



MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS

Outline Landscape Management Plan



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Prepared by:

RPS

Prepared for:

**Morgan Offshore Wind Limited,
Morecambe Offshore Windfarm Ltd**

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Glossary

Term	Meaning
400 kV grid connection cables	Cables that will connect the proposed onshore substations to the existing National Grid Penwortham substation.
400 kV grid connection cable corridor	The corridor within which the 400 kV grid connection cables will be located.
Applicants	Morgan Offshore Wind Limited (Morgan OWL) and Morecambe Offshore Windfarm Ltd (Morecambe OWL).
Biodiversity benefit	<p>An approach to development that leaves biodiversity in a better state than before. Where a development has an impact on biodiversity, developers are encouraged to provide an increase in appropriate natural habitat and ecological features over and above that being affected.</p> <p>For the Transmission Assets, biodiversity benefit will be delivered within identified biodiversity benefit areas within the Onshore Order Limits. Further qualitative benefits to biodiversity are proposed via potential collaboration with stakeholders and local groups, contributing to existing plans and programmes, both within and outside the Order Limits.</p>
Code of Construction Practice	A document detailing the overarching principles of construction, contractor protocols, construction-related environmental management measures, pollution prevention measures, the selection of appropriate construction techniques and monitoring processes.
Commitment	This term is used interchangeably with mitigation and enhancement measures. The purpose of commitments is to avoid, prevent, reduce or, if possible, offset significant adverse environmental effects. Primary and tertiary commitments are taken into account and embedded within the assessment set out in the ES.
Development Consent Order	An order made under the Planning Act 2008, as amended, granting development consent.
Environmental Impact Assessment	The process of identifying and assessing the significant effects likely to arise from a project. This requires consideration of the likely changes to the environment, where these arise as a consequence of a project, through comparison with the existing and projected future baseline conditions.
Generation Assets	The generation assets associated with the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm include the offshore wind turbines, inter-array cables, offshore substation platforms and platform link (interconnector) cables to connect offshore substations.
Horizontal directional drilling	A trenchless technique for installing cables and cable ducts involving drilling in an arc between two points.
Landfall	The area in which the offshore export cables make landfall (come on shore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area at Lytham St. Annes between Mean Low Water Springs and the transition joint bays inclusive of all construction works, including the offshore and onshore cable routes, intertidal working area and landfall compound(s).
Landscape	An area, as perceived by people, the character of which is a result of the action and interaction of natural and/or human factors.
Landscape character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.

Term	Meaning
Landscape Character Area	A single unique area of the discrete geographical area of a particular landscape type.
Maximum design scenario	The realistic worst case scenario, selected on a topic-specific and impact specific basis, from a range of potential parameters for the Transmission Assets.
Mean High Water Springs	The height of mean high water during spring tides in a year.
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	The offshore and onshore infrastructure connecting the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm to the national grid. This includes the offshore export cables, landfall site, onshore export cables, onshore substations, 400 kV grid connection cables and associated grid connection infrastructure such as circuit breaker compounds. Also referred to in this report as the Transmission Assets, for ease of reading.
National Policy Statement(s)	The current national policy statements published by the Department for Energy Security and Net Zero in 2023 and adopted in 2024.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substations.
Onshore export cable corridor	The corridor within which the onshore export cables will be located.
Onshore Order Limits	See Transmission Assets Order Limits: Onshore (below).
Onshore substations	The onshore substations will include a substation for the Morgan Offshore Wind Project: Transmission Assets and a substation for the Morecambe Offshore Windfarm: Transmission Assets. These will each comprise a compound containing the electrical components for transforming the power supplied from the generation assets to 400 kV and to adjust the power quality and power factor, as required to meet the UK Grid Code for supply to the National Grid.
Transmission Assets	See Morgan and Morecambe Offshore Wind Farms: Transmission Assets (above).
Transmission Assets Order Limits	The area within which all components of the Transmission Assets will be located, including areas required on a temporary basis during construction and/or decommissioning.
Transmission Assets Order Limits: Onshore	The area within which all components of the Transmission Assets landward of Mean High Water Springs will be located, including areas required on a temporary basis during construction and/or decommissioning (such as construction compounds). Also referred to in this report as the Onshore Order Limits, for ease of reading.

Acronyms

Acronym	Meaning
AOD	Above Ordnance Datum
BAOL	Blackpool Airport Operations Limited
BS	British Standard
CDM	The Construction (Design and Management) Regulations 2015
DCO	Development Consent Order
HDD	Horizontal Directional Drilling
ES	Environmental Statement
LCA	Landscape Character Area
NPS	National Policy Statement
OLMP	Outline Landscape Management Plan
PRoW	Public Rights of Way

Units

Unit	Description
%	Percentage
km	Kilometres
kV	Kilovolt

1 Outline Landscape Management Plan

1.1 Background

1.1.1 Introduction

1.1.1.1 This document forms the Outline Landscape Management Plan (OLMP) prepared for the Morgan and Morecambe Offshore Wind Farms: Transmission Assets (referred to hereafter as ‘the Transmission Assets’).

1.1.1.2 This Outline Landscape Management Plan has been updated for Deadline 4 to include the following:

- Clarification of the roles and responsibilities for implementing this outline management plan
- Clarification that the measures within this outline management plan will be implemented during the onshore site preparation works.

1.1.2 Project overview

1.1.2.1 Morgan Offshore Wind Limited (Morgan OWL), a joint venture between ~~bp Alternative Energy Investments Ltd (bp)~~ JERA Nex bp (JNbp) and Energie Baden-Württemberg AG (EnBW), is developing the Morgan Offshore Wind Project. The Morgan Offshore Wind Project is a proposed wind farm in the east Irish Sea.

1.1.2.2 Morecambe Offshore Windfarm ~~Ltd (Morecambe OWL), a joint venture between Zero-E Offshore Wind S.L.U. (Spain) (a Cobra group company) (Cobra) and Flotation Energy Ltd,~~ Limited is owned by Copenhagen Infrastructure Partners' (CIP) fifth flagship fund, Copenhagen Infrastructure V (CI V). and is developing the Morecambe Offshore Windfarm, also located in the east Irish Sea.

1.1.2.3 The purpose of the Transmission Assets is to connect the Morgan Offshore Wind Project: Generation Assets and Morecambe Offshore Windfarm: Generation Assets (referred to collectively as the ‘Generation Assets’) to the National Grid.

1.1.2.4 Morgan OWL and Morecambe OWL (the Applicants), are jointly ~~developing~~ promoting a single consent application for transmission assets associated with each of the generation assets, including offshore export cable corridors to landfall and aligned onshore export cable corridors to onshore substation and onward connection to the National Grid at Penwortham, Lancashire.

1.1.2.5 The key components of the Transmission Assets include offshore elements, landfall and onshore elements. Details of the activities and infrastructure associated with the Transmission Assets are set out in Volume 1, Chapter 3: Project Description of the Environmental Statement (ES) (document reference F1.3).

- 1.1.2.6 This OLMP has been developed for the onshore elements of Transmission Assets, landwards of Mean Low Water Springs (MLWS). The onshore and intertidal elements of Transmission Assets relevant to this plan are:
- onshore export cables: these export cables will be jointed to the offshore export cables via the transition joint bays at the landfall site, and will bring the electricity generated by the Generation Assets to the onshore substations;
 - onshore substations: the two electrically separate onshore substations will contain the components for transforming the power supplied via the onshore export cables up to 400 kV;
 - 400kV grid connection cables: these export cables will bring the electricity generated by the Generation Assets from the two electrically separate onshore substations to the existing National Grid substation at Penwortham;
 - environmental mitigation areas – temporary and/or permanent areas, including accesses identified to provide environmental mitigation only; and
 - biodiversity benefit areas - temporary and/or permanent areas, including accesses identified to provide biodiversity benefit only.

1.1.3 Purpose and scope of the Outline Landscape Management Plan

- 1.1.3.1 This OLMP provides outline landscape design and maintenance measures from which to agree detailed landscape design and management plans for the Morgan OWL onshore substation and the Morecambe OWL substation. The landscape proposals and management prescriptions provide information to help ensure successful establishment and growth of proposed planting following the construction works.
- 1.1.3.2 The OLMP describes the landscape management measures that will be carried out during the first five years following planting or seeding along the onshore export cable corridor and 400 kV grid connection cable corridor and for the lifetime of the onshore substations.
- 1.1.3.3 This OLMP should be read in conjunction with the Outline Ecological Management Plan (document reference J6), which accompanies the DCO application, and describes the onshore ecological mitigation measures that will be implemented prior to, during and post construction of the onshore development, and the long-term management measures to be set in place for reinstated habitats, including hedgerows, trees and woodlands.
- ~~1.1.3.4 It should also be read in conjunction with the Onshore Biodiversity Benefit Statement (document reference J11) which identifies suitable opportunities for habitat creation and/or management principles for enhanced, restored or newly created habitats necessary to deliver biodiversity benefit (above baseline value) in relation to the permanent above ground infrastructure.~~
- ~~1.1.3.5~~ 1.1.3.4 It should also be read in conjunction with Volume 3, Annex 10.5: Tree survey and arboricultural impact assessment of the ES (document reference F3.10.5), which has been used to prepare the OLMP, and will be

used to inform the detailed soft landscape design proposals following DCO consent.

1.1.4 Structure of this document

1.1.4.1 This document is set out as follows.

- **Section 1.1** presents background information on the OLMP.
- **Section 1.2** presents the existing landscape context within the Onshore Order Limits.
- **Section 1.4** presents the principles of landscape management for Transmission Assets.
- **Section 1.5** presents monitoring and management for the proposed landscape proposal.

1.1.4.2 The OLMP is supported by the following appendices.

- **Appendix A** – Indicative Programme of Operations, which provides an outline of the timing of works.
- **Appendix B** – Indicative Planting Mixes, which sets out typical plant species, sizes and mixes that could be incorporated in detailed design proposals.

1.1.5 Implementation

1.1.5.1 Following the granting of consent for the Transmission Assets, detailed LMPs will be prepared on behalf of Morgan OWL and/or Morecambe OWL, prior to commencement of the relevant stage of works and will follow the principles established in this OLMP. The detailed LMPs will require approval by the relevant planning authority following consultation with relevant stakeholders. The Applicants and all relevant appointed contractors will be responsible for the implementation of the detailed LMPs.

1.1.5.2 The Applicants have committed to implementation of detailed LMPs through the following commitment, CoT15 (see Volume 1, Annex 5.3: Commitments Register, document reference F1.5.3), and is secured by inclusion of Requirement 6 of the draft Development Consent Order (DCO) (document reference C1) Schedules 2A & 2B. Below sets out the requirement wording for Project A (Project B's requirement mirror those of Project A for this requirement and are, therefore, not repeated):

6.—(1) No stage of the Project B onshore works may commence until a written landscaping scheme and associated work programme in accordance with the outline landscape management plan for the relevant stage has been submitted to and approved by the relevant planning authority.

(2) The written landscaping scheme must include details of all proposed hard and soft landscaping works including—

(a) location, number, species, size and planting density of any proposed planting including any trees; and

(b) implementation timetables for all landscaping works.

1.1.5.3 The Transmission Assets may adopt a staged approach to the approval of DCO requirements. This will enable requirements to be approved in part or in whole, prior to the commencement of the relevant stage of works in accordance with whether staged approach is to be taken to the delivery of ~~the~~ each of the offshore wind farms.

1.1.5.4 For onshore and intertidal works (landward of MLWS), this approach will be governed by the inclusion of Requirement 3 within the draft DCO, which requires notification to be submitted to the relevant planning authority/authorities detailing whether Project A or Project B relevant works will be constructed in a single stage; or in two or more stages to be approved prior to the commencement of the authorised development.

1.1.5.5 ~~Pre-construction and/or Onshore~~ site preparation activities may be undertaken prior to the commencement of construction. These activities would comprise the following, in accordance with the definition of 'onshore site preparation works' as works are defined by in Article 2 of the draft DCO and deemed marine licenses (document reference C1) and Volume 1, Chapter 3: Project description of the ES (document reference F1.3), and F06). This Outline Landscape Management Plan applies to the onshore site preparation works and construction activities for the Transmission Assets located landward of MLWS. It does not consider impacts seaward of MLWS.

~~1.1.5.5~~ 1.1.5.6 Onshore site preparation works will be undertaken prior to the commencement of construction. These works (Section 1.5.2) will be undertaken in accordance with the measures set out in this outline plan Outline Landscape Management Plan, as authorised through the DCO.

- ~~• Site clearance.~~
- ~~• Demolition.~~
- ~~• Early planting of landscaping works.~~
- ~~• Archaeological investigations.~~
- ~~• Environmental surveys.~~
- ~~• Environmental mitigation.~~
- ~~• Biodiversity benefit works.~~
- ~~• Removal of hedgerows and trees.~~
- ~~• Surveys and investigations for the purpose of assessing ground conditions.~~
- ~~• Remedial work in respect of any contamination or other adverse ground conditions.~~
- ~~• Diversion and laying of utilities and services.~~
- ~~• Site security works.~~
- ~~• Erection of any temporary means of enclosure.~~
- ~~• Erection of temporary hard standing.~~
- ~~• Erection of welfare facilities and compounds for welfare facilities.~~
- ~~• Creation of site accesses.~~

- ~~Onshore substation preparatory ground works.~~
- ~~Temporary display of site notices or advertisements.~~

1.1.6 Relevant guidance

1.1.6.1 The OLMP has been informed with reference to the following documents.

- Lancashire Landscape Character Assessment, December 2000.
- Lancashire Nature Recovery Interactive Map.
- Fylde Biodiversity Supplementary Planning Document 2019.
- Fylde Green Infrastructure Strategy Final Report 2011.

1.1.6.2 The OLMP takes cognisance- of the current relevant British Standards (BS) as follows.

- BS 3882 (2015): Specification for topsoil.
- BS 4428 (1989): Code of practice for general landscape operations (excluding hard surfaces) (AMD 6784).
- BS 7370: Grounds maintenance, referencing specifically Parts 1 to 5 of this standard as follows.
 - Part 1: Recommendations for establishing and managing grounds maintenance organisations and for design considerations related to maintenance.
 - Part 4: Maintenance of soft landscape (other than amenity turf).
 - Part 5: Maintenance of Water and Wetland Areas.

1.1.6.3 Key guides and documents considered within the establishment and maintenance of tree and hedge restoration/planting and woodland planting are:

- BS 3998: Tree Work – Recommendations;
- BS 5837 (2012): Trees in Relation to design, demolition and construction;
- BS 3936-1 (1992) – Nursery stock. Specification for trees and shrubs;
- BS8545: Trees: from nursery to independence in the landscape – Recommendations (BSI, 2014); and
- Creating New Native Woodlands FC Bulletin 112 (Forestry Commission, 1995).

1.1.7 Consultations

1.1.7.1 The feedback received from consultees informed the Environmental Impact Assessment process including the selection of the representative viewpoints, preparation of photomontages for the substations illustrated within Figure 10.7, Volume 3: Figures of the ES (document reference F3.12), and a landscape design for inclusion within this OLMP. Consultation responses are set out in full within Table 10.7 of Volume 3, Chapter 10: Landscape and visual resources of the ES (document reference F3.10). A summary of responses relating to landscape management are provided below.

- 1.1.7.2 The preliminary findings of the Environmental Impact Assessment process were published in the Preliminary Environmental Information Report (PEIR) in October 2023. The PEIR was prepared to provide the basis for formal consultation under the Planning Act 2008. This included consultation with statutory bodies under section 42 of the Planning Act 2008.
- 1.1.7.3 In relation to landscape mitigation, Natural England in their Section 42 response from November 2023 advised the following:
- ‘The design, implementation and monitoring of landscape mitigation must be robust and appropriate. This is vitally important, not only around the buildings, but also along cable laying routes as the landscape can suffer in the long-term from this level of disruption. The land can settle to a level which is ununiform to the surrounding landform and so create rises and falls which are not organic to the surrounding landscape’.*
- ‘Around the buildings, new planting should be native and aim to replicate the surrounding species where possible. This is particularly applicable to screening tree planting and hedge-laying. Landscape design work should be carried out in conjunction with the BNG [biodiversity net gain]’.*
- 1.1.7.4 Lancashire County Council (November 2023) specified that ‘*necessary maintenance and management will be secured for the lifetime of the anticipated planning obligations*’.
- 1.1.7.5 The landscape and visual Expert Working Group convened on 22 February and 24 September 2024 (refer to the Technical Engagement Plan (document reference E5)) and included the following attendees:
- Fylde Council;
 - South Ribble Council;
 - Preston Council;
 - Lancashire County Council;
 - Historic England; and
 - Natural England.
- 1.1.7.6 The aim of the first meeting was to agree the representative viewpoint locations and the second meeting to discuss the photomontages and landscape management plan.

1.2 Roles and responsibilities

1.2.1 Overview

- 1.2.1.1 The key roles and associated responsibilities with regard to this Outline Landscape Management Plan are set out below. The Construction (Design and Management) Regulations 2015 also identify the legal duties, responsibilities and obligations of all the duty holders on a construction project.
- 1.2.1.2 The responsibilities of each role will be refined in the detailed Landscape Management Plans.

1.2.2 Applicants

1.2.2.1 The Applicants will be responsible for the following:

- Ensuring that, where appropriate, this outline Landscape Management Plan and any detailed Landscape Management Plan(s) are implemented effectively
- Provide sufficient and relevant information to contractors (for example, setting contractual obligations requiring compliance with the detailed Landscape Management Plan(s)) and
- Preparing the detailed Landscape Management Plan(s) and undertaking reviews and refining the Landscape Management Plan(s) (where necessary) in conjunction with the Principal Contractors.

1.2.3 Principal Contractors

1.2.3.1 Principal Contractors will be appointed for each project by Morgan OWL and Morecambe OWL and have the overall responsibility for:

- Delivering the outline and detailed Landscape Management Plan(s) on behalf of the Applicants
- Ensuring all procedures in the outline and detailed Landscape Management Plan(s) are followed
- Ensuring all contractors are suitably qualified and experienced in implementing the measures within the outline and detailed Landscape Management Plans and
- Maintain records relevant to the outline and detailed Landscape Management Plan(s).

1.2.4 Contractors/Subcontractors

1.2.4.1 Contractors and subcontractors will be required to understand their responsibilities and implement the measures within the outline and detailed Landscape Management Plan(s).

1.2.1.3 Existing landscape context within the Onshore Order Limits

1.2.1.3.1 Landscape context of the onshore export cable corridor and 400 kV grid connection cable corridor

~~1.2.1.4~~ **1.3.1.1** The onshore export cable corridor and 400 kV grid connection cable corridor are located within the Onshore Order Limits, shown in Figure 1.1b of Volume 1: Figures of the ES (document reference F1.6 Part 1).

~~1.2.1.2~~ **1.3.1.2** The onshore export cable corridor would extend through the following ~~Landscape Character Areas (LCAs)~~, which would therefore be affected by the Transmission Assets.

- Mosslands - South Fylde Mosses (16b).
- Coastal Plain - The Fylde (15d).

- Urban/Suburban.
- Enclosed Coastal Marsh (17a).
- Coastal Plain – Longton Bretherton (15b).

~~1.2.1.3~~ 1.3.1.3 The LCAs are shown in Figure 10.2 of Volume 3: Figures of the ES (document reference F3.12). Full descriptions of the LCAs are contained within Volume 3, Annex 10.2: Landscape character baseline technical report of the ES (document reference F3.10.2).

~~1.2.1.4~~ 1.3.1.4 The main landscape features of the above listed LCAs, which would be affected by the onshore export cables, are trees and hedgerows.

~~1.2.1.5~~ 1.3.1.5 The onshore export cables would be buried for the entire length of the onshore export cable corridor (which totals approximately 17 km) between the landfall site at Lytham St. Annes, the onshore substations at Freckleton and the 400kV grid connection corridor towards the National Grid substation at Penwortham.

~~1.2.1.6~~ 1.3.1.6 The onshore export cable corridor will have typical maximum width of 100 m during construction, except at the at complex crossings, for example railway crossings.

~~1.2.1.7~~ 1.3.1.7 All major crossings, such as major roads, river and rail crossings will be undertaken using Horizontal Directional Drilling (HDD) or other trenchless technologies (see CoT02 in Volume 1, Annex 5.3: Commitments register of the ES (document reference F1.5.3)) except for Leach Lane.

~~1.2.1.8~~ 1.3.1.8 Public rights of way (PRoW) along the onshore export cable corridor and 400 kV grid connection cable corridor will be managed in accordance with CoT102 and CoT32 and may involve bridging PRoWs to maintain access in line with the relevant CoTs (see Volume 1, Annex 5.3: Commitments register of the ES (document reference F1.5.3)).

~~1.2.1.9~~ 1.3.1.9 The operational access routes have been designed and included along the onshore export cable corridor and the 400 kV grid connection cable corridor to the national grid infrastructure, to enable access for routine operation and maintenance activities. These operational accesses have been designed to be approximately 3.5 m in width and follow existing paths and tracks, where practicable.

~~1.2.1.10~~ 1.3.1.10 Where hedgerows and trees occur within the area affected by the onshore export cable or 400 kV grid connection cable route they will be removed, except for sections of the route where HDD is proposed within sections of the route with substantial areas of woodland or large A class specimen trees, or where trenchless installation techniques may be proposed, but where haul road crossing points are still required. However there will also be some areas along the cable corridor where hedgerows and trees will be removed. In addition, hedgerows removal may be required to allow for access and to meet visibility requirements at access points and haul road crossing points. It will not be possible to re-plant trees on top of, or in close proximity to an onshore export cables.

~~1.2.1.11~~ 1.3.1.11 According to the tree survey (constraints) plan within Volume 3, Annex 10.5: Tree survey and arboricultural impact assessment of the ES (document reference F3.10.5), most of the hedgerows (hawthorn, willow,

hazel, elder and ash), which have to be removed are of low quality (Category C), and only a few sections have been identified as being of a moderate quality (Category B).

1.2.2.1.3.2 Landscape context of the onshore substations

1.2.2.1.3.2.1 The onshore ~~substation sites~~ substations are shown on Figure 3.5 of Volume 1: Figures of the ES (document reference F1.6 Part 1).

1.2.2.2.1.3.2.2 The onshore ~~substation sites~~ substations are located within the Coastal Plain - The Fylde (15d) LCA as shown in Figure 10.2, Volume 3: of the ES (document reference F3.12). The LCAs are described in Volume 3, Annex 10.2: Landscape character baseline technical report of the ES (document reference F3.10.2).

1.2.2.3.1.3.2.3 The main landscape features of the Coastal Plain - The Fylde LCA, which would be affected by the onshore substations, and the loss of trees and hedgerows.

1.2.2.4.1.3.2.4 Both of the onshore ~~substation sites~~ substations lie within an area between the A583 to the north and A584 (Preston New Road) to the south, which is predominantly pasture and grassland, with fields enclosed by hedgerows and trees. The A584 is circa 630 m to the south of the Morecambe substation site, and the A583 is circa 560 m to the north of the Morgan substation site.

1.2.2.5.1.3.2.5 The onshore substation sites extend immediately to the west of Dow Brook (a small watercourse and a tributary of the River Ribble), which converges with Middle Pool to the south. The wider setting of the sites is an agricultural, rural landscape, which is generally flat and slopes down towards Dow Brook. There are several 'field ponds' scattered across the surrounding landscape. Field ponds are a particularly characteristic feature of this area and provide important wildlife habitats. The field ponds removed to accommodate the substation would be replaced. The onshore substation sites benefit from some substantial existing hedgerows and tree belts within the local area, planted for shelter to act as windbreaks across the farmland.

1.2.2.6.1.3.2.6 The surrounding area of the onshore substation sites contains large number of existing energy infrastructure elements; electricity pylons and communication masts, which are all highly visible in the flat landscape. The high voltage transmission line with tall steel lattice pylon towers and overhead wires crosses the area between the onshore substations sites. Another overhead line with high pylons is located just 150 m to the south of the site of Morecambe onshore substation. This indicates that the area has already been influenced by existing electrical infrastructure.

Morgan onshore substation

1.2.2.7.1.3.2.7 The Morgan substation site lies 560 m to the south of the A583 Kirkham Bypass, which will provide access to the site. Freshfield Farm is located 190 m to the north west of the site and a small settlement (next to Lower Lane) is 570 m to the west of the site, and Newton-with-Scales settlement lies 770 m to the east.

~~1.2.2.8~~ 1.3.2.8 Public bridleway BW0505016 runs from Lower Lane, Hall Cross, located to the west of the site, and connects to PRoW FP0505003 to the north of Freckleton. The bridleway is located adjacent to the western boundary of the site, which is lined by the hedgerow and trees.

~~1.2.2.9~~ 1.3.2.9 The site is approximately rectangular in shape. It comprises five medium size grass fields which are divided by hedgerows with trees. The north western section of the site, lies at an elevation of 15 m Above Ordnance Datum (AOD), slopes down towards Dow Brook to the east. There are several 'field ponds' within the Morgan's Morgan substation boundary and there are a number of field ponds scattered across the surrounding area.

~~1.2.2.10~~ 1.3.2.10 According to the Trees Constraints Plan (Volume 3, Annex 10.5: Tree survey and arboricultural impact assessment, document reference F3.10.5), most of the hedgerows (hawthorn, blackthorn, alder, common oak and elder), which have to be removed are of low quality (Category C), and only a few sections of crab apple hedgerows have been identified as being of a moderate quality (Category B).

~~1.2.2.11~~ 1.3.2.11 Tree removal will include seven A category ash tree, common oak trees and alders. The rest are B and C category ash, common alder, hawthorn and common oak trees. There are several tree clumps and hedgerow trees within the substation site and several sycamores next to the A583/Kirkham Bypass. Most of the trees lie within hedgerows which line the bridleway to the west of the substation site, where most of the A and B category trees will be preserved through the use of trenchless techniques under the PRoW.

Morecambe onshore substation site

~~1.2.2.12~~ 1.3.2.12 The Morecambe onshore substation site is located 380 m to the south of the Morgan onshore substation site, 170 m east of Lower Lane (local road). The site is 530 m to the north of Freckleton and 880 m to the west of Newton-with-Scales settlement. A public footpath FP050503 lies adjacent to its eastern boundary. The ground level landform of the Morecambe onshore substation site is relatively flat with an elevation of between 9 to 11 m AOD.

~~1.2.2.13~~ 1.3.2.13 The main operational access for the Morecambe onshore substation will be off Lower Lane. This operational access will be approximately 130 m in length with a permanent width of 15 m, 7.3 m of which will be hardstanding. The operational access would be fenced with a gate in place to control access to the substation site.

~~1.2.2.14~~ 1.3.2.14 The temporary construction access for the Morecambe onshore substation will be provided from the A584. The temporary construction access will be approximately 760 m and it will be 20 m in width. Approximately 7.3 m of this 20 m will be hard standing, with the remaining area used for topsoil storage, drainage and temporary fencing. Approximately 325 m of this temporary construction access is shared with a construction access to the 400 kV cable corridor.

~~1.2.2.15~~ 1.3.2.15 The temporary construction access will be retained post-construction as an operational access for abnormal indivisible loads and heavy goods vehicle deliveries to the Morecambe onshore substation. The permanent area will be reduced to 15 m in width, of which 7.3 m will be

hardstanding. This operational access will not be fenced where it crosses agricultural fields, thus ensuring agricultural activities can continue unhindered during the operational life of the substation.

~~1.2.2.16~~ 1.3.2.16 According to the Trees Constraints Plan (see Volume 3, Annex 10.5: Tree survey and arboricultural impact assessment (document reference F3.10.5)) most of the hedgerows (hawthorn, blackthorn, ash, common oak and sycamore), which have to be removed, are of low quality (Category C).

~~1.2.2.17~~ 1.3.2.17 Tree removal will include a few A Category common oak and one ash tree. The rest are B and C category ash, alder and common oak. Most of the trees line Lower Lane to the west of the substation site.

Onshore substations design

~~1.2.2.18~~ 1.3.2.18 Both onshore substation sites will accommodate ~~four~~ 4 main buildings (up to 140 m x 80 m for Morgan and 30 m x 15 m for Morecambe), which are up to 15 m in height for Morgan and 13 m for Morecambe. Their associated lightning protection masts will be up to 30 m in height, ~~which will be~~. The latter and these are the tallest structures within the sites. However, due to their slim nature, these rods are not considered to have bearing on landscape design. There will also be several smaller buildings required to house components such as smaller equipment and control rooms. The layout and location of buildings has not been finalised as part of the DCO submission and will be established during detailed design post consent. Indicative layouts for the onshore substations are included in Figure 5 (Morgan OWL onshore substation) and Figure 6 (Morecambe OWL onshore substation) of the Environmental Statement: Technical Note: Landscape and Design Matters (REP3-064).

~~1.2.2.19~~ 1.3.2.19 The onshore substation building substructures are likely to comprise steel frames and external sheet cladding materials.

~~1.2.2.20~~ 1.3.2.20 The permanent onshore substation sites will be secured with 3 m high appropriate metal mesh fencing which may be electrified for security purposes.

~~1.2.2.21~~ 1.3.2.21 The maximum heights specified for buildings, external electrical equipment and lightning protection masts relate to ~~heights above finished ground level. The final finished ground level will be established~~ metres Above Ordnance Datum . These maximum heights (mAOD) are secured within Requirement 5 of Schedules 2A and 2B of the draft DCO (document reference C1). The final heights for buildings, external electrical equipment and lightning protection masts will be established within the specified parameters during detailed design post consent.

~~1.2.2.22~~ 1.3.2.22 There are a number of factors that could influence the maximum finished ground level, including:

- surface water drainage design requirements, to ensure adequate surface water run-off from the onshore substations and a suitable connection to the existing surface water drainage system;
- existing ground levels and practicable cut and fill requirements, to optimise the cut and fill balance of the onshore substations and minimise

the need to import or export spoil material during the onshore substations construction; and

- groundwater constraints, to ensure appropriate management and control of groundwater interactions in the design of the onshore substations.

1.3.1.4 Principles of landscape management

1.3.1.4.1 Overview – onshore substations

1.3.1.4.1.1 This section of the OLMP sets out the landscape strategy for the Transmission Assets.

1.3.1.4.1.2 Volume 3, Chapter 10: Landscape and visual resources of the ES (document reference F3.10) has concluded that the appearance of the onshore substations in the wider landscape setting will generally be limited to views from:

- bridleway BW0505016, which is on the west side of the Morgan substation site;
- the PRoW footpath FP050503 east of the Morecambe substation site;
- views from Parrox Lane on the edge of Newton-with-Scales;
- private views from properties next to the Lower Lane to the south of Higher House at a distance of approximately 600 m; and
- private views from Freshfield Farm immediately to the north west of the Morgan onshore substation site.

1.3.1.4.1.3 For the vast majority of visual receptors within the surrounding landscape including settlements, residential properties, roads and PRoW, there will generally be very limited views of the onshore substations and the existing semi-rural character of the landscape will be retained.

1.3.1.4.1.4 By incorporating the landscape design, the onshore substations will have reduced landscape and visual impact (refer to Table 10.30 of Volume 3, Chapter 10: Landscape and visual resources of the ES (document reference F3.10) for summary of environmental effects).

1.3.1.4.1.5 The onshore substation buildings will not only be sited having consideration of the electrical design but will also be sensitively placed, with visual impacts minimised as far as possible by the use of appropriate design, building materials, shape, layout, ~~coloration~~ **colouration** and finishes.

1.3.1.4.1.6 The landscape related design principles for each substation are provided in the Outline Design Principles Document (document reference J3), which in turn will inform the detailed landscape design. The outline design principles consider the roof line, cladding and colours of the buildings in order to further soften their appearance and to break up the mass and scale of the development to provide an effective and satisfactory integration into the landscape when viewed from the surrounding area. Positioning and orientation of the built form and hard surfaced areas of the substations will be designed considering both the functional requirements and to reduce the visual impact of the substation, where practicable. Also, the signs marking the sites' entrances, along with their gates, will be designed to be 'low key'

and set back to preserve the rural character of the A583 and A584/ Preston Road corridors.

1.3.21.4.2 Outline design objectives – onshore substations

1.3.2.11.4.2.1 Illustrative indicative landscape proposals for the Maximum Design Scenario of the onshore substations are shown on **Figure 1.1, Figure 1.2 and Figure 1.3.**

1.3.2.21.4.2.2 The landscape proposals adhere to the following main principles:

- consideration of ‘*Criteria for good design for Energy Infrastructure*’ in line with the requirements of Overarching National Policy Statement for Energy (NPS EN-1 and EN-3).

1.3.2.31.4.2.3 The landscape proposals adhere to the following main objectives.

- Landscape integration: to provide an appropriate setting that manages the landscape impacts of the proposed onshore elements, in particular the onshore substations, responding to adjacent land uses and the landscape character of the area:
 - retain and protect existing trees, hedgerows and other vegetation wherever practicable;
 - reinstate land and planting replacement trees, hedgerows and other vegetation where practicable;
 - compliment, extend and join existing landscape elements and habitats including hedgerows, trees and woodlands to enhance the green infrastructure and landscape fabric within and around the onshore substation sites; and
 - use appropriate native (and of local provenance) species to contribute towards habitat enhancements (subject to landowner agreement) and in turn to promote biodiversity to achieve a biodiversity benefit and bolster the diversity of native species that are present locally (refer to the Outline Ecological Management Plan (document reference J6)).
- Landscape amenity: the overall design will seek to deliver for public amenity, where possible, by responding to the scale and character of the area and the experience of people working in the locality and local communities that live nearby the proposed substations, as well as those travelling through the area:
 - aim to filter/screen views of the components of the proposed substations and integrate these into the landscape context.

1.3.31.4.3 Landscape strategy for onshore export cable corridor and 400 kV grid connection cable corridor

1.3.3.11.4.3.1 The route of the onshore export cable corridor has been designed to avoid crossing woodlands and areas of groups of trees, wherever possible. Volume 3, Chapter 3: Onshore ecology and nature conservation of the ES (document reference F3.3) states that up to 5.39 km of hedgerows will be permanently lost and approximately 19.9 km of existing hedgerows would be

temporarily removed to allow construction of the onshore export cable corridor.

~~1.3.3.2~~ 1.4.3.2 Protection and re-planting of hedgerows would be implemented to minimise adverse landscape, visual and other potential effects.

~~1.3.3.3~~ 1.4.3.3 Furthermore, enhancement of hedgerows (subject to landowner agreement) that are retained, and are currently in poor condition (i.e., they are species-poor and/or defunct) will provide the opportunity for long term benefits.

~~1.3.3.4~~ 1.4.3.4 The minimum anticipated distance for retaining mature trees close to the underground cable corridor is 6 m which is based on industry guidance comprising National Grid's Notes for Guidance – Tree Planting Restrictions on Pipelines (NJUG 10) and GTC-UK's Tree Planting Guidelines Notes for Guidance – Tree Planting Restrictions on or near Utility Apparatus (BK-ENV-IG-0018 Rev 4).

~~1.3.3.5~~ 1.4.3.5 The industry guidance advises that only hedge plants may be planted over the cables and that within 6 m of the cable only shallow rooted, native species such as Blackthorn (*Prunus spinosa*), Hazel (*Corylus avellana*), Broom (*Cytisus scoparius*), Elder (*Sambucus nigra*), and Hawthorn (*Crataegus monogyna*) may be planted. By planting these species, it may be possible to create a mature hedge up to 5 m wide and 5 m tall. Where required a root barrier will be placed in the cable trench prior to backfilling.

~~1.3.3.6~~ 1.4.3.6 Beyond the 6 m buffer, it may be possible to allow native trees and shrubs except for willows (*Salix sp.*) and poplars (*Populus sp.*) which are not to be planted within 10 m of the cables, due to their invasive roots.

~~1.3.3.7~~ 1.4.3.7 The following requirements were adopted during the design process and will be adhered to in the detailed LMPs.

- Once the installation work is completed, the haul road(s) will be removed and the ground reinstated using stored subsoil and topsoil and the land will be restored to its original condition. Where practicable, consideration will be given to early restoration of sections of the cable route.
- Where hedgerows and trees are crossed using open cut trenching techniques, measures would be taken to minimise vegetation removal and damage, where practicable. These measures are likely to include reducing the length of hedgerow removed and avoiding trees at crossing points, where this is possible.
- All sections of hedgerow removed to enable construction of the onshore export cable corridor would be replanted in the first planting season following the completion of construction. Replacement planting would comprise native shallow-rooting hedgerow species typical of the area, planted as 40 – 60 cm high transplants, protected with biodegradable (non-plastic) rabbit guards or other forms of protection from grazing. To prevent future root damage to cables, no trees would be planted within or in close proximity to the permanent cable easements.
- In addition to the reinstatement of hedgerows removed by the onshore export cable corridor, where practicable and as agreed with the landowner, hedgerow enhancement would be undertaken within the order limits. The

aim of enhancement would be to increase native species diversity and/or improve habitat structure and connectivity across the landscape.

1.3.4.1.4.4 Landscape design principles for the onshore substations

1.3.4.1.4.4.1 The Morgan onshore substation site comprises of several medium size pasture fields, and consequently there will be a loss of the field boundaries which are made up of hedges and trees, as well as of seven field ponds and pasture and arable land associated with the Morgan and Morecambe onshore substations sites (refer to Figure 1.8 of Volume 3, Annex 3.3: Phase 1 habitat, national vegetation classification and hedgerow survey technical report of the ES (document reference F3.3.3)).

1.3.4.2.1.4.4.2 The proposed Morecambe onshore substation would generally be confined to a single pasture field.

1.3.4.3.1.4.4.3 Further to the design objectives outlined above, the following requirements were adopted during the design process and will be maintained during the preparation of the LMP(s).

- Existing agricultural use of pasture fields to the north of the Morgan substation and to the south, west and north west of Morecambe substation sites will be reinstated following completion of the construction activities and use of the compound areas.
- Specifically placed woodland blocks around onshore substations' perimeters to filter/screen views and to break up the bulk and scale of the buildings, reducing the visual impact in views towards the substations, and integrate the development into its landscape context.
- Strengthen and enhance existing hedgerow field boundaries within the vicinity of substations by planting gaps with new native (and of local provenance) species hedge plants and hedgerow trees that would improve hedgerow continuity and provide further screening and filtering of views, enhance landscape character and provide enhanced habitats and habitat connectivity for wildlife.
- Create naturalistic scrub areas to link with ~~native~~ woodland and ~~meadow~~ grassland around the attenuation ~~feature(s)~~ ponds.
- Incorporation of surface water attenuation ~~feature(s)~~ features prior to controlled discharge to the Dow Brook.
- Species rich ~~meadow~~ grassland areas will be established 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 ~~native~~ woodland.
- Minimise, where possible, offsite deposition of soil by sensitive incorporation within the locality. Soil will be suitably stored prior to re-use, and topsoil and subsoil may be incorporated to allow for successful establishment of proposed vegetation. Temporary soil mounds on the western edge of compounds at the Morecambe substation site, adjacent to Lower Lane, will form acoustic barriers.

- Outside of the impermeable areas, the site finishes would consist of stone chippings over an appropriate thickness of sub-base to provide suitable surface for plant maintenance and permeability.
- The permanent access roads may be framed by hedges and individual trees.
- Create new native hedges, especially where connectivity with off-site hedgerows and ~~native~~ woodland could be improved.



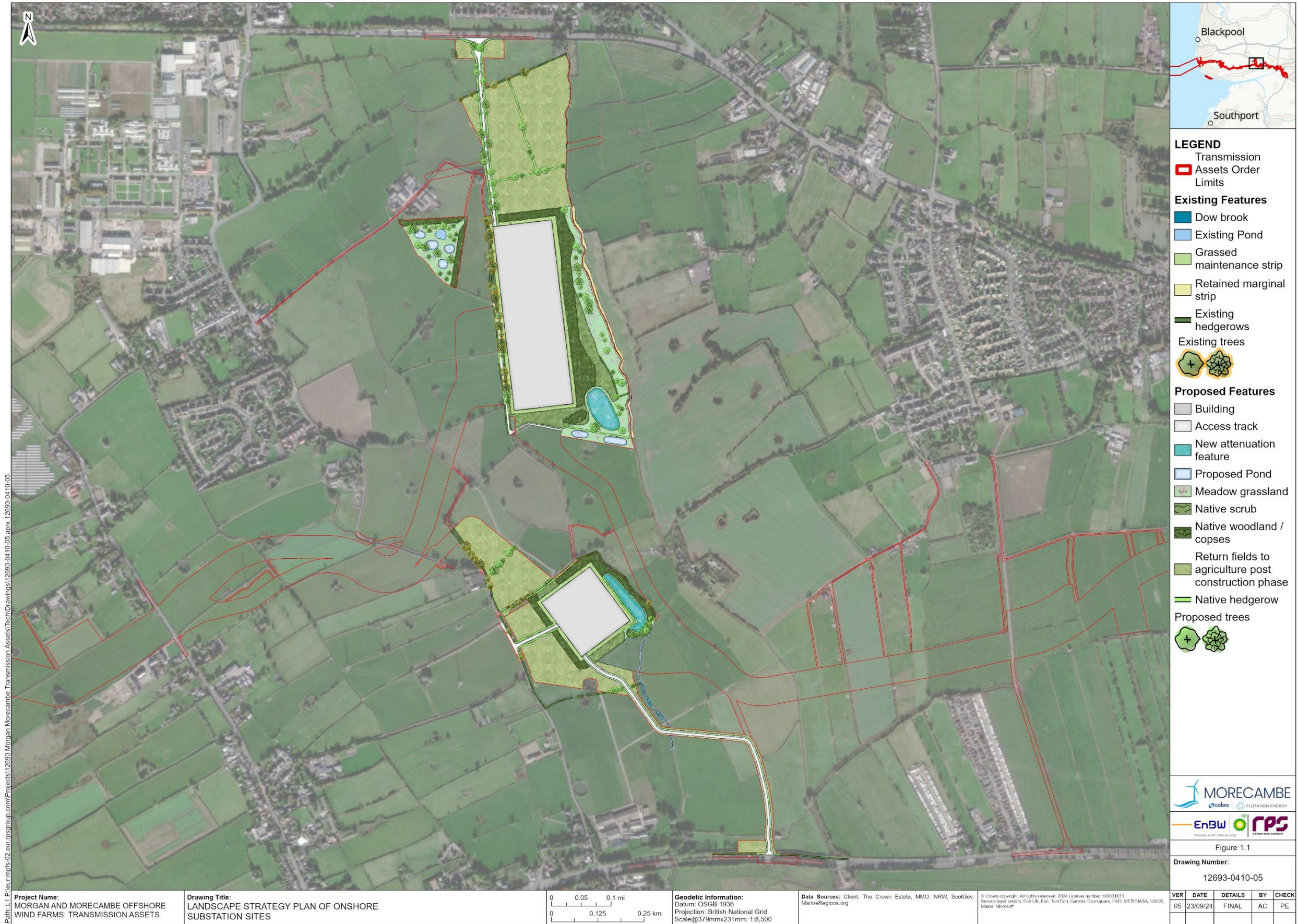


Figure 1.1: Indicative landscape strategy plan of onshore substation sites





Figure 1.2: Indicative landscape strategy plan of Morgan onshore substation site





Figure 1.3: Landscape strategy plan of Morecambe onshore substation site

1.4.1.5 Monitoring and management

1.4.1.5.1 Overview

1.4.1.1 1.5.1.1 Landscape management will include both maintenance and monitoring for up to five years to ensure establishment of plants in accordance with Requirement 7(3) of Schedules 2A and 2B of the draft DCO.

1.4.1.2 1.5.1.2 The management will include a specification and programme of maintenance works covering items such as weeding, screening, mulching, watering, repair to plant protection and replacement of failed plants as required.

1.4.1.3 1.5.1.3 This section sets out the landscape management prescriptions (regimes) for proposed vegetation along the onshore cable corridor and onshore substations.

1.4.2 1.5.2 Indicative programme of landscape works and advance planting

1.4.2.1 1.5.2.1 A programme of landscape works will be provided within the detailed LMP(s) setting out the programme according to relevant planting seasons and maximising opportunities for advance planting prior to construction to allow trees to mature during the construction works and in advance of completion of the onshore substations (see **Appendix A** for the indicative programme).

1.4.2.2 1.5.2.2 The planting will be designed to include a mix of faster growing 'nurse' species and slower growing 'core' species. The core species will comprise a mix of preferred native, canopy species that will outlive the nurse species and characterise the ~~native~~-woodland structure ~~at the onshore substations~~ over the longer term. In locations where it is possible to achieve advanced planting, the landscape mitigation planting will be established as early as reasonably practicable in the construction phase.

1.4.2.3 1.5.2.3 The management and monitoring will be cognisant of any commercial activities and landowner management of the adjacent areas (sections of hedgerows or parts of fields subject to reinstatement will need to be managed in the same way as contiguous areas being actively managed by the landowner).

1.4.3 1.5.3 General principles for plants establishment

1.4.3.1 1.5.3.1 The following will be adhered to when maintaining and managing planting within the Onshore Order Limits.

- Planted trees and shrubs should be protected from browsing by animals.
- Weeds should be controlled, to protect the new planted stock.
- Invasive weeds must be actively removed.

- All woodland, hedge and tree planting will respect the current above and below ground services and utilities.
- Where practicable, maintenance strips and access for ongoing management will be designed into the landscape works.

~~1.4.3.2~~ 1.5.3.2 Work will be planned and carried out taking into account the correct timing of seasonal works such as pruning and hedge cutting to comply with good horticultural practice and any restrictions imposed by ecological constraints.

~~1.4.3.3~~ 1.5.3.3 Watering of newly planted hedgerows and scrub belts will be carried out in the first spring/summer after planting unless weather conditions make this unnecessary. In the second and third spring/summer seasons after planting, watering will take place on a monthly basis between May and August unless weather conditions make this unnecessary or there are extended periods of dry weather that make it necessary to increase the frequency.

~~1.4.4~~ 1.5.4 **Species selection and growth rates**

~~1.4.4.1~~ 1.5.4.1 Final species selection will be confirmed as part of the detailed LMP(s) and will include the use of indicative native species selected from **Appendix Table 2** of **Appendix B**. The species selection will be made to suit the local environmental conditions of where the plants are to be planted and chosen to meet to design principles and in particular the following objectives.

- Ecological objectives for habitat creation and enhanced biodiversity.
- Landscape objectives to support the landscape design principles for amenity, screening and enhanced landscape character.
- Provide reasonable climate change resilience according to their location within the detailed landscape plan.

~~1.4.5~~ 1.5.5 **Monitoring**

~~1.4.5.1~~ 1.5.5.1 The programme of works will include regular monitoring ~~following~~ during the establishment period. Regular inspections of the areas that form part of the landscape works will be carried out. In the case of the woodland, tree and hedge works this will include assessment of:

- plant regeneration (germination, density and any evidence of browsing);
- plant health and vitality;
- condition and integrity of the protection (fencing, shelters, etc.); and
- stress of plants due to moisture deficit.

~~1.4.5.2~~ 1.5.5.2 Monitoring reports will also make recommendations for any remedial action if the objectives are not being met.

~~1.4.5.3~~1.5.5.3 The timing of management and monitoring requirements is presented in **Appendix A**.

~~1.4.5.4~~1.5.5.4 Newly planted vegetation will be monitored bi-annually for up to five years (at least one visit in spring/summer) and annually, during the summer for five years. This monitoring effort would focus on ensuring that any failed habitat creation measures (e.g., die off of planted trees, excessive weed growth) is remedied at the earliest possible opportunity and that appropriate management actions are being taken to ensure that the target condition of the habitats will be reached. The timing of the biannual monitoring visits will allow any remedial actions to be undertaken in the first available season (e.g., replacement of failed whips in winter or additional weed control during the growing season) following identification of the issue. This will ensure that any planting failures identified in the spring/summer will be replaced in the subsequent autumn/winter period. The monitoring visits will be undertaken by a suitably qualified and experienced practitioner who will then have the responsibility to identify:

- replacement plantings for any failed trees or shrubs; and
- adaptive management measures aimed at achieving the target conditions of each habitat specified (for example, additional weed control, fencing installation/repair, tree guard removal/replacement).

~~1.4.6~~1.5.6 Landscape management

~~1.4.6.1~~1.5.6.1 The following recommendations relevant to each habitat within the Onshore Order Limits must also be adhered to, where relevant.

~~Native woodland~~Woodland and scrub planting

~~1.4.6.2~~1.5.6.2 ~~Native woodland~~Woodland and scrub are key components of the landscape proposals for the onshore substations. The aim of the management prescriptions is to guide the creation of a well-balanced, naturalistic landscape including ~~native~~-woodland/woodland copses, scrub and tree belts, with a varied woodland edge and a dense canopy to provide screening ~~where practicable~~ at appropriate locations.

~~1.4.6.3~~1.5.6.3 General management requirements of ~~native~~ woodland and scrub planting.

- All tree stock should be materially undamaged, sturdy, healthy, vigorous, of good shape, free from pests, diseases, discoloration, weeds, and physiological disorders. They must have balanced root and branch systems, root system and condition in accordance with the relevant part of the National Plant Specification. True to name and with certification that the trees comply with the National Plant Specification and to the relevant part of BS 3936 – Nursery Stock (BSI, 1992), name, forms, dimensions, and other criteria as scheduled.
- Plants which are not to be planted on day of delivery to site will be stored in suitable conditions and locations to ensure that they

remain viable and do not suffer from desiccation. Using the recognised best practice, including National Plant Specification.

