical;
 - Storage of the excavated subsoil separately from the topsoil, with sufficient separation to ensure segregation;
 - Handling of soils according to their characteristics – e.g. within wooded areas it is unlikely that topsoil resources of any quality could be separated and preserved for reuse. If current wooded areas are to be used for storage it would not be necessary to undertake topsoil stripping. Topsoil from agricultural land may be treated as a single resource for stockpiling and reuse where appropriate;
 - Where necessary, tree roots would be removed by screening;
 - Under storage areas, loosening of subsoils is proposed when dry to improve permeability before the topsoil is replaced;
 - For most after-uses, subsoils may be treated as a single resource for stockpiling where appropriate;
 - During wet periods, limiting mechanised soil handling in areas where soils are highly vulnerable to compaction;
 - Restricting movements of heavy plant and vehicles to specific routes and avoidance of trafficking of construction vehicles in areas of the site which are not subject to construction phase earthworks;
 - Minimising the excavation footprint; and

- In circumstances where construction has resulted in soil compaction, further remediation may be provided, through an agreed remediation strategy.
142. The mitigation measures above would be set out in a SMP which would be produced by a competent contractor and agreed with the Local Planning Authority, in advance of construction commencement. This would be completed pre-construction once an earthworks contractor has been appointed and detailed earthworks phasing information is available. The contractor would be required to comply with the SMP.
143. 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.
144. Soil within the construction footprint would be subjected to substantial earthworks including initial stockpiling and movement between stockpiles. The magnitude of effect is considered to be low due to the embedded mitigation detailed above, and as full recovery of the land is expected within five to 10 years and an area of approximately 43.4ha is potentially going to be temporarily unsuitable for agriculture (**Table 21.8**).
145. Based on a low magnitude of effect and high soil sensitivity, and without additional mitigation, the impact is predicted to be of moderate adverse significance at a local level.
146. Following implementation of the embedded mitigation, , the Applicant could additionally seek private agreements with relevant 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, as secured within the CoCP and detailed within the OCoCP submitted with this DCO application. This is expected to reduce the magnitude of effect to low magnitude and therefore reduce the predicted impact to **minor adverse** significance.
147. No impacts to natural resources are predicted for the operational phase of the proposed East Anglia ONE North project and is therefore this is not considered any further within this assessment and not included in the assessment presented in **section 21.6.2**.

21.6.1.5 Impact 5: Utilities

21.6.1.5.1 Landfall and Onshore Cable Route, Onshore Substation and National Grid Infrastructure

148. The onshore cable route has been selected to avoid major buried utilities; however, those that do intersect with the onshore development area are discussed in **section 21.5.9** and shown in **Figure 21.5**.
149. 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 have been covered by identifying protective provisions in the draft DCO, and 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 project.

21.6.1.6 Impact 6: Impacts to Common Land

21.6.1.6.1 Landfall and Onshore Cable Route

150. 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 embedded mitigation and the refinement of the onshore development area, outlined in **section 21.3.3**, the proposed East Anglia ONE North project will have no interaction with areas of common land (above or below ground), including Thorpeness Common.
151. 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.

21.6.1.6.2 Onshore Substation and National Grid Infrastructure

152. No areas of common land have been identified within or adjacent to the onshore substation and National Grid infrastructure (**Figure 21.6**), therefore **no impacts** are predicted.

21.6.2 Potential Impacts during Operation

153. This section describes the potential impacts arising during the operational phase of the proposed East Anglia ONE North project. Reference should be made to **Chapter 6 Project Description** for full details of the operational phase.

21.6.2.1 Impact 1: Permanent Change to Land Use

154. The Applicant will permanently reinstate the onshore cable route following the construction phase.

155. Appropriate off-road vehicles would be used to access each jointing bay when carrying out the maintenance visit. Jointing bays would therefore be located adjacent to field boundaries or roads as far as possible to reduce impacts.
156. Non-scheduled maintenance to address faults as and when these may arise would also be necessary, and this maintenance could be required in between jointing bay locations.

21.6.2.1.1 Landfall and Onshore Cable Route

157. The areas of land that would be affected during the operational period are predominately limited to the narrow strip of land above the onshore cables, over which the Applicant is likely to acquire cable protection rights. The Applicant will seek to ensure as far as possible that agricultural activities along the onshore cable route can continue during the operational period.
158. As detailed in **section 21.6.1.1.1**, the Applicant has identified four potential ecological mitigation areas along the onshore cable route (shown on **Chapter 6 Project Description Figure 6.6**). During the operational phase of the proposed East Anglia ONE North project, these four areas could remain as areas of other habitat and therefore would result in a permanent change in land use. The combined area of these four potential ecological mitigation areas is 6.12ha. This represents 0.002% of the county resource of farmed land.
159. The sensitivity of the receptor is considered to be medium because the land is of ALC Grades 2 – 4. Due to the small area of land take in the context of the regional resource, and that any maintenance events at the landfall and onshore cable route would be highly localised, temporary and of short duration, the magnitude of effect is considered to be negligible.
160. Therefore, the impact significance is considered to be **minor adverse**.
161. Discussions with landowners regarding potential future land uses and any restrictions on these would be undertaken as part of ongoing discussions between landowners and the Applicant.

21.6.2.1.2 Onshore Substation and National Grid Infrastructure

162. The total permanent and take attributed to the onshore substation and National Grid infrastructure would be 10.81ha (**Table 21.2**). There would be additional land taken by the landscaping of the onshore substation and National Grid substation, as detailed in **section 21.6.1.1.2**. This would be a total area of 22.78ha. Therefore, the total operational land take attributed to the onshore substation and National Grid infrastructure is 33.59ha.

163. This land is ALC Grade 2 - 3 and is therefore considered to be of high sensitivity, on a precautionary basis. Due to the small area of the permanent operational infrastructure and the additional landscaping footprint in the context of the regional resource (0.01% of Suffolk's total farmed resource), the magnitude of the effect is considered to be low. Although the impact significance is therefore predicted to be moderate adverse at a site level of the substation(s) location, the impact is considered to be of **minor adverse** significance in the context of the county.
164. Discussions with landowners regarding potential future land uses and any restrictions on these would be undertaken as part of ongoing discussions between landowners and the Applicant.

21.6.2.2 Impact 2: Impacts to ESS

21.6.2.2.1 Landfall and Onshore Cable Route

165. One Entry Level plus Higher Level Stewardship Scheme falls within the onshore development area which would overlap with operational footprint associated with the landfall and onshore cable route. The size of the ESS which overlaps with this construction is 120ha.
166. Following construction, the affected ESS would be fully reinstated and therefore not inhibit similar agreements being re-established. Permanent infrastructure along the onshore cable route consists of a total of 36 jointing bays (each 45m² in area) which will sit underground with no surface infrastructure, and potential ecological mitigation areas will be the only land under an ESS potentially taken out of use. There are anticipated to be no requirements for maintenance visits to jointing bays along the onshore cable route.
167. On a receptor of medium sensitivity and an effect of low magnitude (due to only a maximum of 0.16% of regional resource being affected), the operational impact to ESS is considered to be **minor adverse**.

21.6.2.2.2 Onshore Substation and National Grid Infrastructure

168. One ESS falls within the onshore development area which would overlap with construction associated with the National Grid infrastructure, specifically the overhead line realignment works and the permanent access road to the onshore substation and National Grid substation. The landscaping surrounding the onshore substation and National Grid substation does not overlap with this ESS. The size of the ESS which overlaps with this construction is 3.6ha.
169. There is an operational impact from the permanent access road, which inhibits the reinstatement of the land and therefore will not allow for similar agreements

to be re-established. The maximum area of ESS that could be affected is 3.6ha. This represents approximately 0.004% of Suffolk county resource (72,177ha).

170. It is considered that the overall magnitude of effect would be low due to the size of area in terms of regional resource and the extent of the ESS itself which falls within the permanent access road footprint. The sensitivity of receptors is considered to be medium (**Table 21.7**) due to the size of the area affected and the level of the ESS being a lower, entry level area.
171. Overall, the significance of the impacts to land within Environmental Stewardship is considered to be **minor adverse**. The Applicant will consult with affected landowners to agree the necessary compensations.

21.6.2.3 Impact 3: Alterations to Land Drainage

21.6.2.3.1 Landfall, Onshore Cable Route, Onshore Substation and National Grid Infrastructure

172. No impacts on drainage are expected to occur during the operational phase of the onshore cable route or landfall, due to the reinstatement of all drainage post construction where possible.
173. All drainage affected during construction would be reinstated where possible and operational drainage requirements at the onshore substation and National Grid infrastructure would be compliant with any flood risk assessment. The potential drainage requirements and strategy for minimising flood risk at the onshore substation and National Grid infrastructure are discussed in **Chapter 20 Water Resource and Flood Risk**. Therefore, there would be **no impact** during operation.

