

Hornsea Project Three
Offshore Wind Farm



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Other Documents
Outline Landscape Management Plan

PINS Document Reference: A8.7
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 **Orsted**

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This report is also downloadable from the Hornsea Project Three offshore wind farm website at:

www.hornseaproject3.co.uk

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Front cover picture: Kite surfer near a UK offshore wind farm © Orsted Project Three (UK) Ltd., 2018.

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Glossary

Term	Definition
Code of Construction Practice	Code to ensure that best practice construction work is undertaken with minimal impacts upon local people and the environment.
Development Consent Order as made	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects.
Horizontal Directional Drilling	Method for the installation of pipes, conduits and cables using a surface launched drilling rig. This is used as a proxy for trenchless technology.
Onshore elements of Hornsea Three	Hornsea Three landfall area, onshore cable corridor, the onshore HVAC booster station, the onshore HVDC converter/HVAC substation and the interconnection with the Norwich Main National Grid substation.

Acronyms

Acronyms	Description
DCO	Development Consent Order
EMP	Ecological Management Plan
HDD	Horizontal Directional Drilling
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
LMP	Landscape Management Plan

Units

Unit	Description
km	Kilometre (distance)
m	Metre (distance)

1. Introduction

- 1.1.1.1 This Outline Landscape Management Plan (Outline LMP) has been prepared on behalf of Orsted in support of the application for a Development Consent Order (DCO) for Hornsea Three.
- 1.1.1.2 This Outline LMP is the framework to agree detailed masterplans and operations for the management and maintenance of the soft landscape proposals (planting and seeding) for the onshore HVAC booster station (if required) and onshore HVDC converter/HVAC substation, and management and maintenance of hedges and trees replaced and additional planting along the onshore cable corridor to ensure that the design and mitigation intent is realised. The landscape proposals and management prescriptions will provide the necessary information to help ensure successful establishment and growth of proposed planting and seeding.
- 1.1.1.3 This Outline LMP describes management to be carried out during the first five years following planting or seeding.
- 1.1.1.4 Local planning authorities will be consulted on this Outline LMP after submission of the DCO application and a final LMP will be agreed with them.
- 1.1.1.5 This Outline LMP should be read in conjunction with the Outline Ecological Management Plan (Outline EMP) (document reference A8.6) which will also accompany the DCO application, which describes the ecology and nature conservation mitigation measures that will be implemented prior to, during and post construction of the onshore elements of Hornsea Three, and the long-term management measures to be set in place for reinstated and enhanced habitats.

2. Existing Landscape Context

- 2.1.1.1 Onshore export cables will be buried underground in up to 6 trenches, running in a south / south westerly direction from the proposed landfall area at Weybourne in north Norfolk for approximately 55 km, before connecting into the national grid. The final corridor will be 80 m in width, of which 20 m will be used for temporary working areas. It runs across a primarily rural landscape incorporating farmland with fields and roads frequently enclosed by hedgerows, areas of woodland, river valleys and frequent small settlements.
- 2.1.1.2 The site of the onshore HVAC booster station is adjacent to an area of woodland to the east and arable fields enclosed by hedgerows to the west. The landscape within 5 km of the onshore HVAC booster station encompasses a largely rural area primarily given over to agriculture with frequent small blocks of woodland and contains a number of small settlements. The landform is undulating with some shallow valleys.
- 2.1.1.3 The site of the onshore HVDC converter/HVAC substation lies south of the A47 and east of the B1113. Arable fields enclosed by hedgerows lie to the west and south of the site, and a sand and gravel quarry under restoration lies to the east. Two lines of pylons and overhead electricity cables cross the landscape immediately south west of the site. North of the A47 lies the southern edge of Norwich and its suburbs which are cut through by the River Yare valley and surrounded by wetlands and parkland. To the south of the A47 the landscape becomes more rural and primarily in agricultural use. There are numerous settlements within this rural landscape ranging from hamlets to large villages and the area is scattered with small woodlands. Landform within 5 km of the site of the onshore HVDC converter/HVAC substation gently undulates with two distinct river valleys, those of the Yare and the Tas, cutting through it.

3. Illustrative Landscape Proposals for the Onshore HVAC Booster Station and Onshore HVDC Converter/HVAC Substation

3.1 Concept and Design Justification

3.1.1.1 The landscape proposals for the proposed onshore HVAC booster station and onshore HVDC converter/HVAