



**SCOTTISHPOWER
RENEWABLES**



East Anglia TWO Offshore Windfarm

Outline Landscape and Ecological Management Strategy

Applicant: East Anglia TWO Limited

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Table of Contents

Outline Landscape and Ecological Management Strategy	1
1 Introduction	1
1.1 Background	1
1.2 Structure of the OLEMS	2
1.3 Purpose and Scope	3
1.4 Relationship with Other Documents	4
2 Description of the Development	6
2.1 Summary of Project	6
2.2 Construction Activities (Compliance)	6
2.3 Local Community Liaison	8
3 Outline Landscape Mitigation Plan (OLMP)	9
3.1 Scope of the OLMP	9
3.2 Onshore Substation and National Grid Infrastructure Onsite Landscape Plan	11
3.3 OLMP Design Principles	16
3.4 Consultation	20
3.5 Substation OLMP Proposals	23
3.6 Woodland East and West of Aldeburgh Road	45
4 Landscape Management Plan	46
4.1 Introduction	46
4.2 Outline Landscape Management Arrangements	47
5 Arboriculture and Hedgerows	50
5.1 Embedded Mitigation	50
5.2 Woodland, Scrub and Trees	54
5.3 Hedgerows	57
6 Other Habitats and Non-Avian Species	59
6.1 Grasslands	60
6.2 Coastal Habitats	60
6.3 Watercourses and Ponds	61
6.4 Arable Land	63
6.5 Invasive Species	64
6.6 Badgers	66
6.7 Bats	68
6.8 Great Crested Newts	70
6.9 Reptiles	72

6.10	Other Notable Species	73
7	Ornithology	76
7.1	Baseline	76
7.2	Embedded Mitigation	80
7.3	Additional Mitigation	83
7.4	Breeding Bird Protection Plan (BBPP)	89
8	Overview of Ecological Surveys	95
8.1	Summary of Species-Specific Pre-Construction Surveys	95
8.2	Timings	95
9	Mitigation Measures During Operation	99
10	Monitoring	100
11	Ecological Management Plan	101
11.1	Background	101
11.2	Responsibilities	102
11.3	Licence Requirements	103
11.4	Consultation	104
12	Summary	105
13	References	106
Annex 1: Hedgerow Schedule		
Annex 2: Figures		



The Outline Landscape and Ecological Management Strategy is supported by the figures listed below and included in this document as **Annex 2**.

Figure number	Title	Content	Scale at A1
Figure 1	Historic Map Context	1st edition Historic OS map from 1883/84 over aerial image, showing historic field boundaries.	1:2500
Figure 2	Baseline Site Context	Aerial image showing existing landscape features, settlement and viewpoints.	1:4000
Figure 3	Outline Landscape Mitigation Plan General Arrangement	General arrangement of the types of planting proposed i.e. native core, edge, screen and wet woodland planting; and native hedgerows on OS Mastermap base mapping.	1:2500
Figure 4	Outline Landscape Mitigation Plan Illustrative Plan (Overview scale)	Illustrative aerial plan overview of the OLMP showing wider extent	1:4000
Figure 5	Outline Landscape Mitigation Plan Illustrative Plan	Illustrative aerial plan enlargement of the OLMP at 1:2500 scale	1:2500
Figure 6	Outline Landscape Mitigation Plan Proposed Planting Plan	Proposed woodland and hedgerow planting areas in the OLMP.	1:2500
Figure 7	Outline Landscape Mitigation Plan Timing of Planting	Identifies the proposed timing of early and post construction planting.	1:2500
Figure 8	Outline Landscape Mitigation Plan Public Rights of Way	Showing the existing and proposed PROW diversion in conjunction with the OLMP.	1:2500
Figure 9	Outline Landscape Mitigation Plan General Arrangement – National Grid GIS Substation	General arrangement with a National Grid GIS substation of the types of planting on OS Mastermap base mapping (as per Figure 3).	1:2500



Glossary of Acronyms

ACoW	Arboricultural Clerk of Works
AMS	Arboricultural Method Statement
BAP	Biodiversity Action Plan
BBPP	Breeding Bird Protection Plan
BCT	Bat Conservation Trust
BTO	British Trust for Ornithology
CoCP	Code of Construction Practise
CCS	Construction Consolidation Sites
CIEEM	Chartered Institute for Ecology and Environmental Management
CIRIA	Construction Industry Research and Information Association
CMS	Construction Method Statement
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
ECoW	Environmental Clerk of Works
EclA	Ecological impact Assessment
EIA	Environmental Impact Assessment
EMP	Ecological Management Plan
EPS	European Protected Species
ES	Environmental Statement
ESC	East Suffolk Council
ETG	Expert Topic Group
EU	European Union
ha	Hectares
HDD	Horizontal Directional Drilling
HRA	Habitats Regulations Assessment
ILE	Institute of Lighting Engineers
LBAP	Local Biodiversity Action Plan
LCT	Landscape Character Type
LMP	Landscape Management Plan
LNR	Local Nature Reserve
m	Metres
NCA	National Character Area
NPS	National Policy Statement
OLEMS	Outline Landscape and Ecological Management Strategy
OLMP	Outline Landscape Mitigation Plan
PEIR	Preliminary Environmental Information Report
PRoW	Public Rights of Way
RAMS	Risk Assessments and Method Statements
SPA	Special Protection Area
SPR	ScottishPower Renewables
SSSI	Site of Special Scientific Interest
UK BAP	UK Biodiversity Action Plan
UKHPI	UK Habitat of Principal Importance



Glossary of Terminology

Applicant	East Anglia TWO 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 TWO project	The proposed project consisting of up to 75 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 TWO 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 TWO 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 TWO project to the national electricity grid which will be owned by National Grid but is being consented as part of the proposed East Anglia TWO 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 TWO 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 TWO 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 TWO project.
Transition bay	Underground structures at the landfall that house the joints between the offshore export cables and the onshore cables.

Outline Landscape and Ecological Management Strategy

1 Introduction

1.1 Background

1. This Outline Landscape and Ecological Management Strategy (OLEMS) relates to the proposed East Anglia TWO project and associated infrastructure.
2. The OLEMS forms part of a set of documents that supports the Environmental Statement (ES) (document reference 6.1) submitted by East Anglia TWO Ltd (hereafter referred to as 'the Applicant') as part of the Development Consent Order (DCO) application for the proposed East Anglia TWO project.
3. A final detailed Landscape Management Plan (LMP) and Ecological Management Plan (EMP) will be produced post-consent in order to discharge the relevant DCO requirements, prior to construction of the proposed East Anglia TWO project. Both of these documents will be drafted in line with the information contained within this OLEMS.
4. The final LMP and EMP will provide the key mechanisms for discharge of the relevant DCO requirements by the relevant regulatory authorities. It can therefore be assured that ecological management and provision of landscaping associated with the construction of the onshore infrastructure will be formally controlled and implemented through this process.
5. This OLEMS reinforces commitments made in the ES and the below Requirements of the **draft DCO** (REP5-003):
 - DCO Requirement 14 – Provision of landscaping; and
 - DCO Requirement 21 – Ecological Management Plan.
6. The Applicant has also committed to the preparation of an onshore preparation works management plan, which in the context of landscape and ecological considerations, will provide a mechanism for agreeing the nature and extent of early planting to be undertaken as onshore preparation works (if any) and ensuring ecological considerations are incorporated into the delivery of specified onshore preparation works. Further information on the onshore preparation works management plan process is provided in the **Outline Code of**



Construction Practice (OCoCP) (an updated version has been submitted at Deadline 6, document reference 8.1).

7. This OLEMS provides an outline of the landscape and ecological considerations and measures to be included within the final LMP and EMP respectively. The measures within this OLEMS are reflective of and proportionate to the findings of the Environmental Impact Assessment (EIA) presented within the ES, specifically **Chapter 29 Landscape and Visual Impact Assessment** (APP-077) and **Chapter 22 Onshore Ecology** (APP-070), as well as feedback received during pre-Application consultation (as described within **Appendix 22.1** (APP-501) and the **Consultation Report** (APP-029)). Ultimately, the measures that will be implemented must accord with those in this OLEMS and will be presented within the LMP and EMP which must be submitted to and approved by the relevant planning authority in advance of the onshore works commencing. However, the measures within the final LMP and EMP will also be informed by pre-construction surveys which will update the results of the surveys undertaken pre-Application.

1.2 Structure of the OLEMS

8. This OLEMS summarises the general landscape and ecology principles and mitigation measures that will be adopted during construction and operation of the onshore infrastructure associated with the proposed East Anglia TWO project and will provide the framework for the preparation of the final, more detailed LMP and EMP which will be developed post-consent.
9. The OLEMS begins by giving an outline of the proposed East Anglia TWO project parameters and details aims and objectives of this OLEMS in relation to compliance in **Section 2**. **Section 3** provides the Outline Landscape Mitigation Plan (OLMP) that has been developed in consultation with the relevant planning authority and other key stakeholders (see **section 3.4**); and which will form the basis of the final LMP. Further details regarding the structure and content of the final LMP are set out within **section 4**.
10. **Section 5** addresses arboriculture and hedgerows, whilst **Section 6** addresses other habitats and non-avian species. Each relevant habitat or species is listed within these sections, along with the following:
 - Detail of a species-specific baseline within the onshore development area for each ecological receptor;
 - A description of any mitigation measures embedded into the project design;
 - An outline of any proposed pre-construction survey work; and
 - A summary of any additional mitigation measures required to minimise impacts to ecology.



11. **Section 7** addresses onshore ornithology species. A baseline is given for each relevant species, followed by a summary of embedded mitigation measures relevant to all ornithology species. Embedded mitigation measures are then detailed alongside any additional mitigation measures required to minimise impacts to birds.
12. **Section 8** provides a summary of pre-construction surveys proposed, including information on timings for completion of the agreed mitigation measures, taking account of any seasonal constraints for individual species or habitats.
13. **Section 9** provides mitigation during operation.
14. **Section 10** discusses requirements for monitoring of agreed mitigation measures.
15. **Section 11** provides detail on the EMP, including the responsibilities of the contractor and ECoW, including **section 11.3** which considers any licence requirements necessary to undertake the agreed mitigation measures.

1.3 Purpose and Scope

16. The purpose of this OLEMS is to outline the requirement for landscape and ecological (including ornithological) mitigation measures that are reflective of the surveys and impact assessment carried out for the onshore infrastructure of the proposed East Anglia TWO project, detailed in the ES (document reference 6.1). The document supports the construction management team in ensuring compliance with the DCO requirements. This document is also a mechanism to deliver environmental commitments as set out in the ES and to promote environmental and construction best practice. The final detail of the mitigation and enhancement measures will be provided through the LMP and EMP, which will be produced post-consent and be pursuant to relevant requirements of the **draft DCO** (REP5-003) which form part of the final LMP and EMP.
17. The final LMP and EMP will be produced in accordance with the measures set out in this OLEMS and will be subject to agreement by the relevant regulatory authorities, in consultation with the relevant planning authority and other relevant stakeholders. Under the DCO the Applicant will be required to implement the measures set out in the agreed LMP and EMP. Details of implementation measures, including an implementation timetable, will be provided in the final LMP and EMP.
18. The OLEMS has the following objectives:



- To clearly outline the framework for landscape mitigation and management.
 - To clearly outline the framework for ecological management.
 - To provide the basis for the agreement of a detailed LMP for the onshore substation and National Grid substation. This scheme will detail how ecological and landscape considerations will be integrated at the substation location, considering (as appropriate) the Design and Access Statement (APP-580) and the final Operational Drainage Management Plan.
 - To provide the basis for the agreement of a final LMP for the protection and restoration of impacted and replanted trees and hedges along the onshore cable route.
 - To ensure all reasonable precautions are taken by the Applicant and their contractors to safeguard protected and notable species. This OLEMS also acts as the basis for an EMP, and Breeding Bird Protection Plan (BBPP). A final detailed scheme of protection and mitigation measures for any European Protected Species (EPS) and Schedule 1 bird species¹ shown to be present, prior to construction, will be agreed with the relevant planning authority under the relevant requirement of the draft DCO.
 - To form the basis of a process of ongoing dialogue / forum with the relevant planning authority leading up to and during construction to ensure that the relevant planning authority are kept informed and satisfied of the implementation of the OLEMS (and the plans of which it forms the basis) and in order that they can also keep communities informed.
19. The schemes of planting and aftercare for the onshore cable route, onshore substation site and National Grid infrastructure will be delivered by contractors who can demonstrate appropriate experience and capacity to deliver effective establishment and robust aftercare and provide a consistent quality of work across the proposed East Anglia TWO project.

1.4 Relationship with Other Documents

20. A number of the measures set out in this document overlap to some degree with measures detailed within other documents submitted as part of the DCO application. This OLEMS should therefore be read in conjunction with the following other documents:
- ES Volume 1 **Chapter 6 Project Description** (APP-054);

¹ Species afforded enhanced legal protection from disturbance, as listed in Schedule 1 of the Wildlife and Countryside Act 1981.



- ES Volume 1 **Chapter 29 Onshore Landscape and Visual Impact Assessment (LVIA)** (APP-077);
 - ES Volume 1 **Chapter 22 Onshore Ecology** (APP-070);
 - ES Volume 1 **Chapter 23 Onshore Ornithology** (APP-071);
 - ES Volume 1 **Chapter 20 Water Resources and Flood Risk** (APP-068);
 - **Outline Code of Construction Practice** (an updated version has been submitted at Deadline 6, document reference 8.1);
 - **Design and Access Statement** (APP-580);
 - **Substations Design Principles Statement** (REP4-029); and
 - **Outline Operational Drainage Management Plan** (an updated version has been submitted at Deadline 6, document reference ExA.AS-1.D6.V3).
21. The SPA crossing works within the Sandlings Special Protection Area (SPA) and works associated with the SPA crossing within 200m of the SPA (the SPA crossing buffer) will be subject to the measures contained within both the final SPA Crossing Method Statement and the final EMP, both of which will be approved by the relevant planning authority prior to construction of the SPA crossing. In terms of the interaction between these two documents, whilst the measures within the final EMP apply generically to the whole of the onshore development area, those set out within the final SPA Crossing Method Statement will apply specifically to the works associated with the crossing of the SPA.
22. Measures to be implemented for the works associated with the crossing of the SPA within the final SPA Crossing Method Statement will accord with those set out within the **Outline SPA Crossing Method Statement** (REP1-043). The **Outline SPA Crossing Method Statement** outlines the activities to be undertaken within the SPA, specific mitigation and management measures, restoration objectives and indicative implementation timeframes. These details will be refined, and more detail provided within the final SPA Crossing Method Statement, which will be prepared post-consent.



2 Description of the Development

2.1 Summary of Project

23. Works and locations within the scope of this document include construction (including enabling works), commissioning and re-instatement of the onshore infrastructure of the proposed East Anglia TWO project from the landfall located approximately 500m north of the edge of Thorpeness to the onshore substation and National Grid infrastructure. Works include:
- Temporary works associated with landfall Horizontal Directional Drilling (HDD) and transition bay excavation;
 - Offshore export cable installation from the HDD temporary works area to the transition bays;
 - Onshore cable installation along the onshore cable route including jointing bays and potential trenchless techniques at the SPA crossing;
 - Temporary works associated with the onshore cable route, onshore substation, and National Grid infrastructure, including enabling works such as the establishment of a haul road, Construction Consolidation Sites (CCSs) and working area (any area with the onshore development area where construction activities are taking place);
 - Onshore substation, and temporary / permanent access;
 - National Grid infrastructure;
 - Interface between the onshore substation and National Grid infrastructure; and
 - Reinstatement and mitigation work enacted during the construction phase.
24. The term 'construction' in the OLEMS includes all onshore enabling works, material delivery, excavated material disposal, waste removal and all related engineering and construction activities as defined within the DCO.

2.2 Construction Activities (Compliance)

25. The roles and responsibilities will be appointed by the Principal Contractor. All of the ecological work described in this OLEMS will be undertaken under the guidance of the appointed Ecological Clerk of Works (ECoW) (and/or Arboricultural Clerk of Works (ACoW) if required).
26. The ECoW (and the ACoW if required) will be appointed ahead of the commencement of any relevant works. The Applicant will work with the relevant regulatory authorities to ensure appropriate resourcing is in place to monitor



compliance with the provisions of the final EMP, and the plans and schemes of which it forms the basis.

27. The ECoW will ensure all site workers receive a site induction and toolbox talks that will include reference to the requirements of the final EMP.
28. The ECoW will undertake the following tasks:
 - Arrange all specialist environmental surveys;
 - Undertake regular environmental site inspections;
 - Liaise with the contractor to microsite onshore infrastructure including accesses, haul road and jointing bays and manage the storage of materials and movement of vehicles to provide optimum embedded mitigation against tree and hedge loss or damage;
 - Assist (where deemed necessary) the Principal Contractor in delivering site inductions and toolbox talks (i.e. presentations and the dissemination of information to site personnel on ecological matters). All briefings will include reference to the requirements set out in the final EMP. The site-wide ecological requirements will be explained within these briefings. Additional toolbox talks will also be provided for each new area of works to ensure that area-specific requirements are fully understood and implemented;
 - Assist in reviewing Risk Assessments and Method Statements (RAMS); and
 - Notifying the Principal Contractor of any issues/breaches in the final EMP.
29. All site workers will be briefed on the role and responsibility of the ECoW. Contact details for the ECoW will be provided within the final EMP and will be made available to site workers and contractors. A copy of the final EMP will be kept on site at all times and site workers will be made aware of its location along with the details of the person to contact in order to obtain a copy.
30. Any known breaches of the requirements documented within the final EMP will be reported to the ECoW by the Principal Contractors Site Manager or site workers (either directly or through the Principal Contractors Site Manager) as soon as practicable.
31. Should it become evident to the ECoW that a breach of the requirements of the final EMP has occurred, the ECoW will be responsible for the reporting this breach and where necessary will report any breaches to the relevant authorities.
32. The ECoW will be responsible for the developing an appropriate ecology and nature conservation incident response plan for any breach of the final EMP. The



ECoW will be responsible to ensure that any remedial measures proposed are communicated and where required, approved by the local planning authority. Where appropriate Natural England, Environment Agency or other relevant organisations will be consulted with to obtain their agreement for any remedial measures that may be required.

33. The final EMP, which must accord with this OLEMS, will be a live document and therefore be regularly reviewed and updated by the ECoW as appropriate. The ECoW will be responsible for the reviewing and updating of the final EMP, ensuring that all site personnel are aware of the current version as well as submitted amended versions to the local planning authority for their re-approval. In instances where updates are made, and re-approved by the local planning authority, the ECoW will provide the Site Manager with details of any updates.

2.3 Local Community Liaison

34. The Applicant will ensure effective and open communication with local communities that may be affected by the construction works. Communications will be co-ordinated on site by a designated member of the construction management team. A proactive public relations campaign will be maintained, keeping local communities informed of the type and timing of works involved, paying particular attention to potential evening and night time works and activities which may occur in close proximity to receptors. A combination of communication channels, for example information boards and parish council meetings, will be employed to keep local communities informed.
35. A designated local community liaison officer will respond to any public concerns, queries or complaints in a professional and diligent manner.
36. Parish Councils in the relevant area will be contacted (in writing) in advance of the proposed works and ahead of key milestones. This information will include indicative details for timetable of works, a schedule of working hours, the extent of the works, and a contact name, address and telephone number in case of complaint or query. Enquiries will be dealt with in an expedient and courteous manner. Any complaints will be logged, investigated and, where appropriate, rectifying action will be taken.
37. A Stakeholder Communications Plan will be produced as part of the final Code of Construction Practice, as secured under the relevant requirement of the DCO.



3 Outline Landscape Mitigation Plan (OLMP)

3.1 Scope of the OLMP

3.1.1 Technical Scope

38. This OLMP provides outline landscape mitigation proposals incorporated into the proposed East Anglia TWO project (referred to in the **Chapter 29 Landscape and Visual Impact Assessment** of the ES as mitigation) to address potential impacts on landscape and visual receptors; and will be used to inform the final LMP. Potential impacts on these receptors are considered in **Chapter 29 Landscape and Visual Impact Assessment**.
39. The measures covered by this OLMP include:
- Proposals for woodland and native hedgerow planting at the onshore substation, National Grid infrastructure and along the onshore cable route.
 - Proposals for reinstatement of land at the onshore substation, National Grid infrastructure and onshore cable route.
 - Proposals for reinstatement and planting of historic hedgerow field boundaries at the onshore substation and National Grid infrastructure.
 - Proposals for a surface water management SuDS basin to manage surface water run-off from the onshore substation and National Grid substation.
 - Proposals for an additional SuDS basin (or similar) to assist in the management of surface water inflows to the substation area, which will in turn reduce flood risk in the village of Friston.
 - Proposals for potential Public Rights of Way (PRoW) diversions routed around the onshore substation and National Grid infrastructure.
 - Proposals for biodiversity mitigation within the onshore development area. These proposals will be developed further post-consent; in consultation with relevant stakeholders and the details will be provided within the final LMP and EMP.
 - This OLMP provides solutions for landscape planting proposals for development with either AIS (Air Insulated Switchgear) or GIS (Gas Insulated Switchgear) National Grid substation designs (refer to **Chapter 6 Project Description** for associated parameters for AIS or GIS NGET substation designs). The planting and landscape scheme has also been designed in order to not sterilise land for potential future development associated with the National Grid substation.



3.1.2 Spatial Scope

40. This OLMP applies to the onshore infrastructure within the onshore development area.
41. Offsite planting (outside the onshore development) is not classed as mitigation (as mitigation within the onshore development area is considered sufficient) and does not form part of the proposed East Anglia TWO project DCO application.

3.1.3 Temporal Scope

42. This OLMP primarily relates to measures to be employed during the construction phase of the proposed East Anglia TWO project, or immediately thereafter (until such time as reinstatement measures are deemed to be successful). Measures to be employed during planned maintenance throughout the operational phase are also included, where relevant.
43. A programme will be provided in the final Landscape Management Plan (LMP), once further details of all the relevant measures have been developed and agreed with the relevant planning authority. The LMP will provide for the ongoing maintenance of landscaping developed under the LMP beyond its management period (as set out in Requirement 15 of the **draft DCO** (REP5-003) and **section 4.2** below) as required for the remaining operational life of the onshore substation and/or National Grid substation.
44. Outline management arrangements for the mitigation planting during the operational phase of the Project is provided in **section 4** of this OLEMS.

3.1.4 Amendments to OLMP

45. The OLMP presented within **Figures 3-8** of this OLEMS reflects the substation footprint reduction from a maximum of 190m x 190m (as set out in **Table 6.27** of **Chapter 6 Project Description** of the ES (APP-054)) to 190m x 170m, as set out in full in the **Project Update Note** (REP2-007).
46. The key changes to the OLMP (**Figure 3**) are summarised below:
 - Retention of an existing area of established woodland (in a depression to the west of PRoW E-354/006/0), which would have previously been removed. This also creates an area adjacent to this retained woodland where additional woodland planting is now proposed adjacent to the western substation, to provide further screening.
 - Additional woodland planting is proposed to the north of the National Grid substation, particularly in the areas around the cable sealing end compounds, to provide additional screening of these compounds. This additional planting to the north also includes an additional woodland belt between Fareacres and



Little Moor Farm to provide screening in views from the PRow near Little Moor Farm.

- Additional woodland planting between the access road and this SuDS basin as described in **section 3.5.12**.
- Additional areas of small 'Covert' woodland planting are proposed alongside field boundaries to the north of Friston (south of the onshore substation location), to provide additional screening in views from the northern edge of the village, while retaining the open setting and a layered screening of the onshore substations.
- The density of individual tree planting along hedgerow boundaries/tree lined avenues has been increased in the updated OLMP as described in **section 3.5.6**.
- Opportunities for early planting have been updated as shown in **Figure 7** of this OLEMS and described in **section 3.5.5**.
- Updates to the PRow diversions in the location of the onshore substation that will require permanent re-routing, as shown in **Figure 8** and described in **section 3.5.13**.

3.2 Onshore Substation and National Grid Infrastructure Onsite Landscape Plan

3.2.1 Baseline Description

3.2.1.1 Landscape Character

47. At the national level, the onshore substation and National Grid infrastructure are located within the Norfolk and High Suffolk Claylands (83) National Character Area (NCA), which is to the west and adjacent to the inland edge of the Suffolk Coast and Heaths NCA (82). This is predominantly a farming landscape, with a strong utilitarian and rural character, evoked in its irregular field patterns. It is a long-settled landscape, with nucleated villages intermixed with dispersed hamlets and farmsteads. Large areas of woodland are relatively scarce, but the extent of scattered smaller woodlands, hedges and hedgerow trees are still notable elements in the landscape, often confining views.
48. At the regional level, the onshore substation and National Grid infrastructure fall mainly within the Ancient Estate Claylands Landscape Character Type (LCT) and partially within the Estate Sandlands LCT, as defined in the Suffolk Landscape Character Assessment (Suffolk County Council 2008/2011).
49. The Ancient Estate Claylands LCT is generally formed by a broad flat plateau, with farmland enclosed by hedgerows and blocks of woodland. The Ancient Estate Claylands LCT is mostly used as farmland with medium to large fields



enclosed by hedgerows, hedgetrees and trees, with also intermittent blocks of woodland. While the plateau landform ensures some longer and more open views occur, a much more intimate character is created by the enclosed nature of much of this landscape. Small villages and scattered farming settlement occur across this landscape. The key characteristics of this Ancient Estate Claylands LCT are described as follows:

- Dissected plateau is composed of glacial till or boulder clay.
- Enclosure pattern is generally ancient and organic in appearance, with some estate influence where rationalisation changed the field pattern into larger, more easily managed units, with straighter boundaries.
- The fields are medium to large and the hedges vary from taller hedges with a mix of trees and shrubs, to single-species hedges that are more tightly controlled.
- Enclosed former greens and common pastures.
- The landscape was often utilised for World War II airfields, which has left a legacy of runway remains and buildings, some of which have been converted to modern industrial use.
- The settlement pattern consists of occasional villages and numerous, dispersed hamlets and farmsteads.
- Vernacular buildings consist of timber-framed structures interspersed with brick ones, though the brick appearance is frequently just a façade added to an earlier timber frame.
- Blocks of ancient semi-natural woodland are scattered throughout the area, made up of oak (*Quercus robur*), ash (*Fraxinus excelsior*), field maple (*Acer campestre*), hornbeam (*Caripinus*) and small-leaved lime (*Tilia cordata*).
- Hedgerow trees are ubiquitous and in many places this landscape can feel well wooded.
- Despite the reasonably well-wooded landscape, the plateau landform means that the views are open and can be long. However, the comprehensive network of winding lanes and tall hedges means that other areas can be much more intimate.