21.6.2.4 Impact 4: Utilities

21.6.2.4.1 Landfall, Onshore Cable Route, Onshore Substation and National Grid Infrastructure

174. The potential exists for maintenance activities (such as described in **Chapter 6 Project Description**) to affect utilities if the location of maintenance coincides with a utility crossing, since these activities may require access to the buried cables. As described in **section 21.6.1.5**, potentially affected utility providers would be contacted prior to maintenance works, and any works would be carried out according to agreed methods. As works would be undertaken with the cooperation and agreement of utility providers **no impact** is predicted during operation.

21.6.2.5 Impact 5: Impact to Common Access Land

21.6.2.5.1 Landfall and Onshore Cable Route

175. The landfall and onshore cable route does not cover any areas of common land. Six areas of common land are in the vicinity of, but are out with, the onshore development area.
176. The operational phase of the proposed East Anglia ONE North project would have no operational access impact on these six areas of common land which are adjacent to the onshore development area. Therefore, **no impacts** are predicted
177. Onshore Substation and National Grid Infrastructure. No areas of common land have been identified within or adjacent to the onshore substation and National Grid infrastructure, therefore **no impacts** are predicted.

21.6.2.6 Impact 6: EMFs

21.6.2.6.1 Landfall and Onshore Cable Route, Onshore Substation and National Grid Infrastructure

178. High voltage cable systems generate electromagnetic fields (EMFs) during operation. The potential operational impacts of EMFs are discussed further and assessed in **Chapter 27 Human Health**. No EMF impacts will occur during the construction phase of the proposed East Anglia ONE North project.

21.6.3 Potential Impacts during Decommissioning

179. 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 *in situ* 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.

21.7 Cumulative Impacts

21.7.1 Cumulative Impact with proposed East Anglia TWO Project

180. 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 DCO application 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.
181. The proposed East Anglia ONE North project CIA will therefore initially consider the cumulative impact with only the East Anglia TWO project.
182. The CIA considers the proposed East Anglia ONE North project and the proposed East Anglia TWO project under two construction scenarios:
- Scenario 1 - the proposed East Anglia ONE North project and proposed East Anglia TWO project are built simultaneously; and
 - Scenario 2 - the proposed East Anglia ONE North project and the proposed East Anglia TWO project are constructed sequentially.
183. The worst case (based on the assessment of these two construction scenarios) for each impact is then carried through to the wider CIA which considers those developments that have been screened into the CIA (**section 21.7.2**). The operational phase impacts will be the same irrespective of the construction scenario. For a more detailed description of the assessment scenarios please refer to **Chapter 5 EIA Methodology**.
184. Full assessment of scenario 1 and scenario 2 can be found in **Appendix 21.2**. This assessment found that scenario 2 represented the worst case impacts for land use and agriculture. A summary of those impacts can be found in **Table 21.15**.
185. **Table 21.15** shows that under scenario 2 there are resulting potentially significant impacts (in EIA terms) on land taken out of existing use, ESS and land drainage. These significant impacts arise from the increased expected construction duration associated with scenario 2.
186. Although there is the potential for these significant impacts, the Applicant will commit to reinstatement plans which will ensure that land is returned to its original use as far as practicable following construction. Therefore, these measures will ensure that there are no long term significant impacts.

Table 21.15 Summary of Potential Impacts Identified for Land Use under Construction Scenario 2

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation Measures	Residual Impact
Cumulative Construction Impacts with the proposed East Anglia TWO project						
Impact 1: Land taken out of Existing Use	Landfall and Onshore Cable Route	Medium	Negligible	Minor Adverse	Consultation with Affected Landowners	Minor Adverse
	Onshore Substation and National Grid Infrastructure	High	Negligible	Minor adverse	Consultation with Affected Landowners	Minor Adverse
Impact 2: Impact to ESS	Onshore development area	Medium	Negligible	Minor adverse	Consultation with Affected Landowners	Minor adverse
Impact 3: Impact to Land Drainage	Onshore Development Area	High	Negligible	Minor Adverse	Use of a specialist drainage contractor.	Minor Adverse
Impact 4: Degradation to Natural Resource	Onshore Development Area	High	Medium	Major Adverse	Private agreements with landowners regarding any measures required in relation to crop loss incurred as an indirect consequence of degradation of the soil resource	Minor Adverse
Impact 5: Impact to Utilities	Onshore Development Area	n/a	None	No Impact	n/a	No Impact
Impact 6: Impact to Common Land	Landfall and Onshore Cable Route	n/a	n/a	No Impact	n/a	No Impact

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation Measures	Residual Impact
	Onshore Substation and National Infrastructure	n/a	None	No Impact	n/a	No Impact
Cumulative Operational Impacts with the proposed East Anglia TWO project						
<p>Cumulative operational impacts on land use and agriculture will be no greater than operational impacts for the proposed East Anglia ONE North project alone. 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 additional infrastructure. The footprint increase from the proposed East Anglia ONE North project alone is not considerable when agricultural activities considered at a regional level. See Table 21.21 for a summary of those operational impacts for the proposed East Anglia ONE North project alone.</p>						
Cumulative Decommissioning Impacts with the proposed East Anglia TWO project						
<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>						

21.7.2 Cumulative Impact Assessment with Other Developments

187. The assessment of cumulative impacts has been undertaken here as a two stage process. Firstly, all impacts considered in **section 21.6** have been assessed for the potential to act cumulatively with other projects. Potential cumulative impacts are set out in **Table 21.16**.

Table 21.16 Potential Cumulative Impacts

Impact	Potential for Cumulative Impact	Rationale
Construction		
Land taken out of Existing Use	Yes	Cumulative direct impacts arising from two or more projects are possible. Impacts may occur where project boundaries overlap spatially or temporally on the same landowner/occupier's land. Such impacts have the potential to affect local productivity (e.g. loss of earnings from more than one project taking the same parcels of land out of use). Changes to ALC grades of land may also occur as an indirect impact.
ESS	Yes	Cumulative direct impacts arising from two or more projects are possible. Impacts may occur where project boundaries overlap spatially or temporally on the same landowner/occupier's land. Such impacts have the potential to affect land under ESS (e.g. loss of earnings from ESS more than one project taking the same parcels of land out of use).
Land Drainage	Yes	Cumulative direct impacts arising from two or more projects are possible given the level of uncertainty regarding the presence and location of drainage systems. Impacts may occur to individual field drains in any area of over-lap or those with an extent which intersects two or more proposed development boundaries (where groundworks are anticipated).
Soils	Yes	Cumulative direct impacts arising from two or more projects are possible. Impacts may occur where project boundaries overlap spatially or temporally on the same landowner/occupier's land. Such impacts have the potential to affect local productivity (e.g. loss of earnings from more than one project taking the same parcels of land out of use). Changes to ALC grades of land may also occur as an indirect impact.

Impact	Potential for Cumulative Impact	Rationale
Utilities	No	Potentially affected utility providers contacted and the location of existing services would be identified prior to works to ensure there would be no impact.
Common Land	Yes	Cumulative direct impacts arising from two or more projects are possible. Impacts may occur where project boundaries overlap spatially or temporally on the same area of common land or over the access to common land.
Operation		
Permanent Change to Land Use	Yes	Cumulative impacts may occur at a county scale where impacts to productivity affect the wider agriculture industry.
ESS	No	where practicable, all ESSs, and the accesses to these parcels of land, will be reinstated following the construction phase. Therefore, no cumulative impacts are predicted during operation.
Land Drainage	No	Due to the reinstatement of all drainage post construction, where practicable, and adherence with the flood risk assessment, no cumulative impacts are predicted during operation.
Utilities	No	Potentially affected utility providers contacted and the location of existing services would be identified prior to works to ensure there would be no impact. Therefore, no cumulative impacts are predicted during operation.
Common Land	No	All common land, and the accesses to these parcels of land, will be reinstated following the construction phase.
Decommissioning		
<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>		

188. The second stage of the CIA is an assessment of whether there is spatial overlap between the extent of potential effects of the onshore infrastructure and the potential effects of other projects scoped into the CIA upon the same receptors. To identify whether this may occur, the potential nature and extent of effects arising from all projects scoped into the CIA have been identified and any overlaps between these and the effects identified in **section 21.6** Where there is an overlap, an assessment of the cumulative magnitude of effect is provided.
189. Following a review of projects which have the potential to overlap temporally or spatially with the proposed East Anglia ONE North project, two developments have been scoped into the CIA.
190. **Table 21.17** provides detail regarding the projects.
191. The full list of projects for consideration has been developed in consultation with the Local Planning Authority. The remainder of the section details the nature of the cumulative impacts against all those receptors scoped in for cumulative assessment.