- Adjust stakes and ties at the end of each growing season or as necessary to maintain support and avoid chafing damage and thus minimise the possibility of infection taking hold within any wounds.
- Where planting is proposed, the boundary of the area will be fenced to prevent damage from browsing animals. In smaller planting areas where few trees are proposed appropriate tree shelters will be used. Inspect and if necessary, repair protection fencing regularly to ensure that it is effective in preventing browsing of plants by deer, livestock and rabbits.
- Maintain the ground around plants largely weed free for the first five years to minimise competition allowing plants to grow unimpeded. Weed control for the individual tree positions will be achieved prior to planting using an approved spot herbicide in the planting position (two months prior to planting), or a mulch mat at the time of planting.
- Replace all plants that die annually at the end of each growing season during the first five years. Any replacement planting will take place with a specimen of the same species and size as that originally planted unless a different species is otherwise agreed with the relevant planning authority and all damaged shelters, supports and fencing must be replaced.
- Weed control including the use of mulch or localised and select herbicide applications will be considered where necessary for successful establishment.
- By year three, woodland and scrub may need to be thinned. Thinning of selected trees will facilitate a diverse stratified structure and encourage a resilient woodland. The thinning will allow for the development of a varied canopy structure to promote maximum botanical interest and to create the maximum number of niches for fauna, thus maximising the biodiversity value of the woodland.
- Remove stakes and ties in year five, or when each plant is deemed firm and self-supporting.
- If used, plant shelters and guards should be removed once the trees/shrubs reach a level of maturity where they can withstand browsing wildlife and livestock.
- If the thinned specimens are intended to grow back as coppice the cut needs to be angled to ensure water will not pool on the cut.
- Brushwood and other vegetative arisings will be stacked within the woodland or scrub as small habitat piles or disposed of off-site as instructed.
- Deadwood is a particularly important woodland habitat and is of value to bats, birds, invertebrates and fungi. To ensure the woodland has the requisite deadwood habitat, dead and dying trees, where they do not present a significant safety risk, should be

retained in a variety of situations. This may include creating eco-stick monoliths, a process of severe pollarding that removes all but the trunk of the tree to create standing deadwood.

- Plants that pose a health and safety risk will be managed appropriately.

Hedges (including individual trees)

~~1.4.6.4~~ 1.5.6.4 The proposed hedge planting will comprise new hedgerow planting and gapping up of existing hedgerows, and new hedgerow planting to replace temporary loss of sections of hedge that have been removed to enable the installation of the onshore export cables.

~~1.4.6.5~~ 1.5.6.5 Individual tree planting will be used in the hedge planting to create the typical landscape feature of trees in hedgerows and to mitigate the loss of trees attributable to the Transmission Assets. Trees will also be planted individually or in groups to create local landscape character features.

~~1.4.6.6~~ 1.5.6.6 New/enhanced hedges will be marked out on site and the existing vegetation reviewed to establish if any areas of ground flora are species rich. Poor quality ground flora that is high in grass species will be removed using an approved herbicide; this will increase the success of tree/shrub establishment. Areas of species rich ground flora will be left in situ.

~~1.4.6.7~~ 1.5.6.7 Planting will be carried out in accordance with the planting plans to be provided in the detailed LMP(s). A summary of the outline indicative planting schedule is provided in **Appendix B**.

~~1.4.6.8~~ 1.5.6.8 The objective is to increase the habitat potential and functioning of the hedges, some of which may contain mature hedgerow trees, whilst maintaining them as key features of the landscape, and to provide screening of onshore substations.

~~1.4.6.9~~ 1.5.6.9 General management requirements of hedge ~~and planting including~~ individual ~~tree planting includes the following~~ trees.

- Adjust stakes and ties of hedgerow trees at the end of each growing season or as necessary to maintain support and avoid chafing damage and thus minimise the possibility of infection taking hold within any wounds.
- Maintain the ground around each plant weed free for the first five years to minimise competition allowing plants to grow unimpeded.
- Replace all plants that die annually at the end of each growing season for the first five years.
- Remove stakes and ties in year five, or when the trees are deemed firm and self-supporting.
- If used, plant shelters/guards should be removed once the trees/shrubs reach a level of maturity where they can withstand browsing wildlife.

- Cut hedges annually or every three or four years between September/December and February to minimise the risk of disturbance to birds, and dormice which could nest in the hedges. Mature hedgerows will be maintained ideally to a height of at least 3 m and a canopy width of at least 2 m to 3 m.
- The hedgerows should be managed to create a thick base with a good density of stems.
- Where the adjacent grassland is also being managed, a ~~maintenance~~ 'buffer' ~~buffer~~ strip of at least 5 m will be ~~positioned~~ maintained alongside each hedgerow. Grassland management will be relaxed within the buffer strip to maintain a gradation between the adjacent grassland and the hedge base.
- Plants that pose a health and safety risk will be managed appropriately.

~~Meadow~~ Grassland/wildflower meadow

If grassland

~~1.4.6.10~~ 1.5.6.10 ~~Where/~~ wildflower meadows are used open areas ~~are set aside for meadow grassland, these~~ shall be seeded and enhanced with ~~other neutral~~ diverse grassland ~~and lowland meadow grassland using~~ seed ~~species-rich~~ mixes appropriate to the ~~area and local~~ soil types and conditions to promote biodiversity. These shall be cut annually in late September and cuttings removed off-site. These areas may include scattered ~~native~~ scrub, and shallow scrapes to allow for ecological enhancements (subject to landowner agreement).

~~1.4.6.11~~ 1.5.6.11 ~~Where/~~ and where, wildflower meadow ~~grassland~~ is to be created, the existing habitat may have been disturbed or cleared as a result of construction activities. Given the current agricultural use of the land, some additional ground preparation may be needed to promote the establishment of ecologically valuable wildflower meadow. Ground conditions will be assessed prior to sowing. Depending on the character of the existing grassland and topsoil, some degree of topsoil or turf strip or turf inversion may be undertaken to reduce soil fertility.

~~1.4.6.12~~ 1.5.6.12 Following any necessary turf stripping or partial topsoil strip, the area will be levelled and cultivated to create a fine tilth for sowing. Grass seed will be sown with an inert mixer or hydroseeded to ensure even spread.

~~1.4.6.13~~ 1.5.6.13 During establishment, ~~the meadow~~ grassland will be monitored and watered as required. The timing of management and monitoring requirements is presented in **Appendix A**.

~~1.4.6.14~~ 1.5.6.14 Following the establishment period, scrub management will be minimal. Periodic cutting back will be undertaken to prevent excessive encroachment of the surrounding grassland, and to prevent overseeding or encroachment of the ~~new~~ attenuation ~~feature(s)~~ ponds.

~~1.4.6.15~~ 1.5.6.15 Existing grassland with a reduced grazing density will require no initial maintenance as the vegetation is already established.

The ~~meadow~~ grassland would be expected to develop a longer more tussocky sward through the natural growth of existing grasses due to reduced grazing. However, where necessary, annual inspections will be carried out to assess the degree to which the management is producing a sward with potential value. The findings of the inspections will inform the ongoing management.

~~1.4.6.16~~ 1.5.6.16 If and where new wildflower meadow and species-rich grassland may be provided as the onshore substations they will be inspected annually during the establishment period to assess the degree to which the sown wildflower species have become established.

~~1.4.6.17~~ 1.5.6.17 Inspection by an ecologist in mid-summer will survey the presence absence and estimated abundance of sown species to compare the sown ~~meadow~~ grassland against the sowing specification. Additional inspections may be carried out if there is unseasonably dry or wet weather to assess their impact on establishment.

~~1.4.6.18~~ 1.5.6.18 The monitoring surveys will be used to inform whether any remedial actions are required. This may include herbicide spot treatment of undesirable species, or additional sowing in autumn or spring. In the first year after establishment, cutting of the wildflower meadow will follow the recommendations of the seed provider. Subsequent cutting in the establishment period will be informed by the initial inspections.

~~Attenuation~~ Ponds/ water attenuation feature(s)

~~1.4.6.19~~ 1.5.6.19 No special ground preparation is required for the creation of ponds or water attenuation feature(s). Detail specification of the new ponds will be provided in the detailed LMP(s).

~~1.4.6.20~~ 1.5.6.20 Ponds will be inspected annually during the five year establishment period to ensure the marginal and aquatic planting is established. It will also include checks for invasive aquatic plants that would compromise the successful establishment of the planted vegetation ~~(refer to the Onshore Biodiversity Benefit Statement (document reference J11) and Figure 1.5 of the Outline Ecological Management Plan (document reference J6)).~~

Invasive non-native species

~~1.4.6.21~~ 1.5.6.21 Habitat maintenance inspections undertaken during the establishment period will include identifying the presence of any invasive plant species which would compromise successful establishment or achieving the desired biodiversity objectives.