50. At the local level, The Suffolk Coastal LCA (Suffolk Coastal District Council, 2018) identifies these landscape character areas, in which the onshore substation and National Grid infrastructure are located, as the Heveningham and Knodishall Estate Claylands (L1) and the Aldringham and Friston Sandlands (K3). The characteristics that are locally distinctive in the Friston area (in the area around the onshore substations) are described as follows with reference to field survey and the Suffolk Coastal LCA:



- The characteristic arrangement of the parish consisting of Friston village, church, village green and detached parishes, such as Fristonmoor, which is typical in Suffolk.
- The visual relationship between the detached parish of Fristonmoor and the village to the south, which is visually connected in views to Friston church and through the existing PRow between the village and parish.
- Areas of land that have the appearance of common on the village edge provide texture and interest.
- The network of small-scale fields to the north of Friston, with strong hedgerow field boundaries and scattered mature deciduous field boundary trees are locally distinctive features. The enclosure pattern is generally ancient, but the field patterns tend to be straight and regularised.
- Quiet farmland, with a simple, rural character but a strong sense of agri-business land use evident amongst the medium to large fields towards Fristonmoor and Little Moor Farm.
- A network of historic green lanes, most of which have been lost to agricultural intensification and PRow through the field systems.
- Scattered listed farm buildings, some of which with local vernacular architecture of dark weatherboard and red pantiles, contribute to the sense of place.
- There are several ancient farms with 'Hall' or 'Manor' in their names, including Friston Hall and Manor Farm. Friston House is a Grade II listed building set in mature woodland on the northern edge of the village.
- There are large-scale modern agricultural buildings in the local landscape, particularly those at Redhouse Farm.
- Gently undulating landform, formed by relatively flat fields to the west of Grove Road/north of Friston, which rises gradually to the north towards Fristonmoor.
- Some variety in visual experience, from more open areas around Fristonmoor with views south to Friston, compared to more enclosed areas in and around the edges of Friston and parts of Grove Road, where strong hedgerows and mature woodland provides visual containment.
- Woodland, roadside trees, hedges and field boundary vegetation are often present and form a notable component of the tree cover.
- Woodland blocks are also present and numerous. In particular the ancient woodland at Grove Wood (and the adjoining Laurel Covert) provides a distinctive wooded backdrop in the setting of Friston and the surrounding agricultural fields.
- Double row of overhead pylons and electrical lines crosses the landscape between the village of Friston and Fristonmoor, form notable visual elements



in the local setting and due to their larger vertical scale and form tend to distort the sense of scale in the landscape.

- The boundary of Ancient Estate Claylands and Estate Sandlands to the north of Friston is not definitive but suggests a transition in character.

3.2.1.2 Historic Context

51. The historic landscape context around the onshore substation is illustrated **Figure 1**, showing the 1st edition historic OS map (1883/84) overlaid onto current aerial imagery. The historic landscape featured more hedges defining smaller field enclosures and tree lined field edges. There were also large blocks of woodland present, which remain today. Historic hedgerow field boundaries have been lost over time to agricultural intensification, while other field boundaries have endured, as shown in **Figure 1**. In the past, historic farms would have been experienced as part of an open agricultural landscape, but with more hedgerow cover, field trees, tree lined enclosures and woodland blocks. Large blocks of trees are a feature of the historic landscape, including those at 'The Grove' (Grove Wood), Laurel Covert and around Friston House, together with smaller 'covert' woodland blocks.

3.2.1.3 Landscape Elements

52. Within the Ancient Estate Claylands there are several notable landscape elements around the substation site. The main landscape elements in the area around the onshore substation are shown in **Figure 2**. The local landscape around the onshore substation and National Grid infrastructure benefits from a network of existing hedgerows and substantial woodland blocks. In particular, there is a large area of ancient woodland at Grove Wood, to the south of Grove Road. Woodland at Laurel Covert extends to the west of Grove Road.
53. The extent and height of this mature woodland at Grove Wood / Laurel Covert will provide mitigation of landscape and visual effects from the outset. In particular, this woodland will provide substantial screening of the onshore substation and National Grid substation particularly in views from the east (Knodishall area), north (Knodishall Hall / Saxmundham Road) and south (Snape Road/PRoW between Knodishall and Friston). Grove Wood and Laurel Covert combine to provide a distinctly wooded backdrop to the north of Friston.
54. There is also a large area of mixed woodland around Friston House, which extends the wooded backdrop and provides enclosure to views north from parts of Friston.
55. Small woodland blocks can be found to the north and north-west, with blocks of trees forming a feature of the existing agricultural landscape. Linear woodlands



are often associated with the boundaries around individual farmsteads, particularly those to the north such as Pear Tree Farm, Little Moor Farm and Moor Farm. Tree-lined enclosures are often evident along field boundaries or roadsides.

56. There is a network of mature hedgerow field boundaries and hedgerow trees in the surrounding agricultural fields, however many historic field boundaries have been lost over time with agricultural intensification. A network of smaller scale fields with hedgerow boundaries has survived in the area immediately north of Friston (immediately north of Church Road) and provides the immediate setting to the north of the village. Further north, hedgerow field boundaries have often been lost to a relatively open farmed landscape with large scale arable agricultural fields.
57. The existing National Grid overhead line, formed by a double row of electrical pylons, has a notable visual influence in the existing setting, forming part of the backdrop to the village of Friston and a feature in views from individual farmsteads.

3.2.1.4 Visual Receptors and Views

58. The visual receptors most susceptible to visual effects arising as a result of the onshore infrastructure, occur within the LVIA study area and in particular, in the vicinity of the onshore substation and National Grid infrastructure, as shown in **Figure 2**. They include people within settlements, particularly the village of Friston; local farmsteads such as Fristonmoor, Moor Farm, Little Moor Farm and Fareacres; people driving on the local roads such as Grove Road and the Saxmundham-Aldeburgh Road and Saxmundham-Leiston Road, and people engaged in informal recreational activities such as walking on the local PRoW network and road cycling. Representative viewpoints assessed in the LVIA and the cultural heritage settings assessment are also shown in **Figure 2**.

3.2.1.5 Landscape and Visual Impacts

59. The operational effects of the onshore infrastructure primarily occur as a result of the operation of the onshore substation and National Grid substation, where significant effects on local landscape character and visual amenity/views occur within an area of approximately 1km from the onshore substation and National Grid substation within the localised Friston area of the Ancient Estate Claylands and Estate Sandlands landscapes.
60. There are notable opportunities for deliverable and effective mitigation of the landscape and visual impacts of the onshore substation and National Grid infrastructure on this localised area in the form of new woodland, hedgerow and tree planting, as proposed in the OLMP (**Figures 3-7**), which have been carefully



designed to be appropriate in the local landscape context, taking account of the potential impact on the landscape and the opportunities to minimising harm through reasonable mitigation.

3.3 OLMP Design Principles

3.3.1 National Design Policies

61. Existing policy set out within the Overarching National Policy Statement for Energy (NPS-EN-1) makes clear for the requirements of good design in energy projects. The Planning Inspectorate is to be satisfied that *“developments are sustainable and, having regard to regulatory and other constraints, are as attractive, durable and adaptable (including taking account of natural hazards such as flooding) as they can be.”*
62. Function and aesthetics are equally as important, and opportunities can be created in terms of good design by considering micro-siting relative to landscape, landform and vegetation.
63. EN-1 NPS also states that *“Virtually all nationally significant energy infrastructure projects will have effects on the landscape. Projects need to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and appropriate.”*
64. EN-3 NPS for Renewable Energy Infrastructure states that *“Proposals for renewable energy infrastructure should demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology.”*
65. The mitigation plans respond to these objectives through their inclusion of substantial areas of new woodland, species rich grassland and hedgerows, the arrangement of these areas to connect internally on site and connect externally with existing woodlands, grasslands and hedgerows in the surrounding landscape, and the contribution they would make through their design to the enhancement of the local landscape character.

3.3.2 Local Design Policies

3.3.2.1 Suffolk Landscape Character Assessment

66. The Suffolk Landscape Character Assessment provides development management guidance for each different LCT within Suffolk. Guidance is provided for the Ancient Estate Claylands, within which the onshore substation and National Grid substation are located. Although this guidance is set out for

different types of development in the Suffolk countryside, the following design guidance is considered broadly applicable to this OLMP:

- The use of locally appropriate hedging species including hawthorn (*Crataegus*), field maple, dogwood (*Cornus*) and other typical clayland species should be specified.
- Opportunities should also be taken to design a field layout that is in keeping with the local field pattern or the historic pattern of boundaries.
- The release of land for development should, if at all possible, reflect the local pattern.
- The right choice of siting, form, orientation and colour of these buildings can make a considerable contribution to mitigating their impact. There are also opportunities to design locally appropriate planting schemes to reduce the visual impact further.
- In addition to new planting to mitigate the impact of a development, the option to modify the management of existing hedgerows within the Order limits should also be explored. There are often significant opportunities to retain these boundary features at a specific height.
- The location of the development in relation to existing trees that act either as screening or as a backdrop should be carefully considered.
- New planting should be designed to integrate the development into the character of this landscape and may consist of both backdrop and screening planting. Although there should be a preference for native tree species other options should not be overlooked, especially if they can act as nurse trees, or are likely to prove successful in difficult conditions.
- A master-plan approach is the most effective way to implement strategic planting schemes to mitigate the visual impact of long-term growth on the site, rather than dealing with proposals and mitigation on a piecemeal basis.

67. The following land management guidelines are also offered in the Suffolk Landscape Guidance for the Ancient Estate Claylands:

- Reinforce the historic pattern of sinuous field boundaries.
- Recognise localised areas of late enclosure hedges when restoring and planting hedgerows.
- Maintain and restore greens and commons.
- Maintain and increase the stock of hedgerow trees.
- Maintain the extent, and improve the condition, of woodland cover with effective management.

- Maintain and restore the stock of moats and ponds in this landscape.
68. The Suffolk Coastal Landscape Assessment (2018) provides the following landscape management guidance for the Heveningham and Knodishall Estate Claylands LCT (L1) in which the onshore substation is located:
- Plan for the ongoing maintenance and careful management of the highly characteristic oak trees along hedges, verges and field boundaries.
 - Manage areas of semi-natural woodland through appropriate woodland management schemes.
 - Manage hedgerows to retain and restore the pattern of network of field boundaries.
 - Plan for enhancements to biodiversity in this highly agricultural landscape, perhaps opportunities that might emerge through agri-environmental schemes.

3.3.2.2 Suffolk Coastal Local Plan

69. Key issues which the Suffolk Coastal Local Plan (Final Draft, January 2019) seeks to address include:
- Managing development while protecting significant areas of environmental protection.
 - Delivering high quality design that respects local character.
70. Policy SCLP11.1 Design Quality specifically addresses matters of design quality:
71. *The Council will support locally distinctive and high-quality design that clearly demonstrates an understanding of the key features of local character and seeks to enhance these features through innovative and creative means. In so doing, permission will be granted where proposals:*
- a. Support inclusive design environments which are legible, distinctive, accessible, comfortable, and safe, and adopt the principles of dementia friendly design;*
 - b. Demonstrate a clear understanding of the character of the built, historic and natural environment and use this understanding to complement local character and distinctiveness through both robust evidence, informed sources and site-specific context and analysis;*



- c. *Respond to local context and the form of surrounding buildings in relation to the following criteria:*
 - i. *the overall scale and character should clearly demonstrate consideration of the component parts of the buildings and the development as a whole in relation to its surroundings;*
 - ii. *the layout should fit in well with the existing neighbourhood layout and respond to the ways people and vehicles move around both internal and external to existing and proposed buildings;*
 - iii. *the height and massing of developments should be well related to that of their surroundings;*
 - iv. *the relationship between buildings and spaces and the wider street scene or townscape; and*
 - v. *by making use of high-quality materials appropriate to the local context;*
- d. *Take account of any important landscape or topographical features and retain and/or enhance existing landscaping and natural and semi-natural features on site;*
- e. *Protect the amenity of the wider environment, neighbouring uses and provide a good standard of amenity for future occupiers of the proposed development;*
- f. *Take into account the need to promote public safety and deter crime and disorder through well-lit neighbourhoods and development of public spaces that are overlooked;*
- g. *Create permeable and legible developments which are easily accessed, throughout the site and connections outside the site, and used by all, regardless of age, mobility and disability;*
- h. *Provide highway layouts with well-integrated car parking and landscaping which create a high-quality public realm, avoiding the perception of a car dominated environment, and that encourage and the use of pedestrian, cycle and other sustainable modes as the most attractive modes of sustainable travel;*
- i. *Include hard and soft landscaping schemes to aid the integration of the development into its surroundings; and*



- j. *Ensure that the layout and design incorporates adequate provision for the storage and collection of waste and recycling bins in a way which does not detract from the appearance of the development.*

3.4 Consultation

3.4.1 Technical Working Group Consultation

72. The relevant planning authority, Natural England and Historic England have provided comments on the OLMP presented within the Preliminary Environmental Information Report (PEIR) (SPR 2019) via a series of technical working group meetings in addition to the LVIA Expert Topic Group (ETG) consultation. These comments allowed the further refinement of the OLMP presented in this report and have been incorporated within the outline design principles in **section 3.3**.
73. Matters in which technical working group have provided comment to ensure that the Applicant have done as much as possible to mitigate the impacts of the development include, but are not necessarily exclusive to:
- Landscape issues (including making land available for public benefit);
 - Reducing the land take of the NGET substation;
 - Transport and access to the onshore infrastructure from the public highway;
 - Net ecological gain;
 - Flood alleviation with the possibility of net gain to the local area;
 - Archaeological and heritage matters including historic field boundaries;
 - Socio-economic issues; and
 - PRoW.
74. The LVIA ETG and technical working group has been engaged on a regular basis to discuss and agree the arrangement, layout, reinstatement of the historic landscape, PRoW permanent diversions, planting specification, planting species and growth rates of the OLMP for the proposed East Anglia TWO project.
75. **Table 3.1** provides a summary of the meetings and discussions.

Table 3.1 Summary of Engagement with OLMP Technical Working Group (in addition to LVIA ETG) Regarding Definition of the Outline Landscape Mitigation Plan

Date	Who with	Discussions
24 th January 2019	Historic England Suffolk County Council	Cultural heritage considerations



Date	Who with	Discussions
	Suffolk Coastal and Waveney District Council ²	
22 nd February 2019	Suffolk County Council Suffolk Coastal and Waveney District Council	National Grid infrastructure update Substation drainage update Landscape design strategy PRoW strategy
3 rd April 2019	Suffolk County Council East Suffolk Council	National Grid infrastructure update Landscape design strategy update PRoW strategy update Tree species and growth rates Ecological considerations Offsite planting strategy
23 rd May 2019	Natural England Historic England Suffolk County Council East Suffolk Council Suffolk Preservation Society	Landscape design strategy update PRoW strategy update Tree species and growth rates update Ecological considerations update

76. Detailed comments were provided by the OLMP technical working group and LVIA ETG during consultations and are summarised as follows:

- Planting proposals including the layout and pattern need to be reflective of prevailing surrounding landscape pattern. It is also important that the choice of planting reflects the prevailing landscape character and growing conditions.
- The planting and landscaping proposals should take account of underground connections to the National Grid substation and other constraints such as overhead lines, archaeology, drainage routes etc.
- The levels across the site need to be fully understood in order to understand the effectiveness of planting proposals as screening.
- The OLMP should be designed in order to accommodate any future development of the National Grid substation to accommodate future projects, without modification to the final LMP, such as the removal of planting provided by the proposed East Anglia TWO project.

² Note that on 1st April 2019, East Suffolk Council was created, covering the former districts of Suffolk Coastal District Council and Waveney District Council



- It is important that the OLMP delivers more than just planting with a sole screening function. The site is surrounded by public footpaths, hosts wildlife and is currently enjoyed by the surrounding communities and therefore the masterplan should deliver significant gains for biodiversity and public amenity.
- The OLMP should identify the end use of the land, whether it is retained with the development or returned to agricultural use, as this is important information which will assist in the understanding of the masterplan.
- The historic landscape of the area needs to be taken into consideration. In area to the immediate north of Friston, the reinstatement of historic field boundaries, filling gaps in existing hedgerows and introducing field boundary trees is likely to be preferable, to provide layered screening, rather than large-scale woodland planting close to the village. This allows the 'setting' of Friston to be retained (rather than being contained by woodland). In other areas, there may be potential for establishment of larger woodland blocks akin to the existing pattern of woodland blocks in the landscape.
- In relation to individual farmsteads, removing the "farming context" with woodland planting close to farms to screen the substations could be potentially damaging to the setting. The preference is for planting not to enclose the historic farms in woodland, as this is not how they would have been experienced in the past. The re-establishment of historically mapped tree-lined enclosures close to the farms is preferable, to retain farms in an open farmed landscape whilst achieving screening through multiple lines of planting.

3.4.2 Stakeholder Consultations

77. A summary of stakeholder feedback on the LVIA and OLMP presented in the PEIR during Section 42 consultation is contained in **Appendix 29.1** of **Chapter 29 Landscape and Visual Impact Assessment** of the ES (APP-565).

3.4.3 Ongoing Consultation

78. The OLEMS was submitted as part of the DCO application in October 2019. It has been updated during the Examination of the Project in light of comments received from stakeholders through the Statement of Common Ground (SoCG) process, as well as Relevant Representations and Written Representations. The Applicant will continue to engage with stakeholders throughout the Examination stage and beyond and seek to address comments within the final EMP and LMP prepared post-consent, where appropriate.

3.4.4 Future Consultation

79. The Applicant will prepare the final EMP and LMP post-consent and, as secured via Requirement 14 and Requirement 21 of the **draft DCO** (REP5-003). Insofar

as relevant to the onshore substation and National Grid substation, Requirement 12 of the **draft DCO** (REP5-003) and associated **Substations Design Principles Statement** (REP4-029) presents design principles to be followed and provides for community consultation of the landscape masterplan. Details will be submitted for approval by the relevant planning authority prior to commencement of the relevant stage of the onshore works. Where any element of the LMP relates to works within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB), the Applicant will consult with the relevant statutory nature conservation body (Natural England) during preparation of the LMP.

3.5 Substation OLMP Proposals

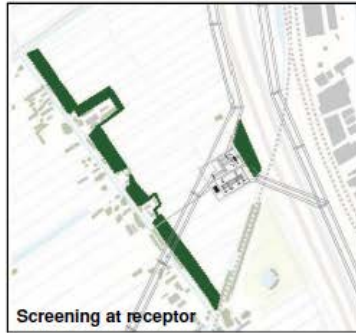
3.5.1 General Overview

80. The location, shape and internal arrangement of the onshore substation and National Grid substation are defined by strict technical constraints and health and safety requirements. The OLMP proposals focus on the land surrounding the onshore substation and National Grid substation and how their landscape and visual impacts may be mitigated and contained within the surrounding landscape.
81. During development of the OLMP, three approaches to the landscape design were considered: 'hidden', 'integrated' and 'exposed'. These options are illustrated and described in **Plate 3.1**.

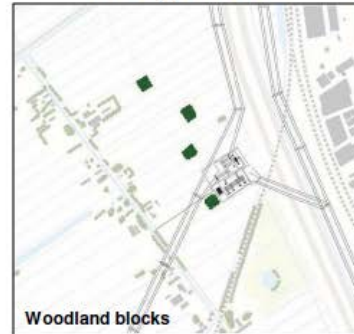


Potential Design Approaches

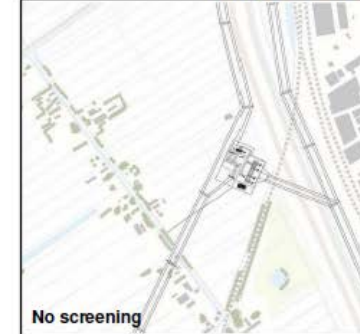
Hidden



Integrated



Exposed



Visual impact (**substations**)

low

high

Visual impact (**woodland**)

high

low

Plate 3.1 Potential Design Approaches

- The **‘hidden approach’** - focuses on reducing the impact of infrastructure on the existing space. The hidden approach has extensive landscape screening to hide the infrastructure, which limits the recognisability of the function of the infrastructure and has a lower change on the rural character. However, the scale of the infrastructure is often hard to completely hide with woodland planting. Existing infrastructure such as power lines and pylons are also likely to remain clearly visible in the landscape. The hidden approach can be achieved with vegetation/woodland planting all around the infrastructure, or on the side of the main observers.
 - The **‘integrated approach’** - focuses on reducing the impact of infrastructure on the existing space, without completely hiding the infrastructure. The strength of this approach is to use the existing landscape structure to embed the infrastructure, and still show its function. The integrated approach has some landscape screening, but expands existing electrical characteristics, enabling the observer to understand the function of the infrastructure, with a more moderate change to the rural character. The integrated approach can be achieved using woodland clumps/shelterbelts and/or hedgerows.
 - The **‘exposed approach’** - focuses less on the spatial impact and more on the recognisability of the function. The exposed approach has limited/no landscape screening, with high recognisability of the function of the infrastructure, but also a high change to the rural character. The exposed approach concentrates on emphasising the infrastructure e.g. through new architectural elements/installations, combined with specifically coloured elements, or emphasis through planting and management of vegetation in a specific form.
82. The landscape design approach selected for the onshore substation and National Grid substation combines the approaches of hiding and integrating them into the landscape to meet the mitigation requirements and also as a response to the local landscape character and the historic landscape context. This approach results in the onshore substations having a lower landscape and visual impact in the long-term, once woodland and hedgerow planting is maturing (as opposed to an approach where the substations are even more emphasised). Specifically placed woodland blocks/shelterbelts, hedgerows and tree lined field edges are proposed to hide and integrate the onshore substation, reducing the visual impact in specific views towards the onshore substation experienced by people from residences, roads and PRoW, while allowing the function of the onshore substations to be recognised when in closer proximity.
83. This approach acknowledges the key requirement for visual screening of the onshore substations, which has been a clear preference expressed during public

and stakeholder consultations. Due to technical constraints, it is unrealistic to completely screen the entirety of the onshore substations, therefore some element of integration is required and is considered suitable to allow some recognisability of the function of the onshore substations, when viewed in the context of the existing electrical transmission infrastructure nearby.

3.5.2 OLMP – Description of Landscape Mitigation Proposals

84. There are notable opportunities for deliverable and effective mitigation of the landscape and visual impacts of the onshore substation and National Grid substation, in the form of new landscape planting in the OLMP. The OLMP is presented in **Figures 3 - 7** and comprises areas of substantial native woodland planting near the onshore substation and National Grid substation, set back from the main visual receptors (such as Friston) to provide screening, while also retaining the open rural setting; supplemented by smaller characteristic woodland blocks, new hedgerow planting along historic hedgerow field boundaries and individual field boundary tree line planting, to provide a layered screening approach. The OLMP has been carefully designed to be appropriate in the local landscape context, taking account of the potential impact on the landscape and the opportunities to minimising harm through reasonable mitigation.
85. Woodland blocks to the south of the onshore substation and National Grid substation are intended to provide screening for the main visual receptors on the northern edges of Friston. Woodland block planting to the north-east is intended to provide screening from road-users of Grove Road and from Knodishall. Hedgerow reinforcement and small woodland block planting to the north of the overhead lines is to provide screening from isolated properties and from users of the PRoW network along the southern edge of Fristonmoor. Hedgerow planting to the west and south-west is intended to provide screening from residential receptors along the Saxmundham Road, and from road-users of Saxmundham Road.
86. The OLMP is presented in **Figures 3 – 7**. **Figure 3** shows the landscape general arrangement of the woodland, hedgerow and tree planting proposed, including the different types of native woodland areas. **Figure 4** and **Figure 5** provide an illustrative landscape plan, graphically designed to show what an aerial image of the site might look like in the future when the landscape planting proposals are maturing. **Figure 6** is also presented on an aerial image, but highlights just the proposed woodland and hedgerows, so that they can be distinguished (in colour) from existing areas of woodland and hedgerows (in greyscale). **Figure 7** identifies the proposed timing of the proposed planting, including opportunities for early (but post-consent) planting and planting proposed towards the end of or after the onshore substation construction period.

87. **Figure 9** shows the landscape general arrangement of the woodland, hedgerow and tree planting proposed, including different types of native woodland areas, with a National Grid GIS substation. This illustrates that the OLMP presented in **Figures 3 – 7** retains flexibility to accommodate the National Grid GIS substation footprint. If the National Grid GIS substation is adopted, the LMP will be prepared based on the GIS layout and take advantage of the reduced footprint that a GIS solution provides.
88. The OLMP proposals seek to be historically appropriate, through proposals to re-establish lost field boundaries and seek to achieve screening through multiple lines of planting, with a mix of blocks, belts, tree lines and hedges.
89. The screening tree belts are not placed hard against the houses, footpaths and villages. On the paths, this creates an experience of walking through farmland that includes woodland and the onshore substations, rather than always walking past woodland. At the houses, the planting has avoided enclosure of the historic farms in woodland, which is not how they would have been experienced in the past (this applies particularly to the listed buildings on Friston Moor). The OLMP includes re-establishment of historically mapped tree-lined enclosures close to the farms to achieve screening whilst retaining the farms in a more open farmed landscape.
90. In the area to the north of Friston, there are proposals to re-establish lost historic field boundaries and to seek to achieve screening through multiple lines of planting rather than woodland blocks. Blocks of trees are a feature of the existing landscape and at least one was added in the late 19th century so more woodland is not inappropriate. However, the proposal includes a mix of blocks, belts, tree lines and hedges to be historically more appropriate, while providing visual screening in views from Friston.
91. The design approach in the OLMP therefore combines areas of woodland planting, hedgerow planting and individual tree planting, to provide a layered screening approach. Each of these elements of the OLMP are described further as follows, with reference to **Figures 3 – 7**.

3.5.3 Woodland Planting

92. There are notable opportunities to deliver effective mitigation of the landscape and visual impacts of the onshore substation and National Grid infrastructure through new woodland planting. The extent of mitigation planting incorporated into the design is presented in **Figures 3 - 7** and comprises native woodland species, developed in consultation with the technical working group, planted around the onshore substation and National Grid infrastructure.



93. A newly planted woodland framework will be established around the onshore substation, with the key element being a substantial belt of woodland linking Grove Wood and Friston House, proposed with the intention of ‘separating’ the site from Friston and Grove Road. This woodland belt is located north of Friston away from the immediate vicinity of Friston, so as not to significantly impact on the setting of Friston and retain the open rural setting of the village, while also providing screening of the onshore substation and National Grid substation.
94. The landscape mitigation plan proposes four types of woodland planting, as shown in **Figure 3** (and **Figure 9** for the National Grid GIS substation), consisting of a core native woodland, native edge woodland, native screening woodland and native wet woodland. These types of woodland planting are summarised as follows:
- Core native woodland (W1) – consisting of native trees species including oak, birch (*Betula*), lime, alder, maple, beech (*Fagus*), rowan and alder, planted within the central part of woodland planting areas, forming core woodland. Mix of native species, typical to the area and is intended to provide long-term screening as well as providing habitat and biodiversity.
 - Native edge woodland (W2) – consisting of smaller native trees and shrubs, such as hawthorn, elder (*Sambucus*), hazel (*Corylus*), dogwood and blackthorn (*Prunus spinosa*) to form graduated edges around woodland planted areas.
 - Native screening woodland (W3) – consisting of quicker growing native species and a small proportion of evergreens to provide some year-round screening, including alder (*Alnus*), rowan (*Sorbus*), silver birch (*Betula pendula*), black poplar (*Populus nigra*) and scots pine (*Pinus sylvestris*). These are generally faster growing species and the intention is for this mix to provide earlier visual screening and also to act as a “nursery crop” for the core woodland species.
 - Native wet woodland (W4) – small area of wet woodland around the SDS, planted in soils likely to be in wetter ground, including alder, willow (*Salix*), birch, common osier (*Salix viminalis*) and elder. The tree species chosen are able to withstand wetter ground conditions.
95. The species mixes for these areas of woodland are shown in **Table 3.2** to **Table 3.5**.

Table 3.2 Core Native Woodland Species Mix (W1)

Common Name	Botanical Name	Proposed Mix %
Common Oak	<i>Quercus robur</i>	15



Common Name	Botanical Name	Proposed Mix %
Downy Birch	<i>Betula pubescens</i>	15
Small-leaved Lime	<i>Tilia cordata</i>	10
Field Maple	<i>Acer campestre</i>	10
Common Beech	<i>Fagus sylvatica</i>	10
Rowan	<i>Sorbus aucuparia</i>	10
Common Alder	<i>Alnus glutinosa</i>	10
Bird Cherry	<i>Prunus padus</i>	10
Common Holly	<i>Ilex aquifolium</i>	5
Common Privet	<i>Ligustrum vulgare</i>	5

Table 3.3 Native Edge Woodland Mix (W2)

Common Name	Botanical Name	Proposed Mix %
Common Hawthorn	<i>Crataegus monogyna</i>	20
Common Dogwood	<i>Cornus sanguinea</i>	10
Common Hazel	<i>Corylus avellana</i>	10
Common Crab Apple	<i>Malus sylvestris</i>	10
Blackthorn	<i>Prunus spinosa</i>	10
Goat Willow	<i>Salix caprea</i>	10
Common Elder	<i>Sambucus nigra</i>	10
Guelder Rose	<i>Viburnum opulus</i>	10
Common Spindle Tree	<i>Euonymus europaeus</i>	5
Common Holly	<i>Ilex aquifolium</i>	5

Table 3.4 Native Screening Woodland Species Mix (W3)

Common Name	Botanical Name	Proposed Mix %
Common Alder	<i>Alnus Glutinosa</i>	15
Rowan	<i>Sorbus Aucuparia</i>	15
Downy Birch	<i>Betula pubescens</i>	10
Black Poplar	<i>Populus Nigra</i>	10
Silver Birch	<i>Betula pendula</i>	10
Scots Pine	<i>Pinus sylvestris</i>	10
Field Maple	<i>Acer campestre</i>	10



Common Name	Botanical Name	Proposed Mix %
Alder Buckthorn	<i>Rhamnus frangula</i>	8
Guelder Rose	<i>Viburnum opulus</i>	6
Common Privet	<i>Ligustrum vulgare</i>	6

Table 3.5 Native Wet Woodland Species Mix (W4)

Common Name	Botanical Name	Proposed Mix %
Common Alder	<i>Alnus glutinosa</i>	20
Crack Willow	<i>Salix Fragilis</i>	15
White Willow	<i>Salix alba</i>	15
Common Oak	<i>Quercus robur</i>	15
Downy Birch	<i>Betula pubescens</i>	15
Common Osier	<i>Salix viminalis</i>	5
Elder	<i>Sambucus nigra</i>	5
Blackthorn	<i>Prunus spinosa</i>	5
Common Hawthorn	<i>Crataegus monogyna</i>	5

96. As noted within the joint Local Impact Report by East Suffolk Council and Suffolk County Council (the Councils) (REP1-132), whilst the species set out in the above tables are substantially agreed, the species mix remains open for discussion until approval of the LMP during the discharge of requirements process.
97. The species set out within **Table 3.2** to **Table 3.5** will be subject to further consultation with the relevant planning authority post-consent and will be agreed within the final LMP submitted for approval through the discharge of Requirement 14 of the DCO. The Applicant is willing to consider limited non-native species should the relevant planning authority consider it beneficial.

3.5.3.1 Updates to Woodland Planting made at Deadline 3

98. An updated OLMP is provided in **Figures 3** (General Arrangement), **Figure 5** (OLMP Illustrative Plan) and **Figure 7** (OLMP Timing of Planting) of this OLEMS.
99. The updated OLMP includes changes to woodland planting areas required to address changes in the maximum footprint of each onshore substation (reduced from 190m x 190m (as set out in **Table 6.27** of **Chapter 6 Project Description** of the Environmental Statement (ES) (APP-054)) to 190m x 170m, as set out in full in the **Project Update Note** (REP2-007) submitted to the Examinations at

Deadline 2, and the **Onshore Substations Update Clarification Note** (REP3-057) submitted to the Examinations at Deadline 3.

100. The changes to the woodland planting areas in the updated OLMP (**Figure 3**), designed to accommodate the East Anglia TWO onshore substation, the East Anglia ONE North onshore substation and the National Grid substation, are summarised below:

- Reducing the footprints of the onshore substations allows for the western boundary of the westernmost substation to be relocated 40m to the north-east. This in turn allows for retention of an existing area of established woodland approximately 2,700m² in area (in a depression to the west of PRow E-354/006/0), which would have previously been removed. This woodland will be retained to provide additional visual screening of the onshore substations and National Grid infrastructure in views from the south and west.
- Relocation of the westernmost onshore substation creates an additional area adjacent to this retained woodland where additional post-construction woodland planting is now proposed adjacent to the western substation and on higher ground, to provide further screening in views from the south and south-west.
- Woodland planting along the PRow to the west (E-260/017/0), between Friston House / SuDS basin and the proposed overhead line realignment, has been reduced in width to allow for the more effective new screen planting on the higher ground to the east next to the western substation.
- The northern SuDS basin has been moved eastwards towards the National Grid substation, allowing additional space for further woodland planting between the access road and this SuDS basin, to provide further screening in views from the west.
- Additional edge woodland planting is proposed to the north of the National Grid substation, particularly in the areas around the cable sealing end compounds, to provide additional screening of these compounds. These areas are proposed as edge woodland (rather than higher core or screening species) to limit the ultimate height of the tree canopy in areas between the re-aligned overhead transmission line, where the overhead electrical cables are a constraint to higher planting.
- Additional areas of small 'Covert' woodland planting are proposed alongside field boundaries to the north of Friston (south of the onshore substation location), to provide additional screening in views from the northern edge of the village. These are proposed as small field edge woodlands with sparse, scrubby, fast growing species with a low ultimate height (similar to some of the existing planting evident in this area), in order to avoid complete enclosure

of the view, retain the open setting while providing a layered screening of the onshore substations.

101. The changes to the woodland planting areas in this version of the OLMP (**Figure 3**) are shown in the photomontages contained within **Appendix 3** of the **Updated Photomontage Clarification Note** (REP3-063) submitted to the Examination at Deadline 3.

3.5.3.2 Updates to Woodland Planting made at Deadline 4

102. Further to the submission of an updated OLMP with the OLEMS at Deadline 3 (REP3-030), an additional triangular area of woodland southeast of Little Moor Farm and an associated woodland belt between Fareacres and Little Moor Farm has been proposed to provide screening in views from the PRoW near Little Moor Farm.

3.5.3.3 Updates to Woodland Planting made at Deadline 6

103. The western extent of the woodland planting southeast of Little Moor Farm added at Deadline 4 has been amended to extend further west to increase the level of screening of south-facing views from the PRoW near Little Moor Farm. The intention at this location is to plant woodland up to the edge of the existing PRoW.

3.5.4 Assumed Growth Rates

104. The appearance of the onshore substation and National Grid infrastructure will be influenced by the establishment and growth of these areas of woodland planting over time. Recently planted cell-grown trees and hedgerows are likely to have limited screening effect when not fully established. Photomontage visualisations in **Figures 29.13 – 29.26** of the **Chapter 29 Landscape and Visual Impact Assessment** and the updated photomontages shown in **Appendix 3** of the **Updated Photomontage Clarification Note** (REP3-063) submitted at Deadline 3 show the predicted view of the onshore substations and National Grid infrastructure with recently planted trees, in the first year of planting as the ‘without mitigation’ scenario.
105. In the early years of growth, young trees will be establishing, and are assumed to have good vigour, but likely to have limited screening effects in the landscape. Woodland planted areas are assumed to be well established between 5 to 10 years post-planting, with young trees growing in height, having increasing landscape significance and providing some screening of the onshore substations. Between 10 to 15 years post-planting, fully established trees are assumed to be generally retaining good vigour and starting to achieve good height with tree crowns spreading and are assumed to provide notable screening of the onshore substations and National Grid infrastructure.



106. At 15 years post-planting, trees within the proposed woodland planting areas (Figure 29.11a) are assumed to be within the following height ranges:
- **Core native woodland (W1).** Taller trees assumed to have heights between 6.5m – 7.8m and smaller trees/shrubs are assumed to have heights of 2m – 4m to form an understorey.
 - **Native edge woodland (W2).** Trees assumed to have heights between 2m – 5m.
 - **Native screening woodland (W3).** Taller trees assumed to have heights between 6.5m – 8.4m and smaller trees/shrubs are assumed to have heights of 2m – 4m to form an understorey
 - **Native wet woodland (W4).** Taller trees assumed to have heights between 6.5m – 7.8m and smaller trees/shrubs are assumed to have heights of 2m – 4m to form an understorey.
107. These tree heights are assumed for the ‘with mitigation’ impact assessments in the LVIA (at 15 years post-planting) and are shown in the Year 15 ‘with mitigation’ photomontages in **Figures 29.13 – 29.26** of the LVIA and in the photomontages contained within **Appendix 3** of the **Updated Photomontage Clarification Note** (REP3-063) submitted to the Examination at Deadline 3. The updated photomontages do not show the growth of proposed early planting areas at Year 1 of operation; or its potential additional growth at Year 15 of operation.
108. These photomontages are produced using a 3D model which accurately shows the height and extent of woodland areas. A range of tree heights within the upper and lower height ranges are shown in the photomontages and are assumed for the ‘with mitigation’ impact assessments in the LVIA. This provides for a representation of likely differences in growth and a more realistic appearance of the woodland areas in the photomontages, than if the trees are all shown at the same height. Trees at the upper end of the height range, for example 7.8m for core woodland, are only applied for a minority proportion of the overall mix as represented in the photomontages, with a range of tree heights shown to represent the range of likely growth of different trees within the planting mixes proposed.
109. Heights of taller trees (W1, W3, W4) at 15 years post-planting are based on an assumption of planting 60cm cell-grown plants, with an average annual growth rate of 30cm per year for the first 5 years and 50cm per year for the next 10 years, based on relevant guidance (IEMA, 2019), research of relevant published literature (Skinner, 1987) and plant nurseries, and are comparable to precedents established by other NSIP projects. To achieve these annual growth rates, the fundamental principles of good nursery stock, proper ground preparation and an

embedded best practice management regime (discussed in **section 4.2** below) will be delivered as part of the planting specification. A variation tolerance of +10% to -10% has been applied to allow for some variation in growth, above and below the abovementioned average annual growth rate, and to provide differences in canopy height in the photomontage visualisations.

3.5.5 Timing of Woodland Planting

110. During the onshore site preparation works, early woodland and hedgerow planting may be implemented in locations where it is possible to achieve advanced planting outside the immediate onshore substation and National Grid infrastructure construction areas. Where agreed with the relevant planning authority through the onshore preparation works management plan or through a stage of works agreed under Requirement 14 of the **draft DCO** (REP5-003), areas of early planting and re-instatement of gappy hedgerows will be implemented in order to establish plants and provide for screening. Potential areas for early planting are shown in **Figure 7**. Depending on the timing of this early planting, these areas could already have had up to three years of growth prior to completion of construction and commencement of operation. Early planting is not illustrated in the 15 year photomontages presented within the Application or the **Updated Photomontage Clarification Note** (REP3-062) submitted at Deadline 3.
111. Opportunities for early planting are as follows and are shown in the updated **Figure 7** of this OLEMS:
- to the south of the onshore substations and to the north of Friston, consisting of the planting of woodland along field boundaries (W1/W2); infilling of existing gappy hedgerows and the planting of individual extra heavy standard tree planting (T1) along hedgerows.
 - to the east/south-east of the onshore substation alongside Grove Road, to provide early screening in views from Grove Road and the diverted PRoW offset from Grove Road.
 - to the north of the National Grid substation in the areas near Fristonmoor and Little Moor Farm; including a woodland belt to the south of Fristonmoor and to the west of Little Moor Farm, hedgerow planting and individual light standard tree planting to form tree lines avenues.
112. Post-construction planting will focus on the large woodland belts to the west, south and east of the onshore substation and the edge woodland planting to the north of the National Grid substation around the sealing end compounds, as well as formalising the woodland planting around the SuDS basins, which will require to be planted towards the end of the construction period.



113. Further planting and establishment of hedgerows (that were not strengthened during any early planting phase) will take place along the permanent substation access road and around the perimeters of the National Grid infrastructure.
114. In the photomontages contained within **Appendix 3** of the **Updated Photomontage Clarification Note** (REP3-063) submitted to the Examination at Deadline 3, all planting is shown in the Year 1 views but with no additional growth for the early planting period (i.e. they are shown as if whips had just been planted and the observer is looking at the planting in Year 1 of the operational period without any additional growth for the construction period).

3.5.6 Individual Tree Planting (T1)

115. Individual tree planting will be undertaken along field boundary hedgerows to create characteristic tree lined field edges, where existing or proposed hedgerows are supplemented with larger hedgerow trees, planting at a larger size and maintained to grow higher than the main hedgerow. Individual trees will be maintained to form characteristic tree lines along hedges, verges and field boundaries. Over time, these trees will contribute towards a network of re-instated historic green lanes, most of which have been lost to agricultural intensification over the years.
116. The density of individual tree planting along hedgerow boundaries/tree lined avenues has been increased in the updated OLMP (**Figure 3**) to provide more trees in these avenues, at closer 10m spacing.
117. A selection of individual trees in field boundaries to the north of Friston and to the south of the onshore substation will be planted as extra heavy standards, assumed to be approximately 4m in height at the time of planting. All other individual trees to the north of the onshore substation will be planted as light standards, assumed to be approximately 2.5m height at planting.

Table 3.6 Individual Tree Planting (T1)

Common Name	Botanical Name
Common Oak	<i>Quercus robur</i>
Small-leaved Lime	<i>Tilia cordata</i>
Field Maple	<i>Acer campestre</i>

3.5.7 Hedgerow Planting (H1) and Reinstatement (H2)

118. In addition to areas of new woodland planting, the OLMP includes substantial lengths of new native hedgerow planting and the reinstatement of existing gappy hedgerows around the onshore substations, shown in **Figures 3 - 7**. Historic hedgerow field boundaries have been lost, over time, to agricultural



intensification. The landscape used to feature more hedges and tree lined field edges and there were also large blocks of woodland present, which remain today. The OLMP proposals seek to be historically appropriate, with proposals to re-establish lost field boundaries and seek to achieve screening through multiple lines of planting, with a mix of blocks, belts, tree lines and hedges. The reinstatement of gappy hedges and new field trees are proposed to north of Friston, to give layered screening in views from this village.

119. The proposals focus on reinstatement of historic field boundary hedgerows/tree lines and tree blocks set back from farmhouses in the form of locally characteristic 'Covert' woods, in order to retain, insofar as possible, the open setting of existing farms and villages, while providing additional visual screening in the landscape. Hedgerows will combine with the woodland planting areas to integrate the substations into the landscape, both in terms of providing screening of the onshore infrastructure and as an extension of an element that is characteristic in the local landscape. The arrangement of hedgerows provides connectivity with existing and proposed woodlands and hedgerows in the surrounding landscape.
120. The OLMP (**Figures 3 - 7**) shows the locations of proposed hedgerow planting around the onshore substations. The hedgerows will consist of mixed native species hedge (including hawthorn, maple, hornbeam, holly, privet, and blackthorn) as listed in full in **Table 3.8**. Native hedgerows will be managed over time to retain and restore the pattern of network of field boundaries.
121. Hedgerows will combine with the woodland planting areas to integrate the substations into the landscape, both in terms of providing screening of the infrastructure and as an extension of an element that is characteristic in the local landscape.
122. The species mixes for the native hedgerow (H1) planting is shown in **Table 3.7**.

Table 3.7 Native Hedgerow Species Mix (H1)

Common Name	Botanical Name	Proposed Mix %
Common Maple	<i>Acer campestre</i>	20
Common Hornbeam	<i>Carpinus betulus</i>	5
Common Hazel	<i>Corylus avellana</i>	2
Common Hawthorn	<i>Crataegus monogyna</i>	55
Common Dogwood	<i>Cornus sanguinea</i>	5
Common Privet	<i>Ligustrum vulgare</i>	5
Blackthorn	<i>Prunus spinosa</i>	2



Common Name	Botanical Name	Proposed Mix %
Common Buckthorn	<i>Rhamnus catharticus</i>	2
Dog Rose	<i>Rosa canina</i>	2
Holly	<i>Ilex aquifolium</i>	2

3.5.8 Grassland

123. Existing agricultural land use will be retained, or land will be returned to agricultural use following the construction period where possible, as illustrated in **Figure 3** (and **Figure 9** for the National Grid GIS substation).
124. Species rich grassland areas will be established, as shown in **Figure 3** (and **Figure 9** for the National Grid GIS substation), particularly in the areas immediately around the onshore substation and National Grid substation, and in smaller fields that would not be viable for agricultural use, to provide a low maintenance ground cover which also enhances the local biodiversity in areas that are not to be returned to agricultural use or planted as woodland. The SuDS basin and associated open swales will be seeded with a wet grass mix. Amenity grasses will be used immediately next to the access road and perimeter foot track around the substation.
125. The Landscape General Arrangement (**Figure 3** and **Figure 9**) shows the locations of all grassland areas that will be established as part of the OLMP. The types of grassland species that will be established are summarised as follows and, in all cases, an appropriate seed mix will be selected to assist with the introduction of grass species appropriate to the area and onshore substation site conditions
 - G1 Amenity Grass Mix - General purpose amenity grass mix, used for verges, embankments, filter strip, swale sides.
 - G2 Species rich grass mix - (grasses and wildflowers) will be established to provide a low maintenance ground cover in areas that are not to be returned to agricultural use or planted as woodland. These include constrained areas beneath the existing overhead transmission lines (and pylons) and within the onshore cable route into the onshore substation, providing biodiversity value and natural appearance to contrast with the onshore infrastructure.
 - G3 Wetland Grass mix - grass mix appropriate for areas that are expected to be frequently and regularly inundated, such as the SuDS basins.

3.5.9 Ecological Features

126. The planting and landscaping proposed within this OLMP are likely to benefit ecological species surrounding the onshore substation and National Grid infrastructure. The planting of hedgerows will provide wildlife corridors, most notably commuting and foraging habitat for bats which are a European Protected Species, as well as providing commuting and foraging habitat for local bird species. Planting of woodland blocks will provide habitat for local wildlife such as squirrels (*Sciuridae spp.*), foxes (*Vulpes spp.*) and deer (*Cervidae spp.*), including protected species such as badgers (*Meles meles*). These areas of woodland may also provide roosts for bat species (*Myotis spp.*) or barn owls as individual trees mature. The wetland habitat provided by the establishment of the SuDS ponds will be beneficial to local wildlife species, for example protected newt species such as great crested newts (*Triturus cristatus*). Verge and hedgerow habitat will provide wildlife corridors between existing ponds and the proposed SuDS ponds for local wildlife. Verge habitat will additionally provide refuge for local reptile species.

3.5.10 Constraints

127. The planting and landscape proposals shown in the OLMP take account of a number of constraints, including the underground onshore cable route, existing and re-aligned National Grid overhead lines.
128. National Grid have a number of requirements for planting near to overhead transmission lines. Changes in ground levels should not result in safety clearances being infringed, with a 7.3m minimum distance. Planting within 2m of pylon bases should be avoided and only slow growing low height species should be planted beneath overhead line conductors (wires). It is also required that sufficient clearance is maintained between overhead conductors (wires) and trees/vegetation, with a 7.5m minimum distance recommended, shown in **Plate 3.2** and **Plate 3.3**. A precautionary 25m buffer from the overhead lines has been applied for the proposed planting of tall woodland areas in the OLMP.

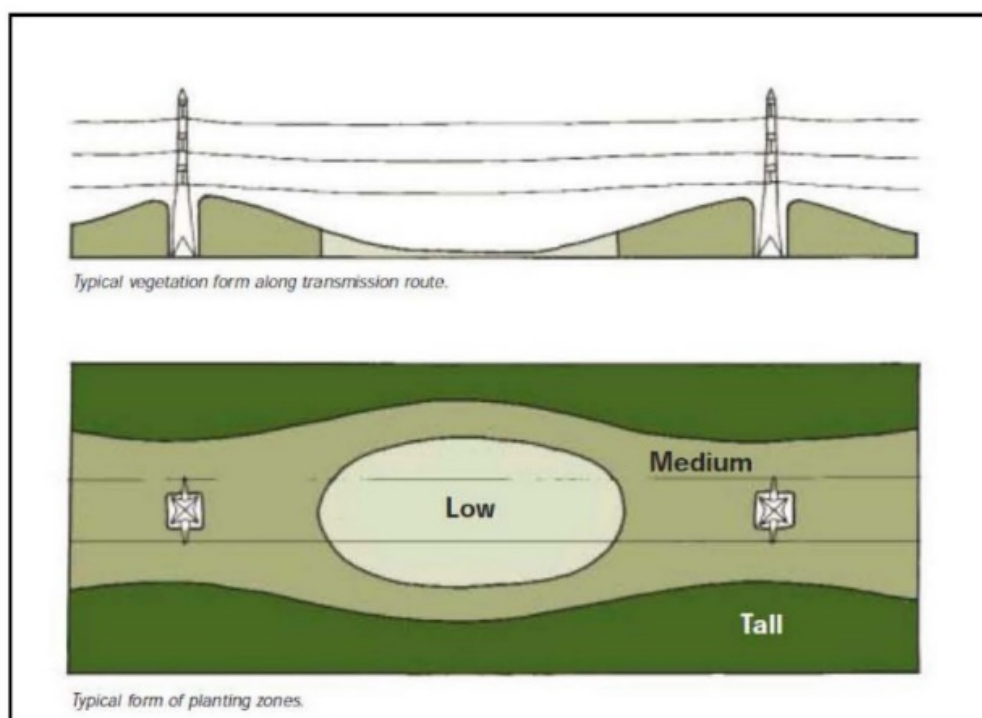
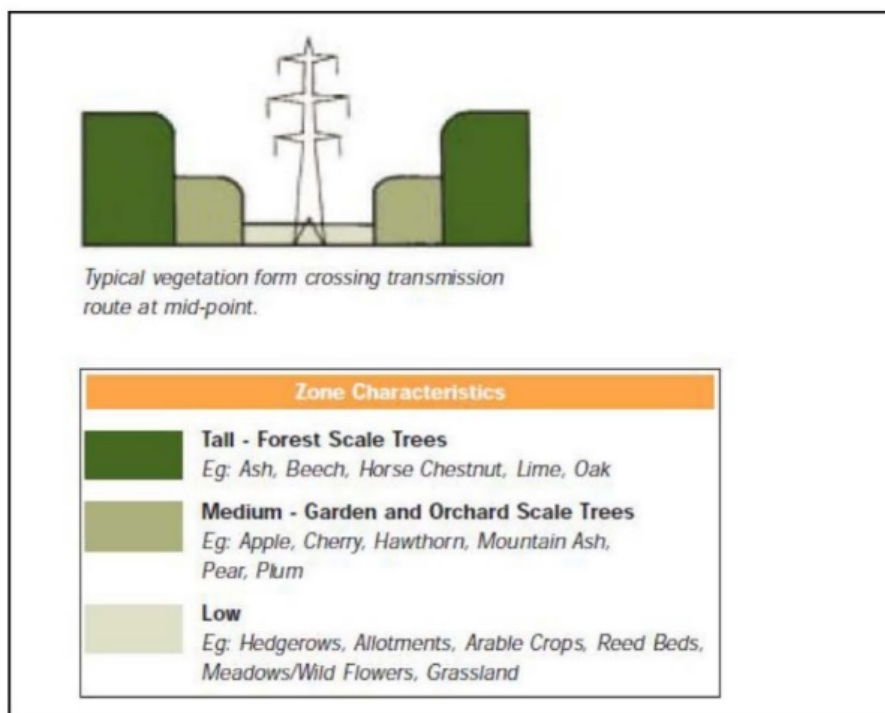
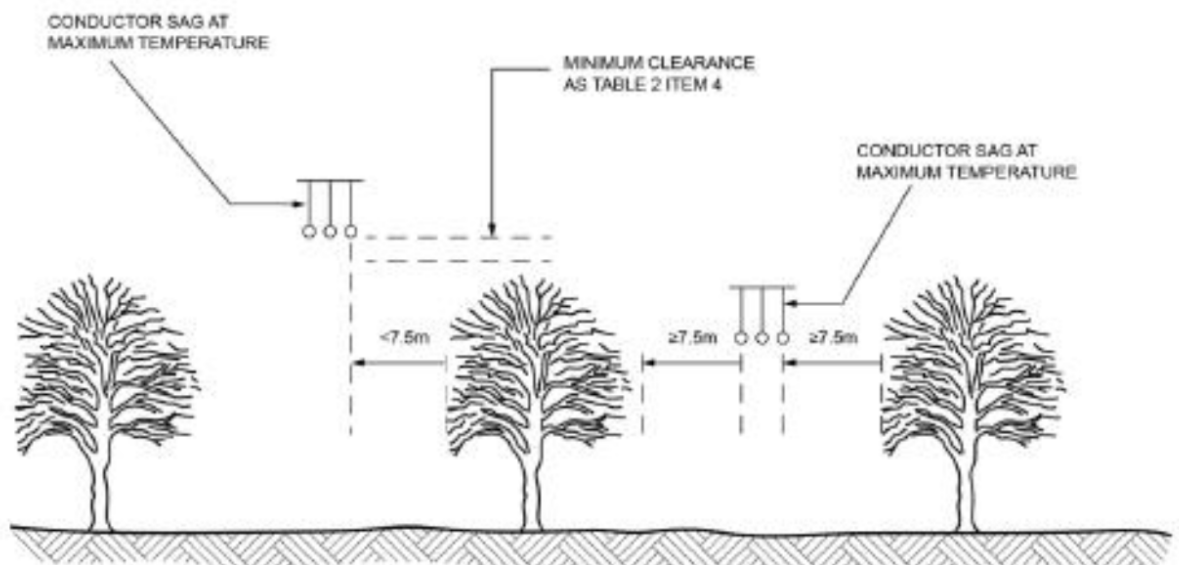
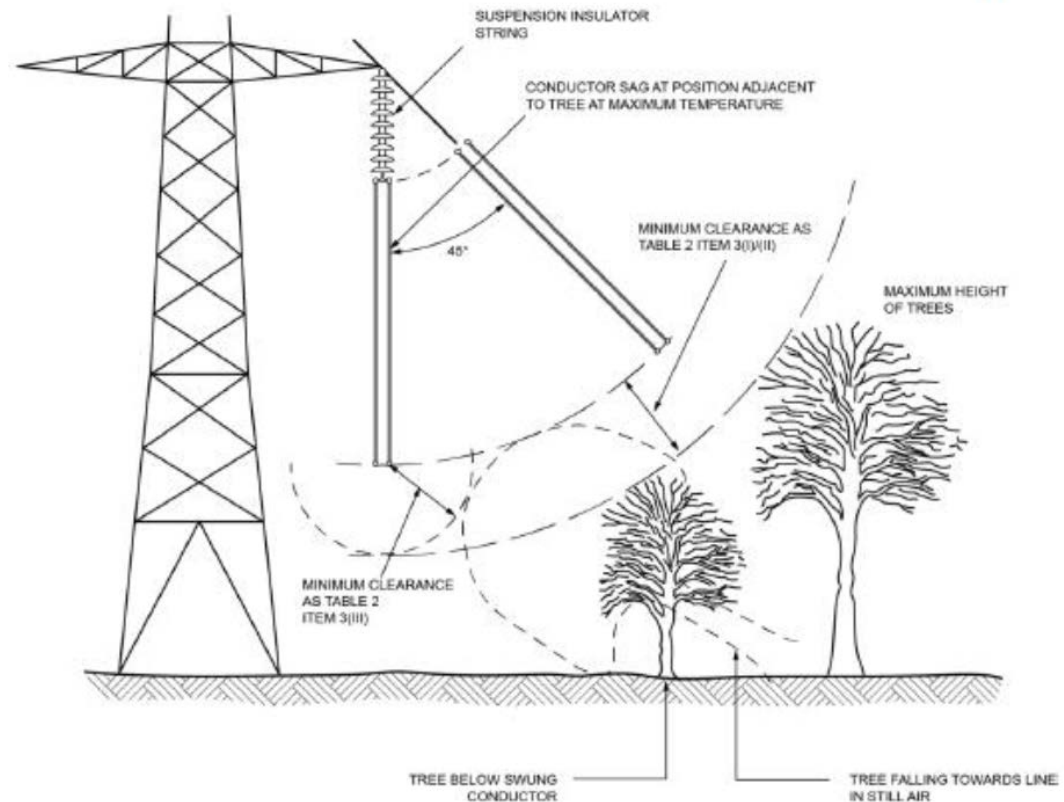