Table 21.17 Summary of Projects Considered for the CIA in Relation to Land Use

Project Name	Status	Development Period	³ Distance from East Anglia ONE North Onshore Development Area	Project Definition	Level of Information Available	Included in CIA	Rationale
Sizewell C New Nuclear Power Station	PEIR formally submitted 04.01.19.	Application expected in 2020. Construction expected to commence in 2021.	1.4km	A new nuclear power station at Sizewell in Suffolk. Located to the north of the existing Sizewell B Power Station Complex, Sizewell C New Nuclear Power Station would have an expected electrical capacity of approximately 3,260 megawatts (MW). Full PEIR available: https://www.edfenergy.com/download-centre?keys=&tid=1380&year%5Bvalue%5D%5Byear%5D=	Tier 5 ⁴	No	Project boundary does not overlap with the onshore development area; therefore, no direct cumulative impacts are anticipated. The total area of land taken out of existing use as a result of the Sizewell C New Nuclear Power Station development will not be clear until the final design is refined. Stage 4 consultation determines that the proposed development is not taking land of high quality (ALC Grade 1 or 2) out of existing use. Therefore, indirect impacts of agricultural land taken out of existing use are unlikely to occur.

³ Shortest distance between the considered project and East Anglia ONE North– unless specified otherwise

⁴ Based on criteria set out in **section 5.7.2** of **Chapter 5 EIA Methodology**

Project Name	Status	Development Period	³ Distance from East Anglia ONE North Onshore Development Area	Project Definition	Level of Information Available	Included in CIA	Rationale
Sizewell B Power Station Complex	Planning application formally submitted 18.04.19. Awaiting Decision.	Construction expected to commence in 2022. Expected construction timetable of 53 months. Peak construction is expected in 2022, completion of construction expected in 2027.	1.4km	The demolition and relocation of facilities at the Sizewell B Power Station Complex. In outline, demolition of various existing buildings (including the outage store, laydown area, operations training centre and technical training facility), and erection of new buildings, including a visitor centre, and the construction of new access road, footpath and amended junction at Sizewell Gap; and associated landscaping and earthworks/recontouring. Full planning application available:	Tier 4 ⁵	No	Project boundary does not overlap with the onshore development area therefore, no direct cumulative impacts are anticipated. Land taken out of existing use for the Sizewell B Power Station Complex would be minimal and does not fall within the best and most versatile grades, therefore indirect impacts of agricultural land taken out of existing use are unlikely to occur.

⁵ Based on the definition of Tier 4 outlined in **section 5.7.2 of Chapter 5 EIA Methodology**

Project Name	Status	Development Period	³ Distance from East Anglia ONE North Onshore Development Area	Project Definition	Level of Information Available	Included in CIA	Rationale
				https://publicaccess.eastsuffolk.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=PQ5NVGQXJJ100			

192. The construction and operational footprints of both the Sizewell C New Nuclear Power Station and Sizewell B Power Station Complex are in close proximity to the onshore development area, but do not overlap.
193. Both the Sizewell C New Nuclear Power Station and Sizewell B Power Station Complex projects are subject to EIA and are therefore anticipated to adopt mitigation strategies which will seek to avoid, reduce or offset their impacts. Therefore, neither the Sizewell C New Nuclear Power Station and Sizewell B Power Station Complex projects are being taken forward into the CIA for land use and agriculture.
194. Cumulative impacts with the proposed East Anglia ONE North project will not change from those presented in **Table 21.15**.

21.8 Inter-relationships

195. Inter-relationships address situations where a number of parameters, or 'sources', interact to affect a single receptor. Those sources that are considered to interact with receptors identified in this chapter are listed in **Table 21.18**.

Table 21.18 Inter-relationships with Land Use and Agriculture

Inter-relationship all Phases and Linked Chapter	Section where Addressed	Rationale
Chapter 18 Ground Condition and Contamination	Sections 21.5, 21.6, 21.7	Changes in soil quality could impact on ground conditions and potential contaminated land.
Chapter 20 Water Resources and Flood Risk	Sections 21.5, 21.6, 21.7	Impacts on land drainage may have the potential to affect water resources.
Chapter 22 Onshore Ecology	Sections 21.5, 21.6, 21.7	Changes to land uses could impact on ecological receptors for example the removal of trees or hedgerows or the loss of agricultural land.
Chapter 24 Archaeology and Cultural Heritage	Sections 21.5, 21.6, 21.7	Potential impacts on land use could affect any buried archaeology present.
Chapter 26 Traffic and Transport	Sections 21.5, 21.6, 21.7	Changes in land uses e.g. at roads or paths could affect traffic and transport.
Chapter 29 Landscape and Visual Impact	Sections 21.5, 21.6, 21.7	Changes to land uses could impact on the landscape and visual amenity.
Chapter 30 Socio-Economics, Recreation and Tourism	Sections 21.5, 21.6, 21.7	Changes in the agricultural industry may affect the socio-economics of the region.