~~1.4.6.22~~ 1.5.6.22 Where any invasive plant species are found, a control/eradication strategy will be prepared and fed into the management and monitoring programme.

1.4.7.1.5.7 Detailed soft landscape design proposals

~~1.4.7.1~~ 1.5.7.1 Separate detailed landscape scheme(s) will be provided post DCO consent for Morgan OWL and Morecambe OWL, and will include detailed soft landscape design proposals which accords with principles set out in the illustrative indicative landscape proposals presented within this OLMP (~~GoT15~~ Cot15).

~~1.4.7.2~~ 1.5.7.2 The detailed soft landscape proposals should include the following.

- Precise location and canopy spread of all trees, hedgerows and other significant areas of vegetation to be retained (including species), together with measures for their protection during the construction phase in accordance with 'BS 5837 (2012) – Trees in Relation to Design, Demolition and Construction'. Information will be derived from the arboricultural survey and assessment (refer to Volume 3, Annex 5.5: Tree survey and arboricultural impact assessment (document reference F3.5.5)).
- Details of all new planting including species, seed mixes, location, size, planting density, number and protection measures during establishment.
- Earthworks and ground profiling (including proposed finish levels and contours) if they are to be different to the existing.
- Full details of the management activities, to include appropriate monitoring to inform these activities, that will be undertaken at any location with proposed planting to ensure successful establishment of the new planting, including but not limited to ground preparation, planting methods, irrigation, weed control, monitoring, replacement and removal of sundries.
- Full details of the management activities, to include appropriate monitoring to inform these activities, that will be undertaken during the first five years of the operational lifetime of the onshore export cable corridor and the full operational lifetime of the substations. The details ~~will~~ are to include, height and width parameters for hedges, thinning and coppicing regimes, frequency of activities, removal and appropriate reuse/recycling/disposal of redundant planting sundries.
- Details of the implementation timetable for all soft landscape works, including any planting that is to be undertaken prior to and/or during the construction works at substations and along the onshore export cable corridor.
- All works will be in accordance with appropriate British Standards, which would include (not be limited to) the following.
 - 'BS 3936-1 (1992) – Nursery stock. Specification for trees and shrubs'.
 - 'BS 3936-10 (1990) – Nursery stock. Specification for ground cover plants'.

- ‘BS 4428 (1989) – Code of practice for general landscape operations (excluding hard surfaces) (AMD 6784)’.
- ‘BS-4043 (1989) - Recommendations for transplanting root-balled trees’.
- ‘BS 5837 (2012) – Trees in Relation to Design, Demolition and Construction’.
- ‘BS 8545 (2014) – Trees: from nursery to independence in the landscape –Recommendations’.
- ‘BS 3882 (2015) – Specification for topsoil’.

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Appendix A: Typical indicative programme of operations

Table 1: Typical indicative programme of operations when activities can be undertaken

Task	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Woodland												
Weed control												
Maintain mulch (where used)												
Fence checking/repair												
Stakes, Ties and Shelter inspection and repair												
Individual tree planting												
Maintain mulch (where used)												
Weed control												
Check and adjust support												
Selective pruning												
Watering (where achievable, until establishment)												
Native shrub and hedge planting												
Maintain mulch (where used)												
Weed control												
Selective pruning/Coppicing												

Task	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Hedge Clipping												
Watering (until establishment)												
Grass and wildflower meadow areas												
Mow grass												
Strim meadow												
Weed control												
Litter control												
Collect litter												
Plant nutrition												
Apply fertiliser (if required)												
Pest and disease control												
Physical / Mechanical means												
Monitoring and inspection												
All habitats and species												
Timing of operations												
Avoid nesting birds												
Avoid disturbing bats												

Appendix B: Typical indicative planting mixes

The following mixes set out typical plant species, sizes and mixes that could be incorporated in detailed design proposals, subject to approval by the relevant planning authority.

Appendix Table 2: Core Woodland Tree mix

Latin Name	Common Name	Form	Height in mm	% Mix
<i>Acer campestre</i>	Field maple	Transplant	450-600	5
<i>Alnus glutinosa</i> *	Common alder	Transplant	450-600	3
<i>Betula pendula</i>	Silver birch	Transplant	450-600	10
<i>Corylus avellana</i>	Hazel	Transplant	450-600	10
<i>Ilex aquifolium</i>	Holly	Transplant	450-600	3
<i>Prunus avium</i>	Wild cherry	Transplant	450-600	5
<i>Populus tremula</i> *	Aspen	Transplant	450-600	3
<i>Quercus petraea</i>	Sessile oak	Transplant	450-600	10
<i>Quercus robur</i>	Pendunculate oak	Transplant	450-600	40
<i>Salix caprea</i> *	Goat willow	Transplant	450-600	3
<i>Sorbus torminalis</i>	Wild service tree	Transplant	450-600	3
<i>Tilia cordata</i>	Small-leaved lime	Transplant	450-600	5

*targeted to the wetter areas of the Onshore Order Limits.

Appendix Table 3: Native scrub mix

Latin Name	Common Name	Form	Height in mm	% Mix
<i>Cornus sanguinea</i>	Dogwood	Transplant	450-600	10
<i>Corylus avellana</i>	Hazel	Transplant	450-600	15
<i>Crataegus monogyna</i>	Hawthorn	Transplant	450-600	10
<i>Euonymus europeus</i>	Spindle	Transplant	450-600	10
<i>Ilex aquifolium</i>	Holly	Transplant	450-600	10
<i>Prunus spinosa</i>	Blackthorn	Transplant	450-600	10
<i>Rosa canina</i>	Dog rose	Transplant	450-600	10
<i>Salix caprea</i>	Goat willow	Transplant	450-600	10
<i>Viburnum opulus</i>	Guelder Rose	Transplant	450-600	10

Appendix Table 4: Marginal planting mix

Latin Name	Common Name	Form	% Mix
<i>Caltha palustris</i>	Marsh Marigold	9cm pot	15
<i>Carex spissa</i>	Sedge	9cm pot	10
<i>Filipendula ulmaria</i>	Meadowsweet	9cm pot	20
<i>Iris pseudacorus</i>	Flag Iris	9cm pot	15
<i>Juncus effusus</i>	Corkscrew Rush	9cm pot	15
<i>Lythrum salicaria</i>	Purple Loosestrife	9cm pot	15

Latin Name	Common Name	Form	% Mix
<i>Phalaris arundinacea</i>	Reed Canary-grass	9cm pot	10

Appendix Table 5: Hedgerow mix

Latin Name	Common Name	Form	Height	% Mix
Hedgerow Trees				
<i>Acer campestre</i>	Field maple	Feathered	1-1.5 m	10
<i>Fagus sylvatica</i>	Common beech	Feathered	1-1.5 m	5
<i>Malus sylvatica</i>	Crab apple	Feathered	1-1.5 m	5
<i>Quercus petraea</i>	Sessile oak	Feathered	1-1.5 m	5
<i>Quercus robur</i>	Pendunculate oak	Feathered	1-1.5 m	10
<i>Tilia cordata</i>	Small-leaved lime	Feathered	1-1.5 m	5
Hedgerow shrubs				
<i>Corylus avellana</i>	Hazel	Transplant	450-600mm	10
<i>Crataegus monogyna</i>	Hawthorn	Transplant	450-600mm	20
<i>Euonymus europaeus</i>	Spindle	Transplant	450-600mm	5
<i>Ilex aquifolium</i>	Holly	Transplant	450-600mm	5
<i>Ligustrum vulgare</i>	Privet	Transplant	450-600mm	5
<i>Prunus spinosa</i>	Blackthorn	Transplant	450-600mm	10
<i>Viburnum lantana</i>	Wayfaring tree	Transplant	450-600mm	5

Appendix Table 6: ~~Meadow grassland~~Grassland and wildflower meadows

Turfed Areas	Mixture
General Meadow Mix	EM6 Meadow Mixture for chalk and limestone soils (Emorsgate Seeds)
Meadow Grass Mix (if required)	EG9 Grass Mixture for chalk and limestone soils (Emorsgate Seeds)
Tussock Grass Mix (if required)	EG10 Tussock Grass Mixture (Emorsgate Seeds)
Woodland Mix	EW1 Woodland Mixture (Emorsgate Seeds)
Hedgerow Mix	EH1 Hedgerow Mixture (Emorsgate Seeds)
Wet Meadow and Margins	EP1 Pond Edge Mixture (Emorsgate Seeds)