Plate 3.2 Typical form of Planting Areas



ENA Technical Specification 43-8
Issue 4 2015
Page 29



Note. The leftmost configuration shows that when a tree is horizontally closer to the line than 7.5m, then vertical clearance, from the treetop, shall be maintained

Plate 3.3 Typical Planting Forms

129. In particular, these requirements provide constraints to higher woodland planting to the north of the National Grid substation and around the overhead line realignment works, where planting is required to be lower and slow growing species.
130. Constraints are also presented by underground onshore cables coming into the onshore substations (**Figure 3** and **Plate 3.4**), however it has been possible to limit this 'gap' with a hedgerow planted across it and planting of shallow rooting species around the edges of the onshore cable route.

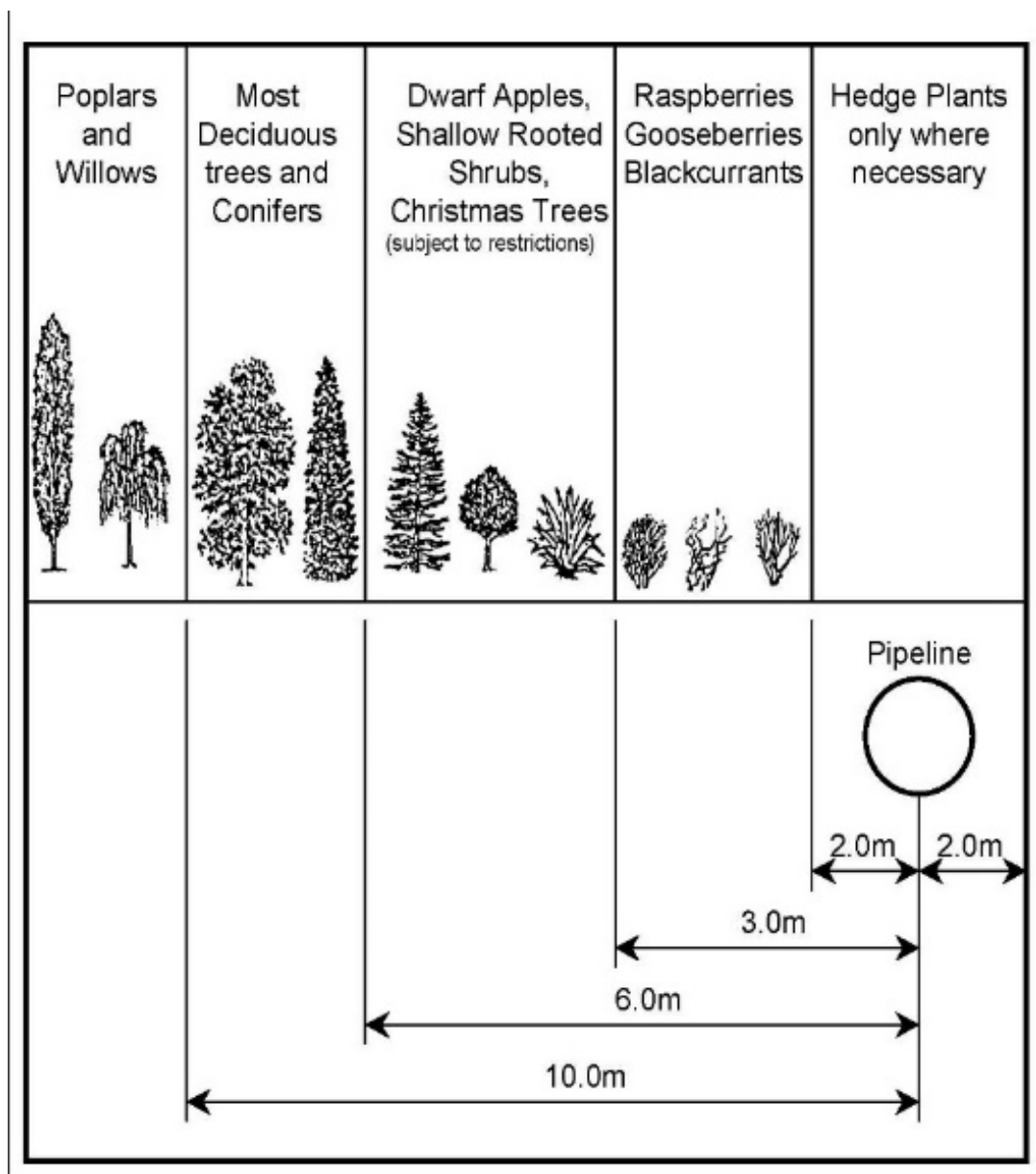


Plate 3.4 Planting Constraints

3.5.11 Substation Site Levels / Earthworks Proposals

131. In line with the **draft DCO** (REP5-003) submitted at Deadline 5, the height of the onshore substation GIS building will be kept to a maximum of 14m above finished ground level and external electrical infrastructure at the onshore substation will be kept to a maximum of 14m above finished ground level; external electrical infrastructure at the National Grid infrastructure will be kept to a maximum of 16m above finished ground level.
132. Based on preliminary engineering design undertaken, the finished ground level in respect of the onshore substation is estimated to be 18.7m AOD where the onshore substation is located to the east, and approximately 18.2m AOD where the onshore substation is located to the west. The final finished ground level will be established during detailed design post-consent as per the Outline Substation Design Principles Statement.
133. The finished ground level in respect of the National Grid substation is estimated to be 18.2m AOD. The final finished ground level will be established during detailed design post-consent as per the **Outline National Grid Substation Design Principles Statement** (REP1-046).
134. Bunding proposals associated with onshore substation and National Grid infrastructure SuDS basins and perching of basins in location is identified in **Figure 5**.
135. The top of the bund is estimated to be 1.5m higher than the internal substation level. The intention is to grade the ground up to these levels from the substation at a grade of 1:3. This grade of slope also allows for safe maintenance access. The bund is then shaped so that externally it falls at a gentler grade of 1:10 to 1:20 away from the substation to have a smoothly graded, natural looking slope facing the viewers looking towards the substation. Bunding is subject to detailed design and the availability of suitable material on site during construction, therefore the effects of bunding are not shown on the photomontages that accompany the Application, with the exception of the bunding proposal associated with the SuDS basin.

3.5.12 SuDS

136. The outline design of the onshore substation drainage has been designed in accordance with best practice as referenced in the SuDS Manual (CIRIA 2015). This includes maximising amenity and biodiversity benefits, whilst delivering the key objectives of managing flood risk and water quality.
137. The outline design of the onshore substation drainage has inherent benefit to reducing downstream flood risk in the village of Friston. For the onshore

substations and National Grid infrastructure, the storage afforded by the SuDS basins will be designed to accommodate runoff from a 1 in 100 year storm event plus a 40% additional allowance for climate change, as requested by Suffolk County Council (SCC) as the Lead Local Flood Authority (LLFA). These measures will limit the runoff to the equivalent of the pre-existing greenfield (undeveloped) runoff rate and is in accordance with best practice.

138. In the iteration of the OLMP submitted at Deadline 3, the northern SuDS basin was moved eastwards closer to the National Grid substation. This allowed space for further woodland planting between the proposed access road and SuDS basin to provide further screening in views from the west. At Deadline 6, the size of the SuDS basins illustrated on the OLMP (**Figure 3-9**) has been amended to reflect updates made to the **Outline Operational Drainage Management Plan** (an updated version has been submitted at Deadline 6, document reference ExA.AS-1.D6.V3); the proposed woodland planting remains as it was at Deadline 3
139. Current outline design has not allowed for any infiltration in the base of the SuDS basins. Following consent, detailed design will likely allow for some percolation through the base of the SuDS basins which will help reduce the required storage volume and enable greater reductions in flood risk downstream.
140. The final Operational Drainage Management Plan will detail the design of SuDS and will require approval from the relevant planning authority. Management measures of operational stage surface water drainage will also be detailed and secured in the final Operational Drainage Management Plan.
141. The Applicant has committed to providing additional 'surface water management SuDS basin' capacity (currently identified as concept within **Figure 5**) to reduce flood risk for the village of Friston, in addition to the SuDS strategy currently proposed. Confirmation of the size, volume and location of this additional 'surface water management SuDS basin' capacity will follow detailed design of the onshore substation and National Grid substation; following establishment of a catchment hydraulic model and final project parameters.

3.5.13 Public Rights of Way

142. The OLMP seek to deliver gains for public amenity by including enhanced access through PRow proposals.
143. There are three PRow (ID number: E-354/006/0, E-354/007/0 and E-260/017/0)) in the location of the onshore substation that will require permanent re-routing. This can be mitigated through implementation of landscaping to develop a number of PRow options (establishing a network) in the area surrounding the onshore substation. Users of the PRow network around the onshore substation

will be given the option of diverted routes, and therefore retain the option to walk around the area on longer, medium or shorter routes. The existing PRoW, and proposed diversions to these routes, is shown in **Figure 3**.

144. A short PRoW diversion, a medium PRoW diversion and a longer PRoW diversion are included in the proposals for the permanent diversion of PRoW ID number E-354/006/0.
145. A short diversion leading from the existing PRoW to connect to the PRoW to the west (E-260/017/0), is proposed for short walks, connecting people back into Friston for amenity walks associated with dog walking which is an important recreation and amenity asset for the village.
146. A longer diversion leading from the existing PRoW (E-354/006/0) is proposed to the east along a grass headland on the inside of the existing hedgerow offset from Grove Road. Beyond this the diverted PRoW turns northwards for a short distance (diverging from Grove Road) before turning east such that it tracks parallel to, but offset by approximately 20m from, Grove Road within an existing field and areas of new planting. Early planting to the south of the PRoW and a strip of early planting to north of the PRoW is intended to provide screening at this location, where the PRoW passes the onshore substation location.
147. The diverted PRoW then forms new/joins existing paths through Laurel Covert, tying into the track running east-west within Laurel Covert (which in itself will provide existing screening). The diverted PRoW will then extend the diversions across field edges north of Laurel Covert to Fareacres Farm, and west under the overhead lines to Little Moor Farm, where it connects to the existing PRoW to the north of the onshore substations near Fristonmoor.
148. This is seen as the optimum route to divert walkers away from construction works and the onshore substation and National Grid infrastructure; along a route that retains some of the open/rural experience and added diversity through new wooded sections to the route. **Figure 3** illustrates the routes of the proposed PRoW diversions.
149. The permanent diversion of PRoW ID number E-354/007/0 is to ensure PRoW users have the benefit of the existing hedgerows in the vicinity of the onshore substation in screening views of the onshore substation and National Grid infrastructure.
150. The permanent diversion of PRoW ID number E-260/017/0 is a realignment of the existing PRoW further west, in order to re-establish a historic field boundary / historic footpath.

151. The proposed permanent diversions will be in place prior to the existing PRow being stopped up. Any temporary diversions to be used during the construction phase will be agreed post-consent with the relevant highway authority.
152. Further details regarding the management of PRowS, including temporary management measures are detailed within the **Outline PRow Strategy** (REP3-024), secured under the requirements of the **draft DCO** (REP5-003).

3.5.14 Access Road

153. The OLMP seeks to enclose the onshore substation access road with hedgerow planting and core woodland in the vicinity of the National Grid substation SuDS basin in order to screen longer-term views of vehicles accessing and egressing the onshore substation site. The landscaping in the area around the bends of the access road must accommodate for any oversail of Abnormal Indivisible Load deliveries to the onshore substations. Refinements will continue to be made to the planting in these specific areas, details of which will form part of the final LMP prepared post-consent.

3.6 Woodland East and West of Aldeburgh Road

154. Where the reduced width onshore cable corridor crosses the woodland to the east and west of Aldeburgh Road, the Applicants will engage with the relevant planning authority post-consent to inform the micro-siting of the onshore cable route to avoid trees of particular importance where possible. At this location, the final LMP will set out the specific planting scheme to be adopted, including details on the planting extent and layout, species mix, management measures and objectives associated with the landscape planting in this area.
155. Any woodland reinstated at the Hundred River will be subject to a ten year management period and will also be subject to the adaptive management provisions set out in **Section 3.6** of this OLEMS.
156. The Applicant will continue to engage with the Councils through the Examination, and where common ground on the landscape planting proposals within the woodland east and west of Aldeburgh Road is reached, provide early details of the landscape design treatment at this location within a further update to this OLEMS.

4 Landscape Management Plan

4.1 Introduction

157. In accordance with the requirements of the draft DCO, prior to construction, a LMP for each phase of the works will be produced to include details of all proposed hard and soft landscaping works, including (but not limited to):
- Location, number, species, size and density of any proposed planting, including any trees.
 - Cultivation, importing of materials, protection, and weed control to ensure plant establishment.
 - Proposed finished heights, form and gradient of any potential earthworks.
 - Hard surfacing materials.
 - Details of existing trees and hedges to be retained with measures for their protection during the construction period.
 - Retained historic landscape features such as ditches, banks and hedgerows and proposals for restoration, where relevant.
 - Implementation timetables for all landscaping works.
 - Soil retention, handling and protection.
 - The provision of a scheme of sustainable drainage will be integrated into the details of landscaping works at the onshore substation and National Grid infrastructure.
 - Integration of relevant sections of substation design principles.
158. All landscaping works must be carried out in accordance with the LMP, unless otherwise agreed in writing by the relevant planning authorities, and to a reasonable standard in accordance with the relevant recommendations of appropriate British Standards or other recognised codes of good practice. The specific standards are to be agreed with the relevant planning authority.
159. A LMP will be developed for the onshore substation and National Grid infrastructure. The OLMP (**section 3**) has been taken into account in the assessment in the ES as part of embedded mitigation. Final details of the planting and earthworks for the project will be developed prior to construction, as part of the LMP Plan under the requirements of the draft DCO. These details will be agreed with the relevant planning authority. The LMP for the onshore substation and National Grid infrastructure may include:

- Drawings indicating cross-section with long cross-sections to include typical elevations of the onshore substation and National Grid substation. These drawings will also indicate proposed floor levels and proposed contours.
- A detailed scheme of tree and shrub planting and aftercare. This will include details of soil restoration and ground preparation, species choice, stock size, spacing, protection and a program of weed control and aftercare.
- A scheme of protection to demonstrate how new tree and hedge planting will be protected against deer, rabbits / hares etc. The detail will also indicate a variety of access gates within the detail for badgers or other creatures that may have, for instance, established routes through the restored areas.
- A process to deal with incidents of ash die back, where relevant to the onshore development area, including removal of diseased specimens and re-planting of replacement native species (non-ash species).
- Details of local provenance suppliers of plant material for inclusion within the specification.
- Details of the implementation and maintenance of landscaping, including management of trees, hedgerows and grassland in the longer term.

4.2 Outline Landscape Management Arrangements

160. The Applicant will prepare and implement a LMP based upon an adaptive planting management scheme for Work No. 24, Work No. 33 and for areas of tree and shrub planting by the Hundred River at Work No. 19 (dynamic aftercare). This is a landscape aftercare supervision structure that addresses the quality and annual growth of different blocks of tree and shrub planting, with monitoring against agreed objectives, with the option to suspend / extend the management periods for discrete areas of such planting (or zones) and target specific measures to improve such areas, in cases where the planting does not establish satisfactorily for any reason.
161. A management period of 10 years will apply to woodland planting within Work Nos. 19, 24 and 33 and the Applicants commit to replace failed trees and shrubs within Work No. 24 and No. 33 on a one-for-one basis within the first 10 years (or as otherwise agreed with the relevant planning authority in accordance with the adaptive management scheme).
162. Under the adaptive planting management scheme, the tree or shrub planting areas will be divided into specific zones as part of the LMP, according to their planting specification or condition. In the event that a particular zone is not making progress to the expected level of growth condition it will, for example, remain in Year 2 of aftercare with specific targeted horticultural remediation measures to improve its growth condition (such as watering, weeding around the

- base of plants, mulching, soil analysis to rectify nutrient deficiencies etc.), while other zones achieving suitable growth move to Year 3 of the aftercare programme.
163. The replacement tree or shrub planting provision within Requirement 15 of the **draft DCO** (REP5-003) will follow the adaptive management programme, allowing the ten-year management period to be 'paused' or 'accelerated' for particular zones as agreed with the relevant planning authority, potentially increasing the 10-year replacement tree and shrub planting period.
 164. The use of such an adaptive planting management scheme has been agreed between the Applicant and the Councils, informed by case studies in Suffolk, to ensure the application of best practice in the implementation and management of the landscape planting proposed in the LMP. The use of this adaptive management planting scheme is intended to de-risk the timely delivery of planting, achieve optimum levels of plant growth and condition and provide greater confidence that effective screening from the tree planted areas will be achieved before the end of the adaptive planting management period.
 165. The Applicant notes the importance of such an approach to adaptive management given the scale of the planting proposed. The Applicant considers that the proposed implementation of planting in phases, consisting of early planting and subsequent post-construction planting, lends itself to this adaptive management approach and the zoning of planting areas for implementation and subsequent management.
 166. The LMP will define the adaptive planting management scheme, which will provide the ability to pause the management period for discrete areas of the tree or shrub woodland planting and target specific management measures to improve the growth and condition of tree or shrub plants in such areas, through aftercare inspection reporting, if the required standard is not achieved.
 167. The Applicant notes the Councils concerns regarding the potential for dry spring / summer conditions in Suffolk to hamper plant establishment, particularly in the period immediately after planting, and will ensure that the final LMP includes provision for the implementation of adequate watering of newly planted tree or shrub and established trees during the aftercare management period.
 168. Beyond the 10-year management period, longer-term maintenance of the woodland tree or shrub mitigation planting within Work Nos. 19, 24 and 33 will be undertaken to ensure planting continues to function effectively. It is anticipated that such measures will include regular inspections (for signs of diseased trees, dangerous limbs or rot requiring removal) and potential thinning and / or ground flora management measures.

169. Before completion of the 10-year management period, the Applicant will consult with the relevant planning authority regarding the precise measures to be implemented during the longer-term maintenance period. The duration of the long-term maintenance period will last for the lifetime of the onshore substation and / or National Grid substation.



5 Arboriculture and Hedgerows

170. This section details the requirements for ecological mitigation measures that are reflective of the arboricultural / ecological surveys and respective impact assessments that have been carried out for the proposed East Anglia TWO project, as detailed in **Chapter 22 Onshore Ecology** of the ES (APP-070).
171. The existing environment for woodland habitat (as well as scrub) and hedgerows described throughout this section is informed by desk-based studies and field surveys detailed within the **Chapter 22 Onshore Ecology** of the ES (APP-070).

5.1 Embedded Mitigation

172. Embedding mitigation into the project design is a type of primary mitigation and is an inherent aspect of the EIA process.
173. Where embedded mitigation measures have been developed into the design of the proposed East Anglia TWO project with specific regard to ecological receptors referred to within **section 5** and **section 6**, these are described in **Table 5.1**. Embedded mitigation measures specific to certain ecological receptors are detailed further throughout **section 5** and **section 6** where appropriate. Embedded mitigation measures in relation to onshore ornithological receptors are covered in **section 7**.
174. Any further mitigation measures suggested within **section 5** and **section 6** are therefore considered to be additional. Additional mitigation measures may be adopted if they are identified during the EIA process specifically to reduce or avoid any predicted significant impacts.

Table 5.1 Embedded Mitigation Measures relevant to Habitat and non-Avian Species

Parameter	Mitigation Measures Embedded into the Project Design
General	
Site selection	The proposed East Anglia TWO project has undergone an extensive site selection process to date which has involved incorporating environmental considerations in collaboration with the engineering design requirements. For further details please refer to Chapter 4 Site Selection and Assessment of Alternatives .



Parameter	Mitigation Measures Embedded into the Project Design
General	
Designated sites	The route of the onshore cable corridor was influenced from the onset of the project design process by the location of designated sites, specifically The Sandlings SPA and component Leiston-Aldeburgh SSSI. The project design minimises the overlap of the onshore cable corridor with these designated sites, choosing a crossing at the narrowest point, within habitat where no records of ornithological target species were found. Where the onshore cable corridor crosses these designated sites, HDD or open cut crossing techniques may be employed. The Applicant will not undertake onshore cable route construction works to cross the Sandlings Special Protection Area (SPA) / Leiston – Aldeburgh Site of Special Scientific Interest (SSSI) within the SPA/SSSI boundary or within 200m of the SPA/SSSI boundary during the breeding bird season unless otherwise agreed with Natural England that bird breeding activities within 200m of the SPA/SSSI crossing works area have ceased. The timing of this seasonal restriction will be based on monitoring information provided by the Ecological Clerk of Work (likely to be mid-February to end of August). Open trench works associated with crossing the SPA (including works within 200m of the SPA boundary) will be undertaken within approximately three months of excavation works commencing (comprising approximately one month within the boundary of the SPA and approximately two months within 200m of the boundary of the SPA). HDD works associated with crossing the SPA (including the establishment and subsequent removal of HDD entry pit and exit pit working areas) will be undertaken over a two year period with works restricted to up to six months per year due to the seasonal restriction. Landscaping works such as hedgerow replanting may be undertaken outside these periods to ensure optimal planting conditions are achieved.
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 SSSI. The project has committed to the use of HDD (refer to Chapter 6 Project Description) at the landfall to minimise potential impacts to the cliffs, beach or intertidal area (and Leiston-Aldeburgh SSSI). Furthermore, the landfall HDD temporary working area is located inland from the SSSI. There will also be no requirement for access onto the beach at this location. Therefore, there will be no potential for any interaction with this SSSI site through the use of the HDD technique at the landfall.
Construction of onshore cable corridor	The onshore cables will be installed underground to minimise operational impacts to ecological receptors and landscape and visual impacts. Where appropriate, construction work areas would be accessed using existing tracks and road (to be developed as part of the Traffic Management Plan). Reinstatement of all temporary working areas to agreed specifications.



Parameter	Mitigation Measures Embedded into the Project Design
General	
Maintenance and operational measures	Suitable maintenance of any newly planted sections of hedgerow, shelterbelts and woodlands following construction would have an aftercare period of ten years. One for one replacement planting of failed plants would only be required for the first five years. Lighting sensitive to bats would be incorporated according to guidance in Bats and Artificial Lighting in the UK (Bat Conservation Trust (BCT) and Institute of Lighting Engineers (ILE) 2018).
Best practice	During all phases of the project, activities will adhere to current best practice guidelines, such as the Environmental Good Practice on Site Guide (fourth edition) by the Construction Industry Research and Information Association (CIRIA), 2015.

5.1.1 Ecological Mitigation Areas

175. The Application specifically makes provision for areas to be used for temporary and permanent ecological mitigation. As specified within the draft DCO (REP5-003), these are Work Nos. 14, 24, 28 and 29. Work No. 14 is specifically intended to mitigate the assessed impacts associated with habitat loss for onshore ornithological receptors and is discussed further in **section 5.2.1**.