21.9 Interactions

196. The impacts 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. The areas of interaction between impacts are presented in **Table 21.19**, along with an indication as to whether the interaction may give rise to synergistic impacts. This provides a screening tool for which impacts have the potential to interact.
197. **Table 21.20** then provides an assessment for each receptor (or receptor group) related to these impacts in two ways. Firstly, the impacts are considered within a development phase (i.e. construction, operation or decommissioning) to see if, for example, multiple construction impacts could combine. Secondly, a lifetime assessment is undertaken which considers the potential for impacts to affect receptors across development phases. The significance of each individual impact is determined by the sensitivity of the receptor and the magnitude of effect; the sensitivity is constant whereas the magnitude may differ. Therefore, when considering the potential for impacts to be additive it is the magnitude of effect which is important – the magnitudes of the different effects are combined upon the same sensitivity receptor. If minor impact and minor impact were added this would effectively double count the sensitivity.
198. The receptors considered in the land use assessment are:
- Agricultural land;
 - ESS Schemes;
 - Land drainage;
 - Soil resource;
 - Utilities; and
 - Common Land.

Table 21.19 Interactions between Impacts

Potential Interactions between Impacts						
Construction Stage Impacts						
	Land taken out of Existing Use	Impact to ESS	Impact to Land Drainage	Degradation to Natural Resource	Impact to Utilities	Impact to Common Land
Land taken out of Existing Use	-	Yes	Yes	Yes	No	Yes
Impact to ESS	Yes	-	Yes	Yes	No	Yes
Impact to Land Drainage	Yes	No	-	Yes	No	No
Degradation to Natural Resource	Yes	Yes	Yes	-	No	Yes
Impact to Utilities	No	No	No	No	-	No
Impact to Common Land	Yes	Yes	Yes	Yes	No	-
Operation Stage Impacts						
	Permanent Change to Land Use	Impact to ESS	Alterations to Land Drainage	Impact to Utilities		
Permanent Change to Land Use	-	No	Yes	No		
Impact to ESS	Yes	-	No	No		
Alterations to Land Drainage	Yes	No	-	No		
Impact to Utilities	No	No	No	-		

Potential Interactions between Impacts

Decommissioning Stage Impacts

No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. 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 *in situ* 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.

Table 21.20 Potential Interactions between Impacts on Land Use

Receptor	Construction	Operational	Decommissioning	Phase Assessment	Lifetime Assessment
Agricultural Land	Minor adverse	Minor adverse	Minor adverse	n/a There is only a single impact (<i>Impact 1 land taken out of existing use</i>) for the receptor, therefore no potential interactions	No greater than individually assessed impact Infrastructure is only installed during construction, therefore there is no greater footprint taken as part of the operational phase. Therefore impacts remain at the same significance throughout and affect the same land.
ESS schemes	Minor adverse	Minor adverse	Minor adverse	n/a There is only a single impact (<i>Impact 2 impact to ESS</i>) for the receptor, therefore no potential interactions	No greater than individually assessed impact Infrastructure is only installed during construction, therefore there is no greater footprint taken as part of the operational phase. Therefore, impacts remain at the same significance throughout and affect the same land.

Receptor	Construction	Operational	Decommissioning	Phase Assessment	Lifetime Assessment
Land drainage	Minor adverse	No impact	Minor adverse	n/a There is only a single impact (<i>Impact 3 impact to land drainage</i>) for the receptor, therefore no potential interactions	No greater than individually assessed impact Infrastructure is only installed during construction, therefore there is no physical change during operation at landfall and onshore cable route. Management implemented as part of the construction phase and subsequent reinstatement ensures no impact during operation. Drainage plans provided by the LMP provide the lifetime management required for the onshore substation and National Grid infrastructure.
Soil resource	Minor adverse	No impact	Minor adverse	n/a There is only a single impact (<i>Impact 4 degradation to natural resource</i>) for the	No greater than individually assessed impact Infrastructure is only installed during construction, therefore