5.1.1.1 Work No. 24

176. Work No. 24 is currently comprised of an area of existing arable land immediately adjacent to an area of mixed deciduous and coniferous woodland (as identified within the **Extended Phase 1 Habitat Survey** (APP-277)). It is proposed that a new area of mixed deciduous and coniferous woodland is planted within Work No. 24 to offset the section of mixed deciduous and coniferous woodland that will be removed within Works Nos. 20 and 21. The indicative core woodland species that will be planted within Work No. 24 are anticipated to comprise silver birch *Betula pendula*, oak *Quercus robur*, beech *Fagus sylvatica*, sycamore *Acer pseudoplatanus*, horse chestnut *Aesculus hippocastanum*, cherry *Prunus spp.*, Scots pine *Pinus sylvestris*, Corsican pine *Pinus nigra*, mixed ornamental conifers and evergreen oak *Quercus ilex*. Native edge woodland species including hawthorn, elder, hazel, dogwood and blackthorn will be integrated into the planting design to form a graduated woodland profile. The woodland edge is proposed to reflect the structure presented within **Plate 5.1**.
177. The precise species mix, composition and structure will be agreed with the relevant planning authority post-consent as part of the final LMP.

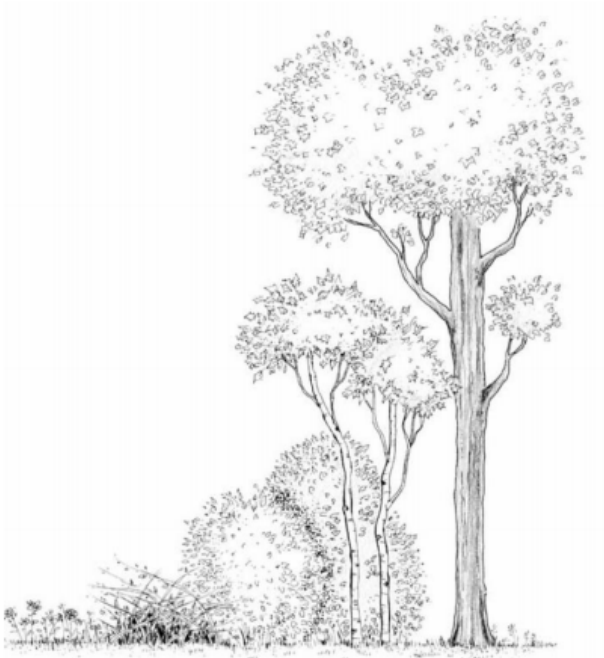


Plate 5.1 Profile of a graduated woodland edge (Blakesley and Buckley, 2010)

178. The area immediately west of Work No. 24 was assessed as providing opportunities for foraging / commuting bats as well as containing features (trees) which may provide suitable opportunities for roosting bats. The proposed woodland planting within Work No. 24 will therefore have secondary ecological benefits, particularly for foraging / commuting bats.

5.1.1.2 Work No. 28

179. This area comprising Work No. 28 is characterised by an existing area of woodland (along with the adjacent hedgerow and area of smaller woodland to the north), as per the ***Extended Phase 1 Habitat Survey*** (APP-277). No specific ecological mitigation works within Work No. 28 have been identified at this stage. However, the Applicants have included this area to provide flexibility to deliver ecological mitigation works should a requirement be identified through post-consent, preconstruction surveys.

180. Should a requirement be identified, the existing area of woodland in Work No. 28 may be protected, managed or enhanced for supporting ecological receptors such as bats (roosting and foraging / commuting) and / or badger. The existing woodland has already been identified to provide suitable habitat for these species. Details of the ecological mitigation to be implemented at this area will be set out within the final EMP.

5.1.1.3 Work No. 29

181. This area comprising Work No. 29 is characterised by an existing area of arable land adjacent to an area of mixed deciduous and coniferous woodland as recorded within the **Extended Phase 1 Habitat Survey** (APP-277). The area immediately north of Work No. 29 (the area of mixed deciduous and coniferous woodland) was assessed as providing opportunities for foraging / commuting bats as well as providing suitable habitat for roosting bats.
182. The area of existing arable land comprising Work No. 29 is identified for ecological mitigation although the precise nature of the mitigation to be implemented is unknown at this stage but will be confirmed on completion of the pre-construction surveys. The area could be a mix of grassland, scrub and scattered trees.
183. Any woodland planting proposed for this ecological mitigation area will have secondary ecological benefits, particularly for foraging / commuting bats. This area may also be used for additional ecological mitigation works that might be identified as a result of pre-construction surveys.
184. The indicative core woodland species that may be planted within Work No. 29 are anticipated to comprise silver birch, oak, beech, sycamore, horse chestnut, cherry, Scot's pine, Corsican pine, mixed ornamental conifers and evergreen oak. Native edge woodland species including hawthorn, elder, hazel, dogwood and blackthorn could be integrated into the planting design to form a graduated woodland profile. If woodland planting is required within Work No. 29, the structure of the woodland will reflect that presented within **Plate 5.1**.
185. The precise species mix, composition and structure of mitigation within Work No. 29 will be agreed with the relevant planning authority post-consent as part of the final LMP.

5.2 Woodland, Scrub and Trees

5.2.1 Baseline

186. Detailed baseline relating to Woodland, Scrub and Trees is provided in **Chapter 22 Onshore Ecology** of the ES, **sections 22.5.2.3-6**. In summary, semi-natural and plantation woodland are found in numerous locations along the onshore cable route, both are considered to be of medium importance.
187. Grove Wood, Buckle's Wood and Great Wood are valued at a county level. There is woodland within the Sandlings SPA and Leiston to Aldeburgh SSSI while other woodland is valued at a local level.



188. Scrub is present in parts of the onshore cable route and represent a range of habitat sub-types. Scattered trees are considered to be of high ecological value and are present throughout the onshore development area. Habitat information is included in **Appendix 22.3** of the ES (APP-503).

5.2.2 Embedded Mitigation

189. As part of embedded mitigation, the onshore infrastructure will avoid areas of woodland and scrub where practicable. As such, the assessment presented in **Chapter 22 Onshore Ecology** of the ES (APP-070) is based on an understanding of the areas where tree loss will be unavoidable, rather than assume that all woodland present within the onshore development area will be lost. The area of woodland that will be lost will be very low and at least an equivalent area of lost woodland will be replanted. However, there are two locations where woodland losses will be unavoidable, in proximity to Aldeburgh Road and Laurel Covert.
190. Where the onshore cable route interacts with the woodland to the east and west of Aldeburgh Road, the onshore cable route working width will be reduced from 32m to 16.1m (save for a 40m buffer from the Hundred River). Where East Anglia TWO and East Anglia ONE North are both consented and constructed³, the onshore cable route working width within the woodland to the east and west of Aldeburgh Road will be 27.1m (save for a 40m buffer from the Hundred River).

5.2.3 Additional Mitigation

5.2.3.1 Pre-construction Survey

191. A pre-construction walkover survey will be undertaken by the ACoW, ECoW and an engineer to assist in micro-siting of accesses, haul road and jointing bays along the onshore cable route to minimise woodland, tree and scrub loss. Any veteran trees present within the onshore development area will be identified during this survey as well as any tree with bat roost potential. The surveys and assessments will be undertaken pre-construction and by suitably qualified personnel to provide the works contractor with part of the baseline construction information. The surveys will show actual position of trees, their condition and value and indicate the extent of root protection zones and all features of bat roost potential. This survey can be conducted at any time of year.

³ As per the **Project Update Note** submitted at Deadline 2 (REP2-007) and Requirement 42 of the **draft DCO** (REP5-003), should both the East Anglia ONE North project and the East Anglia TWO project be consented and then built sequentially, when the first project goes into construction, the ducting for the second project will be installed along the whole of the onshore cable route in parallel with the installation of the onshore cables for the first project. This will include installing ducting using a trenchless technique at the landfall for both Projects at the same time.

192. The ACoW will work in line with the British Standard (BS) 5837,2012 – (Trees in relation to design, demolition and construction recommendations) to reduce the number of trees to be removed and to protect trees situated in or adjacent to the working width. The ACoW will produce an Arboricultural Method Statement (AMS) that will be provided as part of the EMP.
193. The AMS will detail the tree and hedge protection required at the onshore substation and at each hedge crossing along the onshore cable route, such as fencing or ground protection. This information will assist the contractor with the ACoW to micro site accesses, haul road and jointing bays and manage the storage of materials and movement of vehicles to provide optimum embedded mitigation against tree and hedge loss or damage.
194. The survey will also inform opportunities for replacement planting, and at least an equivalent area of lost woodland will be replanted following completion of the works (taking account that trees cannot be replanted directly above the buried cables) particularly through delivery of the OLMP.

5.2.3.2 During Construction

195. Mitigation measures will be identified once detailed design is completed and the exact nature of impacts is known. Examples of the types of mitigation measures that may be considered include:
 - Root protection areas to be fenced off during construction for trees in proximity to the works that area to be retained; and
 - Introduce biosecurity measures, including cleaning of vehicles, equipment and personnel upon leaving infected areas during construction, for example to minimise the spread of ash dieback.

5.2.3.3 Post-Construction

196. Following the construction phase of the proposed East Anglia TWO project, at least an equivalent area of woodland removed will be replanted particularly through delivery of the OLMP.
197. To avoid creating a wind tunnel effect at Aldeburgh Road, replacement planting in the form of woodland edge habitat will be undertaken, to allow future formation of primary, secondary and tertiary succession to ensure there is a sufficient amount of scrub, small trees/shrubs and woodland understorey as well as trees being replanted. This will ensure that woodland is not thinned too extensively and that there is enough vegetation to avoid the wind tunnel effect.
198. To ensure development to a satisfactory standard, there will be an agreed procedure for joint annual inspection of all planting areas by representatives of

the relevant planning authorities and the Applicant at the end of each growing season and for each year of the aftercare period. Areas found not to be thriving will be treated to such additional works as are required to rectify the situation within the next growing season, as agreed with the relevant planning authority.

5.3 Hedgerows

5.3.1 Baseline

199. Hedgerows are a UK Habitat of Principal Importance. Hedgerows are Priority Habitats in the UK Biodiversity Action Plan (UKBAP) and Suffolk Local Biodiversity Action Plan (LBAP).
200. Detailed baseline relating to Hedgerows is provided in **section 22.5.2.2 of Chapter 22 Onshore Ecology** of the ES (APP-070). A hedgerow schedule is provided as **Annex 1** to this OLEMS. The local hedgerow resource is of high importance although it should be noted that there are 67 hedgerows identified within the onshore development area that are assessed as important hedgerows in terms of ecological criteria (species rich and intact hedge; or hedgerows which have been recorded as having a high level of bat activity (usage)), or in terms of archaeological criteria (marks a boundary between parishes existing before 1850; or marks an archaeological feature of a site that is a scheduled monument or noted on the Historic Environment Record; or marks the boundary of a pre-1600 estate or manor or a field system pre-dating the Enclosure Acts).
201. The Applicant is seeking the rights to remove important hedgerows as per **Annex 1** and illustrated on the **Important Hedgerows and Tree Preservation Order Plan** (REP3-010). The construction of the proposed East Anglia TWO project is not seeking to fully remove all of these important hedgerows but is seeking rights to remove short sections of important hedgerows specified within Schedule 11 of the **draft DCO** (REP5-003). For the important hedgerows listed in Part 2 of Schedule 11 removal will be limited to 16.1m reflecting the reduced construction working width. Removal of short sections of some important hedgerows at the onshore substation location is necessary for landscape mitigation such as tree planting or strengthening of hedgerow sections. **Annex 1** provides details of the interaction between the onshore works and important hedgerows within the Order limits. At Deadline 6, **Annex 1** has been updated to align with Schedule 11 of the **draft DCO** (REP5-003). The Applicants confirm that, where important hedgerows south of the onshore substations do not overlap with the onshore cable route but have been identified for full or partial removal (namely important hedgerows 38-46), it is anticipated that only small sections of these hedgerows may require removal to facilitate the required works with the remaining hedgerow lengths retained as landscape mitigation in accordance with this **OLEMS**.

5.3.2 Embedded Mitigation

202. As part of embedded mitigation, hedgerow losses will be minimised where practicable. For instance, hedgerows that border the operational access road provide useful screening of the operational access road and will only require removal at their eastern extent to facilitate the overhead line diversion works.
203. Where the onshore cable route crosses an important hedgerow (as specified within the **draft DCO** (REP5-003), the onshore cable route will be reduced to 16.1m thus minimising the total length of hedgerow removed.

5.3.3 Additional Mitigation

5.3.3.1 Pre-construction

204. A pre-construction hedgerow survey will inform the production of an AMS. All hedgerows identified during the pre-construction survey will be recorded within the AMS, which will assign each hedgerow a unique crossing number, record the species composition of each hedge (including a pre-construction assessment of all trees within hedgerows), specify any special considerations (such as protected species), the proposed species replanting mix stated and reinstatement measures. This will apply to all hedgerows (i.e. those classified as important and those that are not). This will be undertaken in association with the Project's landscape architects and in consultation with the relevant stakeholders, prior to the commencement of construction work at each hedgerow crossing. The final AMS will form part of the final EMP to be submitted to and approved by the relevant planning authority in advance of commencement of the onshore works (in line with Requirement 21 of the **draft DCO** (REP5-003)).
205. A photographic survey will be incorporated as part of the AMS in order to confirm the hedgerow condition, bank/ditch profile and to inform reinstatement techniques. The replacement planting, as far as is reasonably practicable, will reflect the findings of these surveys.

5.3.3.2 During Construction

206. Mitigation measures will be identified once detailed design is completed and the exact nature of impacts is known. A mitigation plan will be produced and prior to the removal of hedgerows and included as part of the EMP, as secured under the relevant requirement of the DCO. Hedgerow root protection areas to be fenced off during construction, where relevant.
207. Where hedgerows provide habitat for protected species, specific mitigation measures relating to these requirements are provided in the relevant protected species section below.

5.3.3.3 Post Construction

208. Following the construction phase of the proposed East Anglia TWO project:

- Temporarily lost hedgerows will be reinstated post-construction. Replanting of hedgerows will take place in the first available planting season following construction and will aim to enhance baseline conditions where possible for example through improved species diversity.
- There will be improvements made to hedgerows immediately adjacent to the removed sections where possible.
- The replanting mix and pattern will be established on the basis of the pre-construction survey and AMS, in accordance with the Hedgerow Regulations, 1997. Replanting will use shrubs of the same species and in the same general proportions as existed pre-construction (native preferably of local origin). Improvement of hedgerows immediately adjacent to the replanted sections will be carried out where possible and where landowner agreement has been obtained.
- A detailed scheme of hedge planting aftercare will be provided, to be agreed with the relevant planning authority prior to reinstatement works commencing. This will include details of soil restoration and ground preparation, species choice, stock size, spacing and a program of weed control and aftercare.
- To aid establishment of replanted trees and shrubs, they will be protected by stock-proof fencing and either rabbit-proof fencing, deer-proof fencing or tree guards.
- To ensure development to a satisfactory standard, there will be an agreed procedure for joint annual inspection of all planting areas by representatives of the relevant planning authorities and developers at the end of each growing season and for each year of the aftercare period. Areas found not to be thriving will be treated to such additional works as are required to rectify the situation within the next growing season, as agreed with the relevant planning authority.

6 Other Habitats and Non-Avian Species

209. This section details the requirements for ecological mitigation measures that are reflective of the ecological surveys and impact assessment carried out for the proposed East Anglia TWO project, detailed in **Chapter 22 Onshore Ecology** of the ES (APP-070).

210. The existing environment for other habitats and non-avian species described throughout this section is informed by desk-based studies and field surveys detailed within the **Chapter 22 Onshore Ecology** of the ES (APP-070). A pre-construction walk over survey will be carried out to confirm the location and extent of the sensitive habitats identified within the ES (as well as identifying any changes in site conditions) and which are affected by the onshore infrastructure construction as determined by the final East Anglia TWO project design.
211. Onshore preparation works, including pre-construction surveys (for example engineering or archaeology surveys), will also be subject to relevant ecological surveys, mitigation and management. This will be detailed further within the final EMP produced post-consent, as secured under the requirements of the **draft DCO** (REP5-003).

6.1 Grasslands

6.1.1 Baseline

212. Only two types of grassland (improved and poor semi-improved grassland) are present throughout the onshore development area. Improved grassland is formed of short sward grasses with areas of scrub vegetation, whereas poor semi-improved grassland is comprised of coarse ruderal grass and herb species. Both habitat types are classes as receptors of low ecological value.
213. Detailed baseline relating to improved grassland and semi-improved grassland is provided in **section 22.5.2.7** and **section 22.5.2.8** of **Chapter 22 Onshore Ecology** of the ES (APP-070).

6.1.2 Embedded Mitigation

214. The proposed East Anglia TWO project has undergone an extensive site selection process, detailed in ES **Chapter 4 Site Selection and Assessment of Alternatives** (APP-052), to refine the potential construction footprint as far as practicable.
215. As all areas of grassland are considered to be of low ecological value in accordance with the criteria set out in **Table 22.9** of **Chapter 22 Onshore Ecology** of the ES (APP-070), further embedded mitigation is not required.

6.1.3 Additional Mitigation

216. Given the large extent of improved and semi-improved grassland surrounding the onshore development area, no additional mitigation measures are proposed.

6.2 Coastal Habitats

6.2.1 Baseline

- 217. Coastal vegetated shingle and coastal grassland have been identified along the coastline, at the eastern edge of the onshore development area.
- 218. Coastal vegetated shingle is a Habitat of Principal Importance (HPI) for Conservation in England and a UKBAP and Suffolk LBAP priority habitat. Coastal grassland is comprised of comprised of gorse, bracken and marram grass and considered to be of high importance.
- 219. Detailed baseline relating to coastal habitats is provided in **section 22.5.2.10** and **section 22.5.2.11** of **Chapter 22 Onshore Ecology** of the ES (APP-070).

6.2.2 Embedded Mitigation

- 220. The proposed East Anglia TWO project has committed to using HDD construction techniques at the landfall, which avoids any interaction with coastal habitats, i.e. no requirement for beach access. As such, coastal habitats will not be affected directly or indirectly by the proposed East Anglia TWO project.

6.2.3 Additional Mitigation

- 221. As there will be no interaction with coastal habitats as a result of the proposed East Anglia TWO project, no additional mitigation is required.

6.3 Watercourses and Ponds

6.3.1 Baseline

- 222. There are 11 standing water bodies within the onshore development area which are considered to be of high ecological value. Sections of the Hundred River and Friston Beck are within the onshore development area. The Hundred River is considered to be of high ecological value. Friston Beck is not considered further within this OLEMS as, it is not considered to be of ecological value.
- 223. Detailed baseline information relating to watercourses and ponds is provided in **section 22.5.2.9** of **Chapter 22 Onshore Ecology** of the ES (APP-070).

6.3.2 Embedded Mitigation

- 224. No standing water bodies are expected to be impacted as a result of the proposed East Anglia TWO project due to micro-siting of the onshore infrastructure to avoid known standing waterbodies.
- 225. Crossing of the Hundred River will use an open trench technique, whereby temporary dams (composed of sandbags, straw bales and ditching clay, or another suitable technique) will be installed upstream and downstream of the crossing point. The cable trench will then be excavated in the area of dry riverbed

between the dams, with river flow maintained through the use of a temporary pump, pipe or flume.

226. The alternative wet flume open cut technique involves equipment operating from either the banks or from flume pipes laid in the river to maintain flow and provide an equipment crossover from one bank to the other. After excavation of the trench, a section of ducting is placed into the trench.
227. The **Outline Watercourse Crossing Method Statement** (an updated version has been submitted at Deadline 6, document reference ExA.AS-5.D6.V2) contains further information on the construction techniques and associated mitigation.

6.3.3 Additional Mitigation

6.3.3.1 Pre-construction

228. A pre-construction walkover survey will be conducted to confirm the location, type and dimensions of water bodies, including their suitability for legally protected and notable species including (but not limited to) water voles, otters, fish, eel and invertebrates (see **section 6.10**).
229. Prior to construction of the onshore works, the Applicant will review the Water Framework Directive's (WFD) status objectives for the waterbodies identified within the pre-construction walkover, where relevant. Where a change in the WFD status objectives between the time of writing the ES and the time of construction are identified, the Applicant will review the conclusions of the ES and the proposed mitigation measures to determine whether they remain applicable.
230. Where the drainage scheme connects into a Main River, the Applicant will apply for a Flood Risk Activity Permit to the Environment Agency in advance of works in accordance with the Environmental Permitting (England and Wales) Regulations 2016.

6.3.3.2 During Construction

231. Mitigation measures for the crossing of watercourses will be set out within the final Watercourse Crossing Method Statement (which must accord with the **Outline Watercourse Crossing Method Statement** (an updated version has been submitted at Deadline 6, document reference ExA.AS-5.D6.V2)) and will be identified once detailed design is completed and the exact nature of impacts is known. The mitigation measures associated with the crossing of the Hundred River will include:

- The amount of time that temporary dams are in place on the Hundred River will be restricted to a reduced programme where possible, and flumes or pumps will be adequately sized to maintain flows downstream of the obstruction whilst minimising upstream impoundment. The area of water between the dams will be inspected for fish and other aquatic life. If there are pools where fish/eels may have gathered, works will stand down and an appropriate fish rescue plan will be executed, which may include electro fishing if necessary. Should any aquatic life be discovered, it will be relocated to the other side of the downstream dam. A fish rescue plan, which will set out the methods to be implemented, will be included within the final Watercourse Crossing Method Statement. Implementation of this plan will be overseen by a suitably qualified ecologist, where required;
- No vehicle crossing of the Hundred River is required, although a temporary bailey bridge (or similar) may be installed to facilitate use by the workforce on foot. The temporary bailey bridge (or similar) will be adequately sized to avoid impounding flows;
- Any aquatic vegetation removed during the process will be retained on the adjacent banks for 24 hours to allow the aquatic fauna to return to the water;
- Bank-side vegetation will be retained where practicable, with trees and shrubs coppiced rather than grubbed-out where practicable;
- Bank and bed material will be stored during construction to aid reinstatement;
- The timing of the works will be carefully selected, and periods of low flow would be chosen wherever practicable; and
- A range of embedded mitigation measures will be implemented to reduce the potential for an increase in the supply of fine sediment, including minimising the area of open ground at any one time where practicable by confining onshore cable installation activities to the defined four onshore cable route sections that will be operative for a short period only, storing and reinstating topsoil and using hardstanding in mobilisation areas.

6.3.3.3 Post Construction

232. Bed and bank habitats will be reinstated and where possible improved following the completion of the works. Bank and bed materials removed for construction will be stored separately and replaced in the reverse order in which they were removed, to promote the re-establishment of appropriate habitat.
233. Geotextile matting or other suitable means will be used, wherever necessary, to reinforce banks during reinstatement.

6.4 Arable Land

6.4.1 Baseline

234. The largest habitat by area within the onshore development area is arable land. All areas of arable land are considered to be of low ecological importance.
235. Detailed baseline information relating to arable land is provided in **section 22.5.2.1 of Chapter 22 Onshore Ecology** of the ES (APP-070).

6.4.2 Embedded Mitigation

236. The proposed East Anglia TWO project has undergone an extensive site selection process, detailed in ES **Chapter 4 Site Selection and Assessment of Alternatives** (APP-052), to refine the potential construction footprint as far as practicable.
237. As areas of arable land are considered to be of low ecological value in accordance with the criteria set out in **Table 22.9 of Chapter 22 Onshore Ecology** of the ES (APP-070), further embedded mitigation is not required.

6.4.3 Additional Mitigation

238. No additional mitigation is proposed.

6.5 Invasive Species

6.5.1 Baseline

239. Himalayan balsam is present along the Hundred River upstream of, but outside, the onshore development area. This is an invasive non-native species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). No other invasive non-native species were noted within the onshore development area through desk-based or field surveys.

6.5.2 Embedded Mitigation

240. No embedded mitigation measures for non-native invasive species have been incorporated into the project design.

6.5.3 Additional Mitigation

6.5.3.1 Pre-construction Survey

241. A pre-construction walkover survey will be undertaken to confirm whether invasive plant species have spread from current known locations. This will be undertaken between April and September and by suitably qualified ecologists.
242. A detailed Invasive Species Method Statement for dealing with invasive species will be prepared, and included within the EMP, focusing on preventing their spread. This will include for management of Himalayan balsam prior to the commencement of construction, including a plan showing the location of

identified invasive plant species. This protocol will be used if further stands were found during construction activities.

243. The invasive species method statement will include procedures for minimising the risk of spreading Himalayan Balsam (*Impatiens glandulifera*) (as this is the only invasive non-native species recorded within the vicinity of the Order limits (but outside the Order limits) to date). Specifically, regarding the Hundred River, the invasive species method statement will include measures to manage the risk of works to prevent the spread of invasive non-native species to other areas along the Hundred River and / or other watercourses. The invasive species method statement will form part of the final EMP that will be approved by the relevant planning authority.

6.5.3.2 During Construction

244. Best practice measures will be adhered to during construction to avoid the spread of non-native invasive species. Particular care will be taken when working in the vicinity of watercourses. This will include:
- Arrive at the site with clean footwear and vehicles;
 - Ensure footwear is clean (visually from soil and debris) before leaving the site;
 - Ensure vehicle is kept clean - in particular remove any accumulated mud before leaving the site;
 - Make use of facilities provided on the site to clean footwear/equipment;
 - Keep access to a minimum;
 - If practical do not take vehicles onto site, keep to established tracks and park vehicles on hard standing;
 - Where possible avoid areas of livestock and areas with known plant disease; and
 - Plan visits so that the highest risk visit is the last one of the day.
245. Any contaminated areas (if present) will be marked out.
246. Soil storage and handling will be carefully managed in accordance with the agreed Invasive Species Method Statement to avoid the spreading of invasive species.
247. Toolbox talks focussing on invasive species will be given to site staff and will include information on recognising invasive species. Briefing notes containing this information will also be available at the site offices.

248. If alien or invasive species were found on site, the ECoW shall be informed. The area will be demarcated, and appropriate signage installed until the appropriate action can be taken.

6.5.3.3 Post Construction

249. No post-construction mitigation measures are proposed.

6.6 Badgers

6.6.1 Baseline

250. Detailed baseline relating to Badger is provided in **section 22.5.3.2 of Chapter 22 Onshore Ecology** of the ES (APP-070). Five active badger setts are currently within the onshore development area, and as a worst case scenario it is assumed that all five would need to be destroyed, with loss of foraging habitat also occurring.
251. Badgers are protected under the Protection of Badgers Act 1992. Their ecological value is considered to be low.