Receptor	Construction	Operational	Decommissioning	Phase Assessment	Lifetime Assessment
				receptor, therefore no potential interactions	there is no greater impact footprint as part of the operational phase. Given that there are no operational impacts, the time between the construction and decommissioning phases is too great for there to be a pathway of interaction between construction and decommissioning impacts.
Utilities	No impact	No impact	No impact	n/a	n/a
Common Land	No impact	No impact	No impact	n/a	n/a

21.10 Summary

199. This section summarises the main findings from the impact assessment. A summary is presented in **Table 21.21**.

Table 21.21 Summary of Potential Impacts Identified for Land Use and Agriculture

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation Measures	Residual Impact
Construction						
Impact 1: Land taken out of Existing Use	Landfall and Onshore Cable Route	Medium	Negligible	Minor Adverse	Consultation with Affected Landowners	Minor Adverse
	Onshore Substation and National Grid Infrastructure	High	Negligible	Minor adverse	Consultation with Affected Landowners	Minor Adverse
Impact 2: Impact to ESS	Landfall and Onshore Cable Route	Medium	Negligible	Minor Adverse	Consultation with Affected Landowners	Minor Adverse
	Onshore Substation and National Grid Infrastructure	Medium	Negligible	Minor Adverse	Consultation with Affected Landowners	Minor Adverse
Impact 3: Impact to Land Drainage	Onshore Development Area	High	Negligible	Minor Adverse	Use of a specialist drainage contractor.	Minor adverse
Impact 4: Degradation to Natural Resource	Onshore Development Area	High	Low	Moderate Adverse	Private agreements with landowners regarding any measures required in relation to crop loss incurred as an indirect consequence of degradation of the soil resource.	Minor Adverse
Impact 5: Impact to Utilities	Onshore Development Area	n/a	None	No Impact	n/a	No Impact
	Landfall and Onshore Cable Route	n/a	n/a	No Impact	n/a	No Impact

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation Measures	Residual Impact
Impact 6: Impact to Common Land	Onshore Substation and National Grid Infrastructure	n/a	None	No Impact	n/a	No Impact
Operation						
Impact 1: Permanent Change to Land Use	Landfall and Onshore Cable Route	Medium	Negligible	Minor Adverse	Consultation with Affected Landowners	Minor Adverse
	Onshore Substation and National Grid Infrastructure	High	Negligible	Minor adverse	Consultation with Affected Landowners	Minor adverse
Impact 2: Impact to ESS	Landfall and Onshore Cable Route	Medium	Negligible	Minor Adverse	Consultation with Affected Landowners	Minor Adverse
	Onshore Substation and National Grid Infrastructure	Medium	Negligible	Minor Adverse	Consultation with Affected Landowners	Minor Adverse
Impact 3: Alterations to Land Drainage	Onshore Development Area	High	None	No Impact	n/a	No Impact
Impact 4: Impact to Utilities	Onshore Development Area	High	None	No Impact	n/a	No Impact
Impact 5: Impact to Common Land	Landfall and Onshore Cable Route	Medium	Negligible	Negligible	n/a	Negligible
	Onshore Substation and National Grid Infrastructure	n/a	None	No Impact	n/a	No Impact
Impact 6: EMFs	N/A, refer to Chapter 27 Human Health					
Decommissioning						

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation Measures	Residual Impact
<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>						
<p>Cumulative Impacts with Other Developments</p>						
<p>No cumulative impacts anticipated for the construction, operation or decommissioning phases of the proposed East Anglia ONE North project.</p>						

21.11 References

Department of Energy and Climate Change (DECC), (2011a) Overarching NPS for Energy (EN-1) (Department of Energy and Climate Change, London: TSO Publications.

Department of Energy and Climate Change (DECC), (2011b) NPS for Renewable Energy Infrastructure (EN-3) London: TSO Publications.

Department of Energy and Climate Change (DECC), (2011c) NPS for Electricity Networks Infrastructure (EN-5) London: TSO Publications.

Department for Environment, Food and Rural Affairs, (Defra) (2016) Waste Management Duty of Care Code of Practice.

Department for Environment, Food and Rural Affairs (Defra), (2003) Biosecurity guidance to Prevent the Spread of Animal Diseases [Online], Available: http://www.fao.org/ag/againfo/commissions/docs/training/material/Biosecurity/biosecurity_guidance.pdf Accessed 18 July 2018

Department for Environment, Food and Rural Affairs (Defra), (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.