6.6.2 Embedded Mitigation

252. The proposed East Anglia TWO project has undergone an extensive site selection process, detailed in ES **Chapter 4 Site Selection and Assessment of Alternatives** (APP-052), to refine the potential construction footprint as far as practicable. Impacts to potential badger habitat including woodland, hedgerow have been limited wherever possible.
253. Where possible, known setts will be avoided as detailed project design is progressed; however, as a worst-case scenario it is assumed that the setts recorded within the onshore development area to date will need to be destroyed (and will be done so under a Natural England badger mitigation licence). Furthermore, construction works will result in the temporary loss of arable and hedgerow foraging habitat. This is sub-optimal foraging habitat, but in the context of the available foraging resource surrounding the onshore development area, this is relatively small in scale.

6.6.3 Additional Mitigation

6.6.3.1 Pre-construction Survey

254. Badgers are a highly mobile species and can occupy their setts at different times over a number of years and seasons. A pre-construction walkover survey of the onshore development area will be undertaken (by a suitably qualified ecologist) in order to assess the status and current use of previously identified setts and identify any new setts excavated. Following this survey, consultation will be undertaken with Natural England detailing outline construction methods; this will enable the requirement for a badger mitigation licence to be determined.

6.6.3.2 Pre-construction Licencing

255. If following the pre-construction surveys, a disturbance licence is required, badgers will need to be excluded prior to works starting. A licence from Natural England to interfere with setts will be sought to undertake a controlled exclusion to ensure that no badgers remain in the sett at the time of construction. This will involve the use of one-way gates on the sett entrance and a monitoring period of at least three weeks. Once the sett is confirmed by a suitably qualified ecologist (assumed to be the named ecologist on the badger mitigation licence) as no longer being in use, works will then proceed.
256. Licences allowing works to proceed close to active badger setts, as works that would cause disturbance as defined by Natural England, will be acquired. Licences for disturbance or sett exclusion are normally only issued for the period 1st July – 30th November, and any deviation from this period will be discussed and agreed with Natural England in advance of submitting the licence application.

6.6.3.3 During Construction

257. Mitigation during construction, if required, will be detailed in the license application submitted to Natural England. This is likely to state that any excavations left open overnight will have a 'ramp' installed; a scaffold plank or similar will be suitable. This is to allow Badgers or other mammals a means to escape in the unlikely event they fall into any open jointing bays.
258. The toolbox talks given to site staff by the ECoW will include information on recognising signs of badgers and their setts. Briefing notes containing this information will also be available at the site offices.
259. A protection buffer zone of 30m will be demarcated around all active setts that had not been closed under a badger mitigation licence prior to construction (including appropriate noise, vibration and lighting minimisation such as directional task lighting to avoid lighting woodland or water's edge, low vibration plant, acoustic panels and, where possible, working outside of the buffer zone to ensure decreased impact upon badgers).
260. Precautionary methods of workings will be utilised to minimise harm to badgers, including:
- Chemicals will be stored as far away from the setts and badger paths as possible;
 - Trenches deeper than 1m must be covered at the end of each working day or include a means of escape for any animal falling in (badgers would continue to use established paths across a site even when construction work has started); and

- Any temporarily exposed open pipe system will be capped in such a way as to prevent badgers gaining access when contractors are off site.

261. If badgers or new setts are identified during construction, works will cease in the immediate area and the ECoW will be informed. The area will be demarcated, and a badger mitigation licence must be obtained from Natural England before works can proceed, if required.

262. The ECoW will monitor the area during construction for new badger setts.

6.6.3.4 Post Construction

263. Any setts subjected to a Natural England Licence, including those not directly affected by works, will be revisited by the ECoW (assumed to be named ecologist on the badger mitigation licence) when all works have been completed. The results of this visit will form part of the licence return reports. The survey timing will be subject to the licence return dates.

6.7 Bats

6.7.1 Baseline

264. Detailed baseline relating to Bats is provided in **section 22.5.3.3** of **Chapter 22 Onshore Ecology** of the ES. Bat are listed as a European Protected Species (EPS) in The Conservation (of Habitats and Species) Regulations 2017. Activity transect surveys have identified that the areas of woodland, hedgerows and areas of scrub (as well as other habitats) throughout the onshore development area also provide and support a diverse population of foraging/commuting bats within Suffolk. The 2018 activity transects show that there is a higher density of bats using the transect areas within the western area of the onshore development area. However, foraging/commuting bats were observed albeit in lower densities within the transect areas near to the coastline.

265. Hedgerows which have been recorded as having a high level of bat activity (usage) are considered to be important for bats. In addition, due to the rarity of the bat species, any hedgerow with at least one barbastelle pass will be considered as an 'important' hedgerow. The 2018 surveys indicate that transect area 3 and 4 recorded at least one barbastelle pass.

6.7.2 Embedded Mitigation

266. Loss of trees has been minimised through careful routeing of the onshore cable route. Onshore cable route refinement will avoid identified bat roosts where practicable.

- 267. Hedgerow losses will be minimised where practicable. Where the onshore cable route crosses an important hedgerow, the onshore cable route will be reduced to the minimal working width (16.1m where possible) thus minimising the total length of hedgerow removed.
- 268. Along the length of the onshore cable route, no 24-hour lighting is anticipated to be required except that associated with HDD operations and security lighting at the CCSs. Task lighting will be utilised in localised areas where required.
- 269. An Artificial Light Emissions Management Plan will be developed in line with the BCT Bats and Lighting in the UK guidance (2018) as required under the relevant requirement of the draft DCO and is summarised within the OCoCP.

6.7.3 Additional Mitigation

6.7.3.1 Pre-construction Survey

- 270. Further surveys for bat activity and bat roosts will be undertaken pre-construction of all features along the onshore development area that will be identified for removal to provide updated assessments of the commuting and/or roosting value of these routes. These will be undertaken by suitably qualified ecologists, at the appropriate time of year (i.e. between April and September) and in accordance with the most recent guidance (currently Bat Conservation Trust 2016). The information from all surveys will form the basis of a lighting strategy focused on minimising impacts during sensitive construction months. The strategy will be agreed with the relevant planning authority and construction implemented in line with the strategy.

6.7.3.2 During Construction

- 271. All temporary lighting will be designed in line with the BCT Bats and Lighting in the UK guidance (2018). This will include the use of directional lighting during construction.
- 272. Construction phase lighting will be limited to between 7am-7pm in low light conditions, with directional security lighting outside of these times, and dark corridors will remain in place during the construction phase.
- 273. Pre-cautionary methods will be used when removing trees that are confirmed as having low bat potential, but no presence (i.e. confirmed bat roosting site) observed (i.e. soft-felling).
- 274. Where sections of hedgerow are to be removed to facilitate laying of the onshore cables, the gaps between retained selected hedgerow sections will be infilled with hazel hurdles (as agreed with East Suffolk Council and Suffolk County Council) to maintain connectivity for commuting / foraging bats. Hazel hurdles will:

- Be installed immediately following the removal of selected hedgerow sections;
- Only be removed during construction activities associated with crossing the respective hedgerow (i.e. excavating, cable laying, use of haul road, backfilling);
- Be retained *in situ* outside of the agreed working hours where the crossing of a hedgerow spans more than one working day; and
- Be of similar height to the existing, retained hedgerow.

275. Location details of the measures (i.e. the specification and deployment of hazel hurdles) that will be implemented, including an implementation timetable, will be provided in the final EMP.

6.7.3.3 Post Construction

276. Where hedgerows are temporarily lost during construction, these will be replaced, and improvements will be made to adjacent sections of hedgerow within the Order limits where possible (with the agreement of landowners) for bats (i.e. improving species diversity specification). Replanting and restoration of hedgerows will occur as soon as is practicably possible.
277. The hazel hurdles will be used to infill the sections of removed hedgerow during construction and will remain in-situ following completion of all construction works at the hedgerow locations until such time that the replanted hedgerow has established to a sufficient height and density for foraging / commuting bats. The target height and density of replanted hedgerow will be agreed with the relevant planning authority and included within the final EMP.
278. Replacement habitat will be managed and maintained to ensure the bat population will persist and monitoring of the population will be undertaken to assess the success of any mitigation where possible.
279. Bat boxes will be considered within the onshore development area, where possible, and detailed further within the EMP that will be produced post-consent.
280. Further surveys for bats will be undertaken post-construction. This will include reinstated hedgerow sections. Three surveys will take place following the same methodology as the baseline surveys, these will take place in May, July and September and in years one, three and five post construction.

6.8 Great Crested Newts

6.8.1 Baseline

281. Detailed baseline relating to Great Crested Newt *Triturus cristatus* is provided in **section 22.5.3.5 of Chapter 22 Onshore Ecology** of the ES (APP-070). Presence of great crested newts has been confirmed within one pond within the onshore development area and up to 250m from its boundaries.
282. All ponds will be avoided during by onshore cable route (no ponds are present within the landfall or onshore substation locations), however temporary impacts to the surrounding terrestrial habitat could potentially occur.
283. Suitable terrestrial habitat for supporting foraging and hibernating great crested newts was observed throughout the onshore development area. Great crested newts are an EPS and a Suffolk LBPA priority species. As an EPS, great crested newts are considered to be of high importance.

6.8.2 Embedded Mitigation

284. As part of the project design, all known ponds have been avoided by the onshore cable route.

6.8.3 Additional Mitigation

6.8.3.1 Pre-construction Survey

285. All ponds within 250m of the proposed works will be surveyed for Great Crested Newts prior to construction. This is to ensure that the surveys meet Natural England's data requirements for informing a mitigation licence if required, which is typically between two – four years old. These surveys will be undertaken between March and mid-June in accordance with the latest guidance (of which the Great Crested Newt Mitigation Guidelines (English Nature, 2001) are current at the time of writing).

6.8.3.2 Further Pre-Construction Mitigation

286. Mitigation measures will be identified once the detailed design is completed and the exact nature of impacts is known. Onshore cable route refinement will be undertaken where practicable to avoid great crested newt terrestrial habitat.
287. An exclusion programme of newts will be undertaken under licence from Natural England. This will involve the installation of amphibian-proof fencing around the working width (e.g. junction bay compounds and haul roads) in all areas identified as great crested newt breeding ponds during the pre-construction survey and using pit-fall trapping and carpet tiles to catch and remove all great crested newts prior to construction. This will take place during suitable conditions in the newt active season March-October inclusive for a period of time appropriate to the population size.

288. Newts will be translocated to suitable habitat at least 50m away from construction works. These receptor sites will be identified during the preconstruction walkover survey and clearly marked on maps to enable landowner permission to be gained prior to works commencing. The amphibian fence will remain in place until the works were complete in that area and the ground was remade.

6.8.3.3 During Construction

289. Precautionary methods of working will be utilised during construction, including toolbox talks and supervision by the ECoW.
290. If any newts are found during works on other parts of the onshore cable route, then works will cease in the area and the ECoW will be called to site immediately to assess the situation and advise on a course of action. The decided course of action will be in accordance with licence requirements and agreements with Natural England.
291. Any other amphibians caught will be relocated outside the area of works and into suitable habitat by the ECoW.
292. The toolbox talks given to site staff by the ECoW will include information on recognising British amphibians. Briefing notes containing this information will also be available at the site offices together with copies of the licence.

6.8.3.4 Post Construction

293. Post construction monitoring will be implemented to monitor great crested newt populations. This will be undertaken in accordance with the Natural England Licence requirements which would typically be for two years post construction. The surveys will take place between April and June.

6.9 Reptiles

6.9.1 Baseline

294. Detailed baseline information relating to reptiles is provided in **section 22.5.3.6** of **Chapter 22 Onshore Ecology** of the ES (APP-070). Suitable habitat for supporting common reptile species have been identified at seven locations along the onshore cable route and in the onshore development area.
295. No further reptile surveys will be undertaken as habitats recorded have been assessed as not being of a suitable size to support significant reptile populations, however appropriate mitigation measures (i.e. habitat manipulation works) to ensure compliance with the legislation afforded to reptiles will be developed and adhered to during construction related activities where required. These mitigation measures will be contained within a reptile Precautionary Method Statement (PMoW) and will be supervised by a suitable qualified ecologist. All reptile

species are protected under the Wildlife and Countryside Act 1981 (as amended). As a nationally important species which is rare in the region, reptiles are considered to be of medium importance.

6.9.1 Embedded Mitigation

296. Habitat such as field boundaries, including hedgerows, can act as wildlife corridors for reptiles. Where works will not cross hedgerows or watercourse, a buffer against field boundaries from construction activities will be in place to reduce the potential risk of affecting reptiles along the onshore cable route.

6.9.2 Additional Mitigation

6.9.2.1 Pre-construction Survey

297. Although no preconstruction survey for reptiles will be undertaken, a pre-construction survey of the entire onshore development area, including the habitats within the seven locations previously recorded, will be undertaken to ensure the habitats remain as previously recorded. Should any changes to the habitats along the onshore development area (including these seven locations) be identified, the adherence to the PMoW will be reviewed and updated accordingly to ensure legal protection afforded to reptiles continues to be adhered to.

6.9.2.2 During Construction

298. In the event a reptile is found during construction works work will stop in the immediate area and the ECoW will undertake a hand search of the area where the reptile was found. If any reptiles were caught, they will be translocated by the ECoW. The ECoW will supervise the recommencement of construction.
299. Mitigation measures will be identified once detailed design is completed and the exact nature of impacts is known. Examples of the types of mitigation measures that may be considered include precautionary methods of working during construction, including toolbox talks, habitat manipulation and ecological supervision of works will be required.

6.10 Other Notable Species

6.10.1 Baseline

300. Detailed baseline information relating to otter and water vole is provided in **section 22.5.3.4 of Chapter 22 Onshore Ecology** of the ES (APP-070). A total of 23 standing water bodies (such as ponds and standing water in ditches) and one ecologically suitable river (the Hundred River) were identified as potentially providing suitable habitat for water vole and/or otter. Of these 23 water bodies, six were assessed as optimal water vole habitat and the remaining 17 water bodies were assessed as sub-optimal water vole habitat. Of the 23 water bodies,

only one (The Hundred River) water body was assessed as being suitable to support otter.

301. No evidence of otter or water vole was recorded during the surveys undertaken to date. Should the presence of otter or water vole be confirmed during pre-construction surveys (see **section 6.10.3**), the final EMP prepared post-consent will include a description of the baseline conditions in respect of these species.
302. Should presence of eel and fish be confirmed during pre-construction surveys (see **section 6.10.3**), the final EMP prepared post-consent will include a description of the baseline conditions in respect of these species.

6.10.2 Embedded Mitigation

303. As stated within the Outline Watercourse Crossing Method Statement, the following embedded mitigation with respect to crossing works at the Hundred River would be implemented:
- The watercourse will be dammed upstream and downstream of the crossing to create a dry area where the onshore cables cross the Hundred River. Water will then be diverted from where it has been impounded upstream and discharged downstream of the crossing area, via flumes or pumps. The precise method of impoundment and diversion will be decided post-consent and set out within the final Watercourse Crossing Method Statement.
 - Periods of low flow would be chosen to undertake the crossing works wherever practicable.
 - The flow rate downstream of the Hundred River crossing will be the same as the flow rate upstream during typical meteorological conditions; and
 - Ensure that there is sufficient capacity within the channel and the floodplain to maintain flows during a flood event.
 - Where migrating eel and / or fish species are recorded, provision will be made for the upstream / downstream migration of eels or fish (e.g. fish pass) using the Hundred River across the site of the crossing.

6.10.3 Additional Mitigation

6.10.3.1 Pre-construction

304. Pre-construction surveys for invertebrates (including Hairy dragonfly) will be undertaken within suitable habitats identified within the onshore development area during the pre-construction walkover undertaken to ascertain the suitability to support such species. The pre-construction survey results will be used to inform species-specific ecological mitigation measures (including any licence requirements), which will be included within the final EMP prepared post-consent

to discharge Requirement 21 of the **draft DCO** (REP5-003). Copies of all pre-construction survey reports will be appended to the final EMP. Results of these surveys will also inform the mitigation measures (if required) included within the final Watercourse Crossing Method Statement.

305. Pre-construction surveys for fish, eel, otter, water vole and invertebrates (including Hairy dragonfly) will be undertaken at the Hundred River and in accordance with relevant industry guidance. The extent of the survey area for fish, eel and water vole will extend 100m upstream and downstream of the Order limits at the Hundred River crossing along the course of the river. For otter, the extent of the survey area will extend 500m from the Order limits at the Hundred River crossing along the course of the river. For invertebrates, the study area will comprise the area of the Hundred River crossing only.
306. The Applicants will consult with the Environment Agency on the scope of these surveys (insofar as they fall within the Environment Agency's remit) prior to mobilising the survey team and surveys being undertaken.

6.10.3.2 During construction

307. The requirement for construction phase mitigation to be implemented will be informed by the pre-construction surveys and set out within the final EMP prepared post-consent.

6.10.3.3 Post-construction

308. The requirement for post-construction monitoring will be informed by the pre-construction surveys and set out within the final EMP prepared post-consent.



7 Ornithology

7.1 Baseline

7.1.1 General Breeding Birds

309. Detailed baseline relating to breeding birds is provided in **Chapter 23 Onshore Ornithology** and **Appendix 23.1** of the ES (APP-508). Key legislation relating to the protection of breeding birds, their eggs, nests and young, is the Wildlife and Countryside Act 1981.

7.1.1.1 Description of Study Areas

310. The onshore ornithology study area is based on the onshore development area, which includes the landfall, onshore cable corridor, onshore substation and national grid infrastructure. Based on scientific evidence and professional judgement, a 400m buffer has also been included around the onshore development area, which is considered to be the uppermost spatial extent of potential disturbance-displacement impacts associated with any ornithological receptor assessed in this ES chapter. The actual extent of potential impacts is likely to be species-specific, with some species having smaller extents of potential impact than 400m from source. The study areas for specific onshore ornithological receptors are provided in **Table 7.1**.

Table 7.1 Study Areas for Different Onshore Ornithological Receptors

Data/Survey	Study Area
Statutory designated sites	Designated sites that are located within, and up to 10km from, the onshore ornithology study area. This buffer is to take into consideration the maximum extent of foraging range for any SSSI species present within the onshore development area
Biological Records	Within 2km of the onshore ornithology study area
Onshore ornithology study area	Within and up to 400m of the onshore development area

7.1.2 Sandlings SPA/ Leiston-Aldeburgh SSSI Breeding Birds

7.1.2.1 Nightjar

311. As a qualifying interest of the Sandlings SPA, and a Schedule 1 species, nightjar is classified as being of High Nature Conservation Importance.
312. Nightjars breed on dry lowland heaths in England although can also breed in open woodland with bracken, and clearings in conifer plantation. Suitable habitat within the onshore ornithology study area was limited to the Sandlings SPA, and a total of six territories were recorded within the SPA (outside of the onshore development area) in 2018.

313. The closest territory centre in 2018 was located approximately 650m from the landfall area, with two territories within 200m of the onshore cable corridor section of the onshore development area. The onshore substation and National Grid infrastructure are not in an area suitable for nightjar, and over 3km from the nearest recorded territory.
314. No nightjar were identified within the area within the SPA crossing by surveys undertaken during 2018 and 2019 by the Applicant (APP-287 and APP-299) or from Royal Society for the Protection of Birds (RSPB) observations (APP-294).

7.1.2.2 Woodlark

315. As a qualifying interest of the Sandlings SPA, and a Schedule 1 species, woodlark is classified as being of High Nature Conservation Importance.
316. Woodlarks may breed on heaths, scrubland, neglected farmland and golf courses, avoiding areas of intensive agriculture. The distribution of woodlark territories recorded during baseline surveys in 2018 reflected these habitat preferences, with all observations occurring within heath or scrub habitats, mainly within the SPA. The large majority of the onshore development area comprises intensive agricultural habitats, with only small areas of scrub and semi-improved grassland where it overlaps with the northernmost part of the SPA, and to a lesser extent in patches south of Aldringham.
317. The closest woodlark territory in 2017 and 2018 was over 300m from the landfall area but was in close proximity to the onshore cable corridor. The onshore substation and National Grid infrastructure are not within an area of suitable habitat for woodlark, and over 2km from the nearest recorded territory.
318. No woodlark were identified within the area within the SPA crossing by surveys undertaken during 2018 and 2019 by the Applicant (APP-286 and APP-299) or from RSPB observations (APP-293)

7.1.2.3 Turtle Dove

319. As a named component of the Leiston-Aldeburgh SSSI, turtle dove is classified as being of High Nature Conservation Importance.
320. Turtle doves nest in mature hedgerows, tall scrub and woodland edges, often close to freshwater, feeding in weedy arable fields. Up to ten turtle dove territories were occupied within the onshore ornithology study area in 2018, mainly within the northern part of the Sandlings SPA and adjacent farmland, in proximity to the onshore development area. The species was also present in the Aldringham area, but there were no records west of Knodishall Common. The onshore substation and National Grid infrastructure are not within an area of

suitable habitat for turtle dove, and around 1.6km from the nearest recorded territory.

7.1.2.4 Nightingale

321. As a named component of the Leiston-Aldeburgh SSSI, nightingale is classified as being of High Nature Conservation Importance.
322. Nightingales occupy a range of habitats, but prefer scrub and woodland thickets, often in the vicinity of water. Scrubby field margins coupled with an adjacent belt of rank grass and ruderal vegetation provide thick cover that nightingales require for foraging. Approximately seven territories were located within the onshore ornithology study area in 2018. Five of these were at the edges of the Sandlings SPA, outside of the onshore development area, with a further two in scrub habitats within the onshore development area at the landfall location. The species was absent to the west of Aldringham and as such, the onshore substation and National Grid infrastructure are not within an area of suitable habitat for nightingale.

7.1.2.5 Marsh Harrier

323. As a named feature of the Leiston-Aldeburgh SSSI, and other designated sites within 10km, marsh harrier is classified as being of High Nature Conservation Importance
324. Marsh harriers generally occur near freshwater or brackish marshes and swamps, with extensive areas of dense reeds and rushes. In more recent times the species has shown an adaptation to nest and forage on arable farmland.
325. No marsh harrier nest sites were confirmed within the onshore ornithology study area. However, it is likely that around 2-3 pairs made use of the area in 2018, with activity largely confined to The Fens area of the Sandlings SPA where suitable reedbed habitat exists. No breeding activity is likely to take place west of Aldringham where the habitat is generally less suitable for the species.

7.1.3 Schedule 1 Breeding Birds

7.1.3.1 Cetti's Warbler

326. As a Schedule 1 breeding species, Cetti's warbler is classified as being of Medium Nature Conservation Importance.
327. Cetti's warblers breed in thick vegetation including reedbed margins, willow carr, willowherb and nettles, usually in proximity to water or marshy land. The distribution of the species within the study area in 2018 reflected these preferences, with four of five territories located within The Fens, with a single

territory within scrubby habitat at the edge of the Leiston-Aldeburgh SSSI, within the landfall area.

328. No Cetti's warbler territories were recorded within the onshore substation and National Grid infrastructure areas or the onshore cable corridor section of the onshore development area, with habitat generally unsuitable for the species.

7.1.3.2 Barn Owl

329. As a Schedule 1 breeding species, barn owl is classified as being of Medium Nature Conservation Importance.
330. One occupied barn owl nest box was recorded within proximity to the onshore substation and National Grid infrastructure areas in 2018, which will be located in an area of agricultural land that is potentially suitable for barn owl foraging.

7.1.3.3 Dartford Warbler

331. As a Schedule 1 breeding species, Dartford warbler is classified as being of Medium Nature Conservation Importance
332. Dartford warblers are found in heathland with gorse scrub and scattered trees. These habitats within the study area are generally restricted to the Sandlings SPA. The closest territory to the landfall area in 2018 was over 600m away. Approximately four Dartford warbler territories were recorded in 2018, three within the SPA, although a recently fledged family group was recorded to the north of the SPA within 100m of the onshore development area.
333. No Dartford warbler territories were recorded within the onshore substation and National Grid infrastructure areas, with habitat generally unsuitable for the species.

7.1.3.4 Marsh Warbler

334. As a Schedule 1 breeding species found in very low numbers in the UK, marsh warbler is classified as being of High Nature Conservation Importance.
335. Marsh warblers are found in areas of dense vegetation with taller bushes nearby. During baseline surveys, there was one record of a singing male within an area of suitable scrubby breeding habitat at the edge of the Leiston-Aldeburgh SSSI and within the landfall area, which is considered to represent a possible territory. No further breeding evidence was recorded at this location.
336. No marsh warbler territories were recorded within the remainder of the onshore development area, or onshore substation and National Grid infrastructure areas, with habitat generally unsuitable for the species.



7.1.3.5 Yellow Wagtail

337. Yellow wagtail is Red-listed, and the species has been in rapid decline since the early 1980s, with notable range contractions in East Anglia. Britain holds almost the entire world population of the *flavissima* race, so population changes in the UK are of global conservation significance. It breeds in a variety of habitats in the UK, including arable farmland, wet pastures and upland hay meadows.
338. A total of 2-3 pairs were likely to have bred within the onshore ornithology study area in 2018, with records on farmland on the northern edge of the Sandlings SPA in proximity to the onshore development area. No yellow wagtail territories were recorded within the onshore substation and National Grid infrastructure areas within the onshore development area, although habitat may be suitable for the species.

7.1.4 Other Schedule 1 Bird Species

339. No other Schedule 1 bird species were confirmed as breeding within potential disturbance range from the onshore development area, based on the surveys carried out in 2018 (note that Bewick's swan was recorded in the winter period, and the species would most likely be absent during the breeding season). As a result, no further detailed mitigation proposals are provided at this stage. The pre-construction surveys detailed below provide the opportunity to establish whether any other Schedule 1 bird species have become established as breeding species along or adjacent to the proposed cable route. Should the presence of additional Schedule 1 species be confirmed during the pre-construction surveys, further targeted mitigation will be proposed and agreed with the relevant planning authority.

7.2 Embedded Mitigation

340. Embedded mitigation measures are provided in **Table 7.2** below. The embedded mitigation measures relate to all bird species listed in **section 7.1**.

Table 7.2 Embedded Mitigation Relating to Onshore Ornithology

Parameter	Mitigation Measures Embedded into the Project Design
General	
Onshore development area	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 target species' nest sites, and distribution of suitable habitat for target species. The onshore development area has also been designed to reduce interaction within a 200m buffer of the SPA where possible. This is in order to achieve a suitable distance between the designated site and construction works associated



Parameter	Mitigation Measures Embedded into the Project Design
General	
	with the proposed East Anglia TWO project to minimise disturbance to sensitive ornithological receptors. For further details please refer to Chapter 4 Site Selection and Assessment of Alternatives.
Construction disturbance	A final Code of Construction Practice (CoCP) will be developed for the construction activities and will adhere to construction industry good practice guidance, as secured under the requirements of the draft DCO. This will incorporate a Breeding Bird Protection Plan (BBPP) which will ensure that the nests, eggs and young of any bird species are protected. Detail with regard to mitigation measures and the content of the BBPP is given in the Outline Landscape and Ecological Management Strategy (OLEMS) submitted with this DCO application, as secured under the requirements of the draft DCO.
Habitat reinstatement	Following reinstatement of soil and subsoil, final restoration would commence where possible. Pasture and arable land would be reseeded, fences would be reinstated, and suitable hedgerow species replanted. Hedges and any replacement planting would be carried out during the first appropriate planting season following site restoration. In ecologically sensitive areas special restoration may be necessary. Detail is given in the OLEMS submitted with this DCO application, as secured under the requirements of the draft DCO
Landfall	
Designated Sites	The landfall location was influenced from the onset of the project design process by the presence of designated sites, specifically the Leiston-Aldeburgh SSSI. The project has committed to the use of HDD (refer to Chapter 6 Project Description) at the landfall to avoid direct habitat loss within the Leiston-Aldeburgh SSSI at the landfall location and reduce risks of disturbance to qualifying features using this part of the SSSI. The final landfall construction methodology will be detailed within the Landfall Construction Method Statement produced post-consent to discharge the requirements of the DCO.
Onshore Cable Corridor	
Designated Sites	The route of the onshore cable corridor was influenced from the onset of the project design process by the location of designated sites, specifically The Sandlings SPA and component Leiston-Aldeburgh SSSI. The project design minimises the overlap of the onshore cable corridor with these designated sites, choosing a crossing at the narrowest point. The crossing point of the Sandlings SPA was further chosen as, at the time of writing the ES, it was being used as a horse paddock and not considered optimal habitat compared to the wider Sandlings SPA which is avoided. Where the onshore cable corridor crosses these designated sites, an open cut crossing technique is the preferred crossing methodology. No construction works associated with the SPA crossing (using an open trench technique) will be undertaken within the SPA or within 200m of the SPA crossing during the nightjar and woodlark breeding bird season (1st February to 31st August) unless otherwise agreed with the relevant planning authority in



Parameter	Mitigation Measures Embedded into the Project Design
General	
	consultation with the relevant statutory nature conservation body. Where entry or exit pits are located outside 200m from the SPA crossing, there will be no disturbance of species within the SPA crossing, and a sufficient buffer of 200m will exist between the SPA boundary and the works, therefore no seasonal restriction will apply. Where entry or exit pits are located within 200m of the SPA crossing, no construction works associated with the SPA crossing will be undertaken within 200m of the SPA crossing during the nightjar and woodlark breeding bird season (14th February to 31st August) unless otherwise agreed with the relevant planning authority in consultation with the relevant statutory nature conservation body. Open trench works associated with crossing the SPA (including associated crossing works within 200m of the SPA boundary) are anticipated to be undertaken within a single non-breeding bird season (i.e. five months from September to January inclusive). Where entry or exit pits are located within 200m of the SPA crossing, trenchless works associated with crossing the SPA (including the establishment and subsequent removal of associated entry and exit pit working areas) will last 11-months and be undertaken over two consecutive non-breeding seasons. Where entry or exit pits are located outside 200m from the SPA crossing, trenchless works associated with crossing the SPA will be undertaken in 11 consecutive months. Landscaping works such as hedgerow replanting may be undertaken outside these periods to ensure optimal planting conditions are achieved.
National Grid Substation and Onshore Substation	
Habitat loss	The potential loss of woodland habitat for birds was identified early in the project design process, and therefore the locations of substations are positioned so as to minimise woodland removal, in an area of arable farmland, which is of lower conservation value for target species.

341. As set out in **section 5.1.1**, the Application specifically makes provision for areas to be used for temporary and permanent ecological mitigation. Work No. 14 is specifically aimed at offsetting the loss of habitat used by ornithological receptors and is discussed further below.

7.2.1 Work No. 14

342. The area comprising Work No. 14 has been identified as ecological mitigation land for turtle dove, to mitigate potential impacts upon this species during the construction of the onshore cable route through the Sandlings SPA. Specific details of the mitigation to be implemented will be included within the final SPA Crossing Method Statement, which must be approved by the relevant planning authority in consultation with the relevant statutory nature conservation body in accordance with Requirement 21 of the **draft DCO** (REP5-003). An **Outline SPA Crossing Method Statement** (an updated version has been submitted at Deadline 6, document reference ExA.AS-3.D6.V2) sets out the proposed

mitigation measures in relation to turtle dove to be implemented within Work No. 14.

343. Mitigation within Works No. 14 will be temporary, implemented throughout the construction and reinstatement period of part of the onshore cable route (anticipated, based on historic ornithological records, to be between the landfall and Snape Road). Temporary ecological mitigation to be implemented will comprise:
- Pre-construction sowing of turtle dove seed mix – to be sown on suitably prepared ground between 1st August and 15th October in the calendar year prior to the commencement of construction of works between the landfall and Snape Road;
 - Supplementary feeding during the construction of works between the landfall and Snape Road;
 - Protection and management of existing established hedgerows during the construction of works between the landfall and Snape Road; and
 - Weed control measures including:
 - o Limited cutting / topping of the area annually between 15th June and 7th July during the construction of works between the landfall and Snape Road; and
 - o Cutting or scarifying of the area to approximately 10-15cm on a rotational basis between 1st and 30th September during the construction of works between the landfall and Snape Road.
344. Further details on the turtle dove mitigation at Works No. 14 is provided within the **Outline SPA Crossing Method Statement** (document reference ExA.AS-3.D6.V2).
345. The spatial extent of, and associated area within, Works No. 14 to be used for turtle dove will be agreed with the relevant planning authority in consultation with Natural England and confirmed within the final SPA Crossing Method Statement post-consent. Should further specific ecological mitigation works be identified post-consent as a result of pre-construction surveys, the relevant planning authority will be consulted, and the final SPA Crossing Method Statement updated to reflect such changes.
346. Following completion of construction of the relevant part of the onshore cable route Work No. 14 will be retained for at least one fully breeding season, after which it will be returned to agricultural use.

7.3 Additional Mitigation

7.3.1 Pre-construction

347. Measures will be undertaken to minimise the likelihood of disturbance injury or mortality of breeding birds, their nests, eggs and chicks. Wherever possible, vegetation which will be directly impacted by construction and that could be used by nesting birds will be removed outside of the mid-February to August (inclusive) bird nesting season (particularly sections of hedgerow, scrub, tree lines and woodland) although good practice would be to remove any vegetation outside of February to September to avoid early or late breeding attempts.
348. At locations where scrub, tree or woodland removal during the breeding season is unavoidable, surveys will be undertaken immediately prior to habitat removal to confirm that there are no occupied nests.
349. If complete removal of the trees, scrub and vegetation is not feasible, then they will be heavily pruned to reduce the amount of nesting cover for breeding birds where compliant with other mitigation measures. Pruning shall occur prior to the bird-nesting season.
350. Should any occupied nests be identified an appropriate buffer zone (determined on the basis of the species concerned and the location of the nest in the context of the surrounding vegetation, but no less than 5 m) will be retained until it can be ascertained that the chicks have fledged.
351. Pre-construction surveys will be targeted at Schedule 1 breeding species, due to the additional legal requirement of avoiding disturbance to breeding birds on or near a nest.

7.3.2 Construction

352. If an active nest is identified during the works, it must be protected until the young have fledged, or breeding activity has otherwise ceased. Works in the area will be halted and a suitably qualified ecologist or ECoW will be contacted to advise on appropriate mitigation. This will involve retaining a buffer zone around the nest of 5-25m dependent on the species involved (Schedule 1 species would need a separate plan due to greater potential range of disturbance distances) and the location of the nest. Although general ranges of exclusion can be determined for species types, for example, a ground nesting species would require a greater exclusion due to having less cover, it is not possible to give specific distances per species, as this is site-specific, e.g. dependent on the level of visual screening around the nest.
353. As detailed within the **Outline SPA Crossing Method Statement** (document reference ExA.AS-3.D6.V2), no construction works associated with the SPA crossing (using an open trench technique) will be undertaken within the SPA or

within 200m of the SPA crossing during the nightjar and woodlark breeding bird season (1st February to 31st August) unless otherwise agreed with the relevant planning authority in consultation with the relevant statutory nature conservation body. Where a trenchless SPA crossing technique with a requirement for entry or exit pits within 200m of the SPA crossing is used, a seasonal restriction of the works associated with the SPA crossing will apply between 14th February to 31st August.

354. When undertaking construction works (excluding personnel and vehicle use of haul roads) within 200m of the SPA crossing during the breeding bird season (generally mid-February to August, inclusive) the following examples of mitigation measures may be employed:

- For works inside or within 200m of the SPA and SSSI boundary, the BBPP will highlight the risks to breeding birds and detail measures to ensure the protection of their nests;
- Pre-construction bird surveys will be undertaken to establish the presence of breeding birds;
- Measures will be adopted to minimise noise, light and disturbance on identified breeding birds, such as visual screening (e.g. opaque fencing) where necessary;
- Construction activities will be monitored by an ECoW or suitably qualified ornithologist, who will seek to ensure compliance with the Wildlife and Countryside Act 1981 by avoiding destruction of nests, eggs or young, and affording increased protection from disturbance to Schedule 1 species breeding birds; and
- Where breeding bird activity within the SPA is recorded within 200m of construction works, such construction works will be halted immediately until a disturbance risk assessment is undertaken by a suitably qualified ecologist. The risk assessment will consider the nature of construction activity, likelihood of disturbance, and possible implications of the construction activities on the breeding attempt and set out measures to ensure that no disturbance occurs. Where it is determined that breeding birds are not likely to be affected, construction works will continue. Where it is determined that breeding birds may be affected, additional mitigation works will be implemented to prevent disturbance. Where, in the opinion of the suitably qualified ecologist, disturbance cannot be avoided by mitigation, construction works within the area of disturbance will be suspended until chicks have fledged.

7.3.3 Post-Construction

355. On completion of construction, the land within the landfall and onshore cable route will be reinstated and farmland returned to agricultural practice. Areas associated with the SPA crossing must be reinstated in accordance with provisions in the **Outline SPA Crossing Method Statement** (document reference ExA.AS-3.D6.V2).

7.3.4 Targeted Management

356. This section details additional mitigation proposed as relevant to the species listed below.

7.3.4.1 Turtle Dove

357. Specific turtle dove mitigation has been identified within the **Outline SPA Crossing Method Statement** (an updated version has been submitted at Deadline 6, document reference ExA.AS-3.D6.V2) where an open trench or trenchless technique is used to cross the Sandlings SPA. Regardless of the SPA crossing technique used, Work No. 14 will be managed with the aim of providing optimal habitat for turtle dove (see **section 7.2.1**). This will involve sowing turtle dove seed mix to create optimal feeding habitat throughout the construction phase in proximity to recorded turtle dove territories. This supplementary feeding area has in recent years been used for arable and pig farming, and based on advice provided by Operation Turtle Dove initiative [<https://www.operationturtledove.org>], is located within 300m of previously recorded turtle dove territories, in an open location adjacent to field boundaries, and also in proximity to water (the agricultural reservoir). It will comprise a strip of land measuring a minimum 50m long by 5m wide, or similar.
358. Seed mix will be sown on suitably prepared ground between 1st August and 15th October (with sowing of the seed mix undertaken as early as practicable during this period) in the calendar year prior to construction of the relevant part of the onshore cable route, as defined within the **Outline SPA Crossing Method Statement** (document reference ExA.AS-3.D6.V2). This is considered by the Applicant to be a suitable period for the mitigation area to become viable.
359. During the construction period, supplementary feeding will be carried out from mid-April until late July (or earlier should turtle dove breeding activity cease as evidenced by the Project's ECoW). The feeding area would be prepared to comprise a bare surface free of vegetation or have vegetation that is short (<15cm) and patchy, including at least 30% (preferably 50-60%) bare areas in April. Limited cutting/topping of Work No. 14 may also occur to control weeds. Between 15th June and 7th July each year during construction of the relevant part of the onshore cable route, half of the turtle dove mitigation area will be cut or scarified to approximately 10-15cm on a rotational basis. The whole turtle dove



mitigation area will then be cut or scarified between 1st and 30th September and the cut vegetation removed. A mix of suitable seed types as advised by Operation Turtle Dove will be sown weekly.

360. The BBPP will ensure that no nesting birds are disturbed by construction. In addition to nesting birds, the site identified for supplementary turtle dove feeding outlined will also be subject to ongoing monitoring as part of the BBPP, and measures would be undertaken that feeding birds in this area are not disturbed by construction activities. It will be ensured that any habitats of conservation value which would be subject to temporary loss are reinstated post-construction in agreement with Natural England.

7.3.4.2 Nightingale

361. Specific nightingale mitigation has been identified within the **Outline SPA Crossing Method Statement** (document reference ExA.AS-3.D6.V2) where an open trench technique is used to cross the Sandlings SPA. For an open trench SPA crossing technique only, Work No. 12A will be managed following recommended guidelines (e.g. British Trust for Ornithology (BTO) 2015), with the aim of providing optimal habitat for breeding nightingale. This will involve thinning or removal of bracken (which dominates in much of this area) or maintenance of scrub by cutting any patches that are getting too old and leggy, and therefore providing a supply of vigorous new growth. A dense field margin of rank grass and taller herbs around the scrub will also be retained by avoiding mowing during the breeding season.
362. Preparation of the mitigation areas within proposed Work No. 12A will occur during the non-breeding season in the calendar year prior to the SPA crossing works commencing and will involve the thinning of scrub and bracken removal on rotation. This is considered by the Applicant to be a reasonable timeframe for the mitigation area to achieve a suitable level of ecological functionality for nightingale prior to the commencement of construction of the SPA crossing. The Applicant notes the importance of incorporating a detailed methodology within the EMP for the establishment of Work No. 12A in order to provide a high-quality mitigation area which maximises the opportunity for nightingales to use the area. The mitigation area will continue to improve during the construction period by virtue of the management measures implemented. Once established and throughout the management period, no mowing of the margins around areas of scrub/thicket within proposed Work No. 12A will take place during the breeding season.
363. Following completion of construction of the relevant part of the onshore cable route, Work No.12A will be managed for a period of ten years save for the area identified as horse paddock which will be managed for a period of five years.

These management periods are considered to be suitable for the mitigation area to become established and to compensate for the temporary loss of habitat during construction within Work No. 12. At the end of the five year management period, the eastern section of Work No. 12 identified as horse paddock will be returned to its original use (as horse paddock), whilst retaining the boundary hedgerow planting. At the end of the ten year management period, the western section of Work No. 12 will be returned to improved dense/continuous scrub as identified by the **Extended Phase 1 Habitat Survey (Figure 22.4a-f** of the ES (APP-277)).

364. The BBPP will ensure that no nesting birds are disturbed by construction. It will be ensured that any habitats of conservation value which would be subject to temporary loss are reinstated post-construction in agreement with Natural England.
365. Note that although no significant impacts were identified on species nightjar and woodlark (and therefore no additional mitigation is proposed), the additional mitigation proposed for nightingale would also benefit these species.

7.3.4.3 Barn Owl

366. Any potential losses of territories will aim to be compensated for by the erection of new nest boxes where possible in suitable locations within the local area, in consultation with the Suffolk Community Barn Owl Project. It will be ensured that new nest boxes are in place and available to barn owls prior to the commencement of construction in the onshore substation and National Grid infrastructure areas.
367. The BBPP will ensure that no nesting birds are disturbed by construction. It will be ensured that any habitats of conservation value which would be subject to temporary loss are reinstated post-construction in agreement with Natural England.

7.3.4.4 Bewick's Swan (non-breeding)

368. If construction activities are due to take place within 200m of Hawsell's Farm (Compartment 7 of **Figure 23.11 of Chapter 23 Onshore Ornithology**) during the midwinter period (November to February), the following mitigation measures will be considered.
- Bird surveys will be undertaken prior to commencement of works in this area to establish the presence of wintering Bewick's swan;
 - Measures will be adopted to minimise noise, light and disturbance on identified areas (Compartment 7), such as visual screening (e.g. opaque fencing) where necessary; and

- Construction activities will be monitored by an ECoW or suitably qualified ornithologist, who will determine whether any further mitigation measures are required to avoid disturbance.

7.4 Breeding Bird Protection Plan (BBPP)

7.4.1 Aims and Objectives

369. The aim of the BBPP is to ensure all reasonable precautions are taken by the Applicant and their contractors to protect birds and their nests, eggs, and dependent young during the construction and decommission of the proposed East Anglia TWO project.
370. The aim will be fulfilled by the Applicant adopting the following objectives:
- Objective A: Implement a bird monitoring plan;
 - Objective B: Follow an approved procedure if an active nest is found;
 - Objective C: If required, implement measures prior to the breeding season to discourage birds from breeding on those areas of the onshore development area to be worked during construction; and
 - Objective D: Ensure adequate education and awareness of site personnel.
371. The procedures to be adopted that will fulfil these objectives are detailed in **section 7.4.5**.

7.4.2 Responsibilities

372. The overall responsibility for ensuring that the DCO requirements and the conditions of any licence granted are adhered to, in particular those conditions relating to protected species, will rest with the Applicant. The personnel responsible for the day-to-day implementation of the BBPP are detailed in **Table 7.3** below.

7.4.3 Role of the Ecological Clerk of Works (ECoW)

373. The ECoW will monitor the procedures outlined within the BBPP. Among other duties, the ECoW will have the responsibility of monitoring compliance with the BBPP during the construction and decommissioning phases and reporting any breaches to the principal contractor and the Applicant. The ECoW's role will involve direct monitoring of all activities within the onshore development area to the extent the ECoW considers this to be required and/or training of nominated personnel to carry these activities out in a manner likely to minimise the potential for adverse impacts. Responsibilities are detailed in **Table 7.3**.



374. During the construction and decommissioning phases, where there is any departure from the BBPP, then the ECoW will be entitled to prescribe such action(s) (including immediate cessation of the relevant tasks/works/operations) that will be implemented by the Applicant or any contractors. The Applicant, or their contractors, shall be given reasonable notice to react to the ECoW's instruction. Exceptions will be made in the case of an emergency.

Table 7.3 BBPP Responsibilities

Task	Responsibility
Implementation of the BBPP	Principal contractor
Monitoring and review of the BBPP	Ecological Clerk of Works
Regular site monitoring for potential nesting birds	Ecological Clerk of Works or a suitably qualified ecological surveyor
On-going watching brief for potential nesting birds	All site personnel
Education of site personnel	Principal contractor, supported by Ecological Clerk of Works

7.4.4 The Potential Impacts of the Development

375. The potential impacts on breeding birds from the construction of the proposed East Anglia TWO project include both direct and indirect impacts. Direct impacts include the physical impacts of construction such as digging of cable trenches, soil stripping and vegetation clearance. Indirect impacts include visual or noise disturbance of nesting birds by construction activities.
376. Any of these construction works can negatively impact or affect breeding birds in a variety of ways, including:
- Abandonment of breeding attempt;
 - Abandonment of nest building;
 - Abandonment of nest site;
 - Damage to, or loss of, the nesting site;
 - Abandonment of brooding;
 - Abandonment of chick feeding;
 - Damage to foraging area; or
 - Damage to the parent birds.

7.4.5 Procedures for Protecting Birds

377. In addition to the seasonal restriction presented in **section 7.2** of this document which has been adopted by the Applicant to protect the integrity of the SPA, this

section details the procedures to be followed to ensure the aim and objectives of the BBPP are achieved and that reasonable precautions have been taken to protect birds and their nests, eggs, and dependent young during the construction and decommissioning of the proposed East Anglia TWO project.

7.4.5.1 Objective A – Monitoring Plan

378. Throughout the breeding bird season, the undernoted bird surveying will be conducted during the construction period to inform the ongoing monitoring and protection strategy.

7.4.5.2 Schedule 1 Birds

379. Regular monitoring of the onshore development area plus a buffer of up to 400m where suitable habitat exists, for Schedule 1 birds will be conducted by the ECoW, or suitably qualified ornithologist, during construction.

7.4.5.3 All Wild Birds

380. Spot-check surveys will be conducted within the onshore development area by the ECoW to check for nest sites of any wild bird. These surveys will be conducted in all areas which may be potentially affected by construction and which may host any wild breeding bird and will commence between 1 and 2 weeks in advance of construction activity. This procedure will allow any necessary micro-siting of the infrastructure or creation of disturbance buffers to be agreed in advance of construction commencing.

381. Ongoing monitoring of breeding bird activity will be undertaken by the ECoW during construction to ensure any changes in breeding bird activity are recorded and the protection plan updated as required.

7.4.5.4 Objective B – Procedure if Active Nest Site is Found

7.4.5.4.1 Schedule 1 Birds

382. If a nest site of a Schedule 1 species is found the undernoted procedure will be followed:

- A preliminary 400m buffer zone around the nest site will be established immediately;
- This area will be clearly identifiable, e.g. demarcated with barrier tape, and the appropriate personnel informed;
- A disturbance risk assessment will then be completed (by the ECoW in consultation with a suitably qualified ornithologist if required) to assess site-specific factors that may either enhance or reduce the risk of disturbance (topography, land-cover etc.). This will also consider relevant guidance (e.g.

Ruddock and Whitfield, 2007). This may result in a decrease or increase in the size of the buffer zone;

- Natural England and the relevant planning authority will be consulted on the disturbance risk assessment before any alterations are made to the 400m buffer zone; and
- No construction activity which may have any of the effects noted in **section 7.4.4**, will be allowed to commence or continue until the ECoW or a suitably qualified ornithologist confirms that it is acceptable to do so on the advice of Natural England and the relevant planning authority. This will be based on the results of nest site monitoring.

383. This procedure will also be considered if a nest site is found for species listed on Annex I of the EU Birds Directive (but not Schedule 1) as although these species are not legally protected from disturbance, implementation of this procedure will help ensure that the conservation status of these species is not adversely affected by disturbance. Specific buffer distances will be based on published guidance, where available (e.g. Ruddock and Whitfield 2007).

7.4.5.4.2 All Wild Birds

384. If a nest of a wild bird is found, that is not listed in Schedule 1, the following procedure will be followed:

- A 30m buffer zone around the nest site will be established immediately;
- This area will be clearly identified, e.g. demarcated with barrier tape, and the appropriate personnel informed; and
- No construction activity which may have any of the effects noted in Section 6.4.4 will be allowed until the ECoW, or a suitably qualified ornithologist, confirms that the nest is no longer in use by breeding birds.

7.4.5.4.3 Personnel Discovering Active Nest

385. In the event of site personnel discovering an active nest site the following procedure must be followed:

- All works within 30m of the identified nest must be stopped (excluding personnel and vehicle use of haul roads) until the ECoW is able to attend. If the species nesting is suspected to be a Schedule 1 species, no works must be undertaken within 400m until the ECoW is able to attend;
- The ECoW will be contacted;
- The location will be checked by the ECoW or suitably qualified ornithologist to determine if an active nest is present; and

- If an active nest site is present, then the appropriate procedure laid down in Objective B above will be followed.

7.4.5.5 Objective C – Measures to Discourage Birds from Breeding on Those Areas of the site to be Worked During Construction

386. A mechanism to allow micro-siting of infrastructure will minimise the risks of development to breeding birds. The flexibility afforded by this mechanism, in combination with the bird monitoring noted in Objective A, will be used by the ECoW to develop measures that will avoid and minimise impacts on breeding birds.
387. If no alternative options are available, deterrent measures to prevent birds from nesting in known construction locations will be considered with reference to relevant guidance (e.g. SNH, 2016). The requirement for such measures will be based on the results of surveys and previous known nest site locations in relation to construction areas. SNH (2016) advises against physical removal or alteration of habitat (e.g. pruning of trees or shrubs) because of possible direct and indirect adverse impacts on other environmental interests, and so this option will be avoided if possible.
388. Any deterrent measures must commence before nest building begins, well in advance of the likely start of egg laying. If nest-building activity is observed, continued deterrence will cease immediately.
389. Once established, the success of the technique(s) will be monitored.

7.4.5.6 Objective D – Education and Awareness

390. The BBPP will be detailed during the formal induction given to all site personnel (including contractors and subcontractors).
391. The Principal Contractor will be made aware of legal status of the breeding birds within the onshore development area. This transfer of information will be undertaken by the Applicant. The Applicant and the principal contractor will provide the necessary education as part of a formal induction to all site personnel with regard to the objectives of the BBPP. In particular, the actions that should be taken if breeding birds are seen will be explained in detail.
392. In addition to the Principal Contractor, the ECoW will meet the relevant contractors before they commence with the proposed East Anglia TWO project to provide contact details and inform them of the presence of any breeding birds in the areas of the onshore development area in which they must be vigilant.

393. The Applicant will undertake that any person found to be disregarding the terms of the BBPP is immediately expelled from the construction site until such time that it is appropriate for them to be allowed to return following a period of re-training. Such persons will need to undertake re-training in the use and application of the BBPP to ensure the impact on breeding birds is avoided or minimised.
394. The ECoW will meet regularly with relevant contractors working on the proposed East Anglia TWO project to gather information on possible breeding bird sightings.

7.4.6 Non-breeding Season Protection Procedures

395. If construction activities are due to take place within 200m of survey Compartment 7 at Hawsell's Farm (**Figure 23.11**) during the midwinter period (November to February), the following measures would be employed:
- Bird surveys will be undertaken prior to commencement of construction activities to establish the presence of wintering Bewick's swan, as recorded in Compartment 7 during baseline surveys in 2018-19;
 - If present, a 200m buffer zone around Compartment 7 will be established immediately;
 - This area will be clearly identified, e.g. demarcated with barrier tape, and the appropriate personnel informed;
 - No construction activity which may have the potential for disturbance to Bewick's swans will be allowed until the ECoW, or a suitably qualified ornithologist, confirms that the site is no longer in use by Bewick's swan;
 - Measures to minimise noise, light and disturbance, such as visual screening (e.g. opaque fencing) may be adopted where necessary, to allow commencement of construction activities within 200m, should an agreement be reached with the ECoW; and
 - Construction activities will be monitored by an ECoW or suitably qualified ornithologist, who will determine the duration and extent of any restrictions to construction activities, and whether any further mitigation measures are required to avoid disturbance.

8 Overview of Ecological Surveys

8.1 Summary of Species-Specific Pre-Construction Surveys

396. Within this OLEMS, the Applicant has committed to undertake pre-construction surveys for the following species:

- **Invasive species.** A pre-construction walkover survey will be undertaken to confirm whether invasive plant species have spread from current known locations.
- **Badger.** A pre-construction walkover survey of the onshore development area will be undertaken in order to assess the status and current use of previously identified setts and identify any new setts excavated.
- **Bat.** Further surveys for bat activity and bat roosts will be undertaken pre-construction of all features along the onshore development area that are identified for removal to provide updated assessments of the commuting and/or roosting value of these routes/features.
- **Great Crested Newt.** All ponds within and up to 250m of the onshore development area will be surveyed for Great Crested Newts prior to construction.
- **Fish, eel, otter and water vole.** Pre-construction surveys for fish, eel, otter and water vole will be undertaken at the Hundred River.
- **Invertebrates (including Hairy dragonfly).** Pre-construction surveys for invertebrates (including Hairy dragonfly) will be undertaken within suitable habitats identified within the onshore development area during the pre-construction walkover undertaken to ascertain the suitability to support such species.
- **Breeding birds.** Pre-construction surveys will be targeted at Schedule 1 breeding species.
- **Wintering birds.** If construction activities occur within 200m of Hawsell's Farm (Compartment 7 of **Figure 23.11 of Chapter 23 Onshore Ornithology**), wintering bird surveys (October to March) will be undertaken within 200m of Hawsell's Farm prior to commencement of works in this area.

8.2 Timings

397. **Table 8.1** provides a summary of further ecological surveys and timeline programme for ecological works required in advance of and to support the construction of the proposed East Anglia TWO project onshore infrastructure, along with site preparation works, construction, post-construction and long term management for the East Anglia TWO onshore infrastructure. A more detailed

programme of ecological works will be included with the EMP, following the completion of the pre-construction surveys.

Table 8.1 Seasonal Timings for Surveys

Receptor	Note	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Tree Survey	Pre-construction survey												
Vegetation (including invasive species)	Pre-construction survey												
Badger	Pre-construction survey												
	Pre-construction exclusion (under licence)												
Bats	Pre-construction bat activity survey												
	Potential tree roost inspection												
	Post construction bat activity survey												
Eel	Pre-construction survey												
Fish	Pre-construction survey (specific timings dependent upon breeding period of the target species)												
Invertebrates (including Hairy dragonfly)													
Great crested newts	Pre-construction survey												
	Pre-construction translocation (under licence)												
	Post-construction survey												
Otter	Pre-construction survey												
Water vole	Pre-construction survey												



Receptor	Note	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wintering Birds	Survey												
Breeding Birds	Survey												
	Vegetation Clearance												

9 Mitigation Measures During Operation

- 398. During any required inspections and/or routine maintenance work, best practice procedures will be followed and be in accordance with the relevant standards at that time. If intrusive works were required at any point, an ecologist will be contacted to assess whether there are any impacts associated with the work, before that work can proceed.
- 399. An Artificial Light Emissions Management Plan will be developed for the final design for the permanent infrastructure, as secured under the relevant requirement of the draft DCO, which will include measures to minimise light spill and be designed in line with the 'Bats and Artificial Lighting in the UK' guidance (BCT 2018).
- 400. Operational noise impacts for the onshore substation and National Grid substation are discussed within the **Chapter 22 Onshore Ecology** (APP-070), **Chapter 23 Onshore Ornithology** (APP-071) and **Chapter 25 Noise and Vibration** (APP-073) of the ES, as relevant.



10 Monitoring

401. The mitigation measures described above will be monitored by the Contractor's environmental management representative and the ECoW throughout the construction phase of the proposed East Anglia TWO project.
402. The Applicant has committed to an adaptive management programme for the landscape planting management scheme, details of which are provided within **section 4** of this OLEMS. The implementation of an adaptive management scheme is intended to de-risk the timely delivery of planting, achieve optimum levels of plant growth and condition and provide greater confidence that effective screening from the tree planted areas will be achieved before the end of the adaptive planting management period. Monitoring will be undertaken throughout the adaptive management period to ascertain progress of woodland growth within the different planting zones to inform the subsequent steps to be taken as part of the adaptive management scheme.
403. In addition, the Applicant will monitor the reinstatement and management of Work No. 12A for a period of ten years (five years at the horse paddock) following completion of construction of the relevant part of the onshore cable route (in line with the management period as set out within the **Outline SPA Crossing Method Statement** (an updated version has been submitted at Deadline 6, document reference ExA.AS-3.D6.V2)). Details of the monitoring will be set out within the final EMP to be approved by the relevant planning authority in consultation with the relevant statutory nature conservation body prior to the commencement of onshore works.
404. The requirement for, and final appropriate design and scope, of monitoring will be agreed with the relevant planning authority and included within the relevant management plan(s), submitted for approval to discharge relevant DCO requirements, prior to construction works commencing.
405. Mitigation monitoring programmes will be established for some habitats and species following completion of construction works, where agreed with the relevant planning authority. Monitoring surveys would be discussed and agreed with the relevant planning authority and included within the relevant management plan(s), submitted for approval to discharge relevant DCO requirements, prior to construction works commencing.

11 Ecological Management Plan

406. An EMP will be implemented during construction of the East Anglia TWO onshore infrastructure, in accordance with the OLEMS, under the relevant requirement of the draft DCO which requires the submission of an EMP to be submitted post-consent to and approved in writing by the relevant planning authority prior to commencement of construction. The EMP will act as a live document, to be referenced throughout construction works on the site, to ensure the protection of the species detailed below.
407. The EMP will also include method statements to ensure that all potential ecological impacts are appropriately mitigated. Method statements secured as part of the EMP are:
- Breeding Bird Protection Plan;
 - Arboricultural Method Statement;
 - Invasive Species Method Statement; and
 - SPA Crossing Method Statement.
408. As part of the EIA process, ecological surveys were commissioned. These surveys confirmed the presence of:
- Great crested newt;
 - Bat species;
 - Badger; and
 - Schedule 1 Breeding Birds.

11.1 Background

409. Impacts on protected species can result from the physical effects of construction such as soil stripping, haul road laying, HDD, trench digging, building construction and noise disturbance. These construction activities can negatively affect protected species in a number of ways including:
- Abandonment of a roost/sett/nest due to disturbance;
 - Abandonment of dependant young due to disturbance;
 - Damage to a protected site;
 - Damage to navigation routes (i.e. hedgerows, ditches, burns, fence lines etc);
 - Fragmentation of territories;
 - Damage to forage areas or wildlife corridors;

- Contamination of water; and
 - Accidental injury or death to species by machinery, tools or vehicles.
410. Below is an outline of the legislation that affords protection to the aforementioned species. It should be noted that regulations might change.
411. European Protected Species (EPS) afforded protection under The Conservation of Habitats and Species Regulations 2017 include great crested newt and bats. Protection afforded under this regulation makes it an offence for anyone to deliberately capture, injure or kill any such animal. Their breeding sites or resting places are protected under Regulation 41.
412. All native reptiles are protected under the Wildlife and Countryside Act 1981 (as amended). It is an offence to kill, injure or sell any of the six, native species.
413. Badgers and their setts are protected under the Protection of Badgers Act 1992, which makes it illegal to kill, injure or take badgers or to interfere with a badger sett with a sett defined as “any structure or place which displays signs indicating current use by a badger”.
414. Schedule 1 species are afforded additional protection under the Wildlife and Countryside Act 1981 (as amended) meaning they are protected at all times and it is an offence to intentionally or recklessly disturb individuals at, on or near an ‘active’ nest.

11.2 Responsibilities

415. The Applicant’s ECoW will take on the responsibility of Ecological Clerk of Works on the East Anglia TWO onshore infrastructure construction.
416. All of the ecological work described in the EMP will be undertaken under the guidance of the Applicant’s ECoW
417. The Contractors role includes ensuring that all measures that are set out within the EMP are adhered to during construction. Support and monitoring will be provided by the Applicant’s ECoW. However, responsibility for compliance with the measures sits with the Contractors and their appointed environmental representatives (i.e. the Contractors ECoW).
418. The Applicant’s ECoW will be responsible for the following activities:
- Monitoring Contractors’ compliance with the EMP during construction;
 - Arranging specialist environmental surveys;



- Undertaking necessary pre-construction checks for legally protected or notable species;
 - Undertaking ecological supervision during the implementation of ecological mitigation outlined in the EMP;
 - Undertaking regular environmental inspections of Works; and
 - Assisting (where deemed necessary by the Contractors or the Employer) in site inductions and toolbox talks and help to review Risk Assessments and Method Statements (RAMS).
419. All site workers will be informed of the role and contact details of the Applicant's ECoW. A copy of the EMP will be kept on site at all times and site workers will be made aware of its location and/or who to contact in order to obtain a copy of the EMP.
420. The site-wide ecological requirements will be explained to all construction personnel, however additional toolbox talks will also be provided prior to construction commencing in certain area of the East Anglia TWO onshore infrastructure to ensure that area-specific requirements are fully understood and implemented.
421. Any known breaches of the requirements documented within the EMP will be reported to the Applicant's ECoW by the Site Manager or site workers (either directly or through the Site Manager). It is the Applicant's ECoW's responsibility for reporting a breach of the requirements of the EMP to the Applicant and Contractors' Site Manager and, where necessary, to the relevant planning authority and/or Natural England. Reporting of pollution incidents will be done directly to the Environment Agency Incident Hotline.
422. The Applicant's ECoW will be responsible for developing an appropriate ecology and nature conservation response strategy for any breach of the EMP as soon as practicable. The Applicant's ECoW will ensure that any remedial measures proposed are approved by the relevant planning authority and where appropriate Natural England, prior to them being carried out on site.

11.3 Licence Requirements

423. During the construction of East Anglia TWO onshore infrastructure all reasonable precautions will be adopted to protect protected species from disturbance, injury and death and to protect any structure or place that any such species uses for breeding, resting, shelter or protection.
424. Mitigation licences will be sought from Natural England in relation to badger and great crested newt. Letters of No Impediment (LONI) to the granting of these



licences are being applied for by the Applicant during the Examination of the Project.

11.4 Consultation

425. The final EMP prepared post-consent will be submitted to the relevant planning authority for approval in consultation with the statutory nature conservation body, in accordance with Requirement 21 of the ***draft DCO*** (REP5-003). Prior to submission of the EMP to the relevant planning authority for approval, the Applicant will consult with the Environment Agency on the final EMP during its preparation.



12 Summary

426. This OLEMS has been drafted in order to provide a framework for the EMP and LMP that will be submitted prior to construction of the proposed East Anglia TWO project, as secured under the requirements of the **draft DCO** (REP5-003).
427. This OLEMS has summarised the landscape and ecological mitigation and enhancement measures which have been proposed within the ES. The OLEMS also details the procedures which have been proposed for ensuring monitoring of and compliance with these measures.

13 References

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Annex 1: Hedgerow Schedule

Reference of hedgerow on Important Hedgerows and Tree Preservation Order Plan (REP3-010)	Sheet number on Important Hedgerows and Tree Preservation Order Plan (REP3-010)	Type of interaction with important hedgerow
1	1	Removal reflecting the reduced working width
2	1	Removal reflecting the reduced working width
3	1	Full or partial removal
4	2	Full or partial removal
5	2	Removal reflecting the reduced working width
6	2	Removal reflecting the reduced working width
7	2	Removal reflecting the reduced working width
8	3	Removal reflecting the reduced working width
9	3	Removal reflecting the reduced working width
10	3	Full or partial removal
11	3	Full or partial removal
12	3	Full or partial removal
13	3	No interaction
14	4	No interaction
15	4	Full or partial removal
16	4	Removal reflecting the reduced working width / No interaction
17	4	Full or partial removal
18	4	Removal reflecting the reduced working width
19	5	Full or partial removal
20	5	Removal reflecting the reduced working width
21	5	Full or partial removal
22	5	Removal reflecting the reduced working width
23	5	Removal reflecting the reduced working width
24	5	Removal reflecting the reduced working width



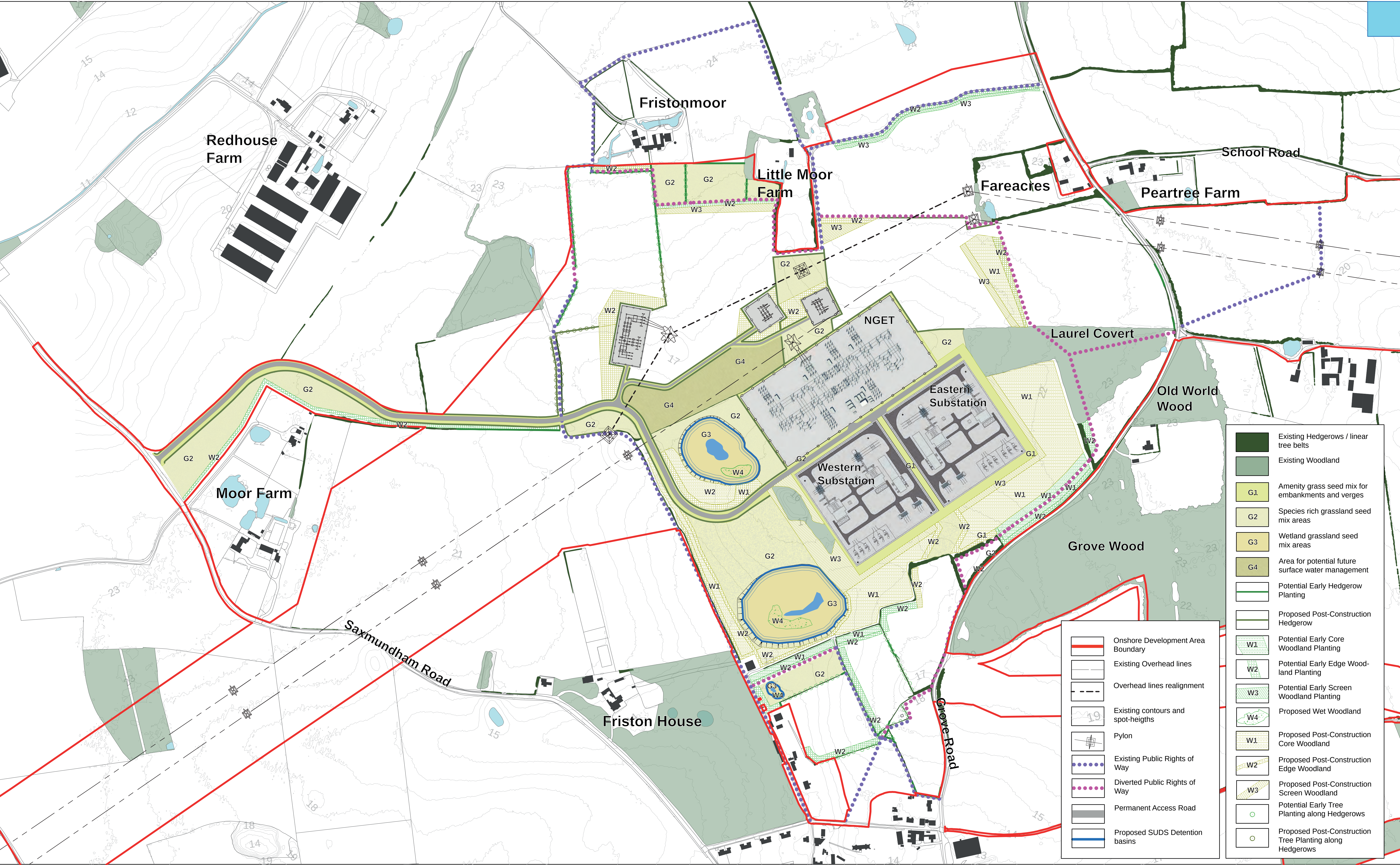
Reference of hedgerow on Important Hedgerows and Tree Preservation Order Plan (REP3-010)	Sheet number on Important Hedgerows and Tree Preservation Order Plan (REP3-010)	Type of interaction with important hedgerow
25	6	No interaction
26	6	Full or partial removal
27	6	Removal reflecting the reduced working width
28	6	Full or partial removal
29	6	Full or partial removal
30	6	Full or partial removal
31	6	Removal reflecting the reduced working width
32	6	Removal reflecting the reduced working width
33	6	No interaction
34	6	No interaction
35	7	Full or partial removal
36	7	Full or partial removal
37	7	Full or partial removal
38	7	Full or partial removal
39	7	Full or partial removal
40	7	Full or partial removal
41	7	Full or partial removal
42	7	Full or partial removal
43	7	Full or partial removal
44	7	Full or partial removal
45	7	Full or partial removal
46	7	Full or partial removal
47	7	Full or partial removal
48	7	Full or partial removal
49	7	Full or partial removal
50	7	Full or partial removal

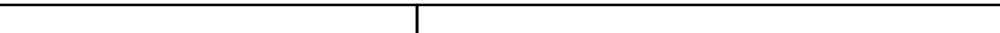
Reference of hedgerow on Important Hedgerows and Tree Preservation Order Plan (REP3-010)	Sheet number on Important Hedgerows and Tree Preservation Order Plan (REP3-010)	Type of interaction with important hedgerow
51	7	Full or partial removal
52	7	Full or partial removal
53	7	No interaction
54	7	Full or partial removal / No interaction
55	8	No interaction
56	8	Full or partial removal
57	8	Full or partial removal
58	8	Full or partial removal
59	7	No interaction
60	9	Full or partial removal
61	9	Full or partial removal
62	9	Full or partial removal
63	9	Full or partial removal
64	9	Full or partial removal
65	9	Full or partial removal
66	9	Full or partial removal
67	1	No interaction

Annex 2: Figures



							1:2,500		East Anglia TWO Historic Map Context (1st edition Historic OS map 1883/84)	Doc Ref	EA2-DEVWF-ENV-REP-IBR-OLEMS	
					Prepared:	mb	Rev			5	Coordinate System: BNG Datum: OSGB36	
	5	14/12/2020	st	Fifth Issue.	Checked:	sm	Date	14/12/20				
	Rev	Date	By	Comment	Approved:	lt	Figure	1				
								This map has been produced to the latest known information at the time of issue, and has been produced for your information only. Please consult with the SPR Offshore GIS team to ensure the content is still current before using the information contained on this map. To the fullest extent permitted by law, we accept no responsibility or liability (whether in contract, tort (including negligence) or otherwise) in respect of any errors or omissions in the information contained in the map and shall not be liable for any loss, damage or expense caused by such errors or omissions.				



	13	23/02/2021	st	Thirteenth Issue.			1:3,000 Scale @ A1 	East Anglia TWO OLMP General Arrangement	Doc Ref	EA2-DEVWF-ENV-REP-IBR-OLEMS		
	12	11/01/2021	st	Twelfth Issue.	Prepared:	st			Rev	13	Coordinate System: BNG Datum: OSGB36	
	11	08/01/2021	st	Eleventh Issue.	Checked:	sm			Date	23/02/21		
	Rev	Date	By	Comment	Approved:	lt			Figure	3		
	This map has been produced to the latest known information at the time of issue, and has been produced for your information only. Please consult with the SPR Offshore GIS team to ensure the content is still current before using the information contained on this map. To the fullest extent permitted by law, we accept no responsibility or liability (whether in contract, tort (including negligence) or otherwise in respect of any errors or omissions in the information contained in the map and shall not be liable for any loss, damage or expense caused by such errors or omissions. Onshore Substations, National Grid Infrastructure and Cable Sealing End Compound is illustrated without shadow effects.											



13	23/02/2021	st	Thirteenth Issue.
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East Anglia TWO

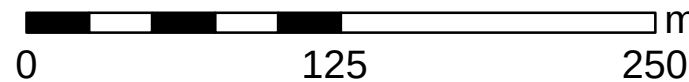
OLMP Illustrative Plan (Overview scale)

Doc Ref	EA2-DEVWF-ENV-REP-IBR-OLEMS	
Rev	13	Coordinate System: BNG Datum: OSGB36
Date	23/02/21	
Figure	4	



	13	22/02/2021	st	Thirteenth Issue.			1:3,000 Scale @ A1 0125250 m This map has been produced to the latest known information at the time of issue, and has been produced for your information only. Please consult with the SPR Onshore GIS team to ensure the content is still current before using the information contained on this map. To the fullest extent permitted by law, we accept no responsibility or liability (whether in contract, tort (including negligence) or otherwise in respect of any errors or omissions in the information contained in the map and shall not be liable for any loss, damage or expense caused by such errors or omissions. Onshore Substations, National Grid Infrastructure and Cable Sealing End Compound is illustrated without shadow effects.	East Anglia TWO OLMP Illustrative Plan	Doc Ref	EA2-DEVWF-ENV-REP-IBR-OLEMS	
	12	11/01/2021	st	Twelfth Issue.	Prepared:	st			Rev	13	Coordinate System: BNG Datum: OSGB36
	11	08/01/2021	st	Eleventh Issue.	Checked:	sm			Date	23/02/21	
	Rev	Date	By	Comment	Approved:	lt			Figure	5	



	11	22/02/2021	st	Eleventh Issue.			1:3,000 Scale @ A1		East Anglia TWO OLMP Proposed Planting Plan	Doc Ref	EA2-DEVWF-ENV-REP-IBR-OLEMS			
	10	11/01/2021	st	Tenth Issue.	Prepared:	st				Rev	11	Coordinate System: BNG Datum: OSGB36		
	9	08/01/2021	st	Ninth Issue.	Checked:	sm	This map has been produced to the latest known information at the time of issue, and has been produced for your information only. Please consult with the SPR Offshore GIS team to ensure the content is still current before using the information contained on this map. To the fullest extent permitted by law, we accept no responsibility or liability (whether in contract, tort (including negligence) or otherwise in respect of any errors or omissions in the information contained in the map and shall not be liable for any loss, damage or expense caused by such errors or omissions. Onshore Substations, National Grid Infrastructure and Cable Sealing End Compound is illustrated without shadow effects.			Date	23/02/21			
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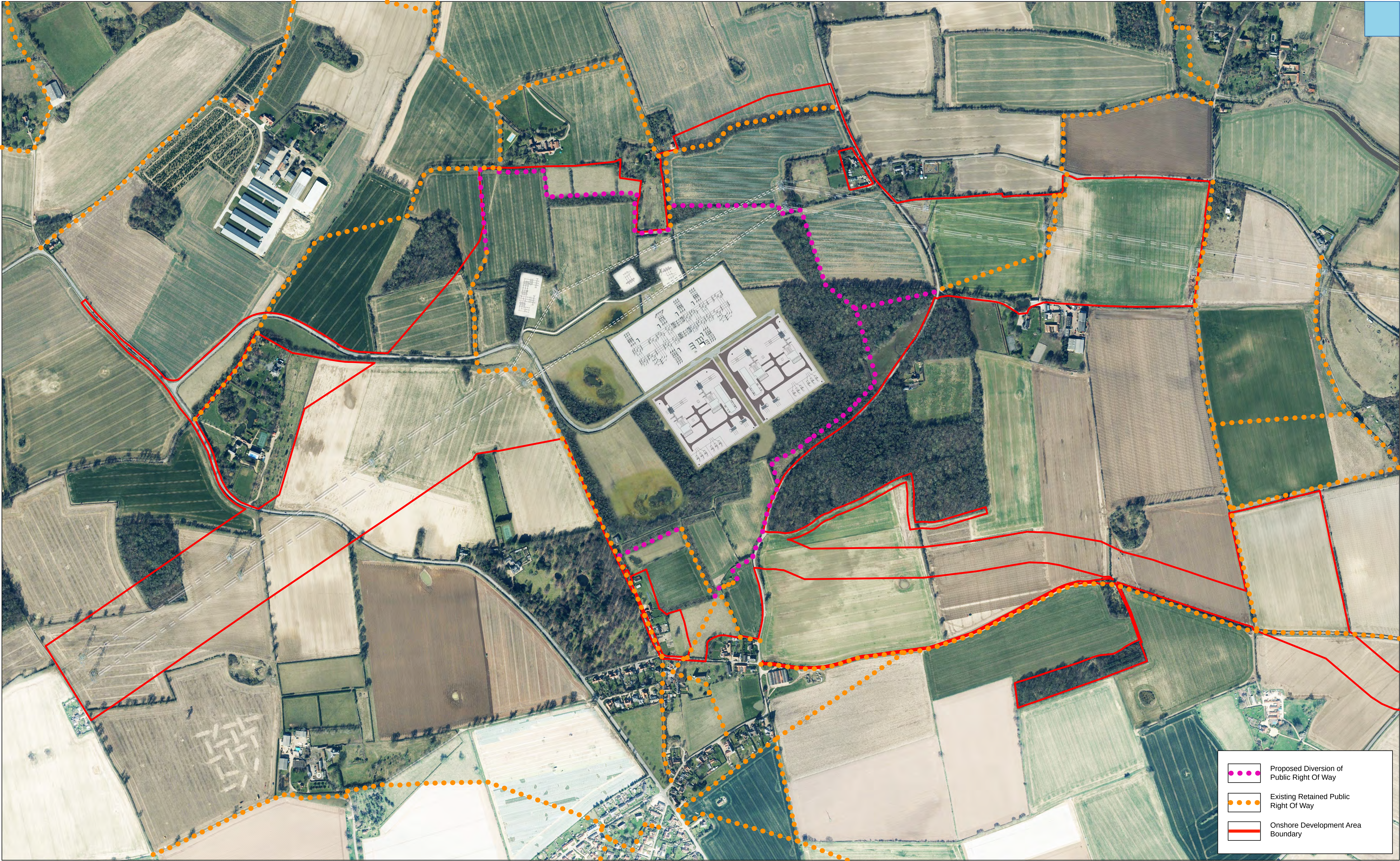
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East Anglia TWO

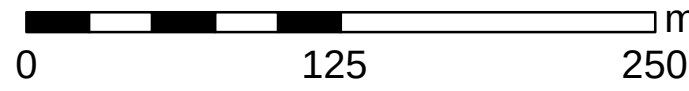
OLMP Timing of Planting

Doc Ref	EA2-DEVWF-ENV-REP-IBR-OLEMS	
Rev	12	Coordinate System: BNG Datum: OSGB36
Date	23/02/21	
Figure	7	



	12	23/02/2021	st	Twelfth Issue.			1:4,000 Scale @ A1		East Anglia TWO OLMP Public Right of Way	Doc Ref	EA2-DEVWF-ENV-REP-IBR-OLEMS		
	11	11/01/2021	st	Eleventh Issue.	Prepared:	mb				Rev	12	Coordinate System: BNG Datum: OSGB36	
	10	08/01/2021	st	Tenth Issue.	Checked:	sm				Date	23/02/21		
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										Figure	8		



	5	22/02/2021	st	Fifth Issue.			1:3,000 Scale @ A1		East Anglia TWO OLMP Illustrative Plan (GIS)	Doc Ref		EA2-DEVWF-ENV-REP-IBR-OLEMS	
	4	11/01/2021	st	Fourth Issue.	Prepared:	mb				Rev	5	Coordinate System: BNG Datum: OSGB36	
	3	08/01/2021	st	Third Issue.	Checked:	sm	Date			23/02/21			
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