Department for Environment, Food and Rural Affairs (Defra), (2013a) Detailed annual statistics on the structure of the agricultural industry at 1 June in England and the UK [Online], Available: <https://www.gov.uk/government/statistical-data-sets/structure-of-the-agricultural-industry-in-england-and-the-uk-at-june> Accessed 11 July 2018.

Department for Environment, Food and Rural Affairs (Defra), (2013b) Statistical data set, Structure of the agricultural industry in England and the UK at June [Online], Available: <https://www.gov.uk/government/statistical-data-sets/structure-of-the-agricultural-industry-in-england-and-the-uk-at-june> Accessed 11 July 2018.

Environment Agency, (2010) Managing Invasive Non-native Plants [Online], Available: <http://www.environment-agency.gov.uk/homeandleisure/wildlife/31350.aspx> Accessed 16 July 2018.

European Commission (Joint Research Centre), (2008) European Soil Portal – Soil Data and Information Systems: Soil Compaction.

European Commission, (2017) Agriculture and Rural Development. Factsheet on 2014 - 2020 Rural Development Programme of England (United Kingdom), [Online], Available: https://ec.europa.eu/agriculture/sites/agriculture/files/rural-development-2014-2020/country-files/uk/factsheet-england_en.pdf. Accessed 02 July 2018.

Highways Agency, (2001) Design Manual for Roads and Bridges (DMRB).

HM Government, (2003) The Weeds and Ragwort Control Act

HM Government, (2000) Countryside and Rights of Way Act.

HM Government, (2005) The Environmental Stewardship (England) and Organic Products.

HM Government, (2006) The Commons Act.

HM Government, (2009) Marine and Coastal Access Act.

HM Government, (2011) Natural Environment White Paper.

Invest in Suffolk, (2018) Food, Drink and Agriculture, [Online], Available: <http://www.investinsuffolk.com/assets/Uploads/sectors/Food-Drink-and-Agriculture2.pdf> Accessed 12 July 2018

Ministry of Agriculture, Fisheries and Food (MAFF), (1988) Agricultural Land Classification of England and Wales: Guidelines and Criteria for Grading the Quality of Agricultural Land (Revised Guidelines).

Ministry of Agriculture, Fisheries and Food (MAFF), (1991) Practical Guide to Preventing the Spread of Plant and Animal Diseases.

Ministry of Agriculture, Fisheries and Food (MAFF), (2000) Good Practice Guide for Handling Soils.

National Planning Policy Framework (NPPF), (2019) *Department for Communities and Local Government*, [Online], Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/779764/NPPF_Feb_2019_web.pdf Accessed 01 May 2019.

Natural England, (2011) Look after your Land with Environmental Stewardship, [Online], Available: <http://webarchive.nationalarchives.gov.uk/20140605123056/http://publications.natureland.org.uk/publication/31048?category=45001> Accessed 02 July 2018.

Natural England, (2012) Agricultural Land Classification: Protecting the Best and Most Versatile Agricultural land.

National Soil Resources Institute (NSRI), (undated) Soilscales, [Online], Available: <http://www.landis.org.uk/soilscales/> Accessed 02 July 2018.

ScottishPower Renewables (SPR) (2017a) East Anglia TWO Offshore Windfarm Scoping Report.

ScottishPower Renewables (SPR) (2017b). East Anglia ONE North Offshore Windfarm Scoping Report

Scottish Power Renewables (SPR) (2019) East Anglia ONE North Offshore Windfarm Preliminary Environmental Information Report

Suffolk County Council (SCC), (2011) Suffolk's Local Economic Assessment 2011 [Online], Available: www.suffolk.gov.uk/.../suffolk.../Economic%20development/Final%20A Accessed 11 July 2018.

East Suffolk Council (2019) Suffolk Coastal Final Draft Local Plan. Available at: <https://www.eastsuffolk.gov.uk/planning/local-plans/suffolk-coastal-local-plan/local-plan-review/final-draft-local-plan/> Accessed 01 May 2019.

Suffolk Strategic Partnership, (undated) Transforming Suffolk Strategy 2008 – 2028 [Online], Available: http://www.waveney.gov.uk/site/scripts/download_info.php?fileID=872 Accessed 2 July 2018.

Waveney District Council, (2009) The Approach to Future Development in Waveney to 2021 [Online], Available: <http://www.eastsuffolk.gov.uk/assets/Planning/Waveney-Local-Plan/Adopted-Core-Strategy/Adopted-Core-Strategy.pdf> Accessed 02 July 2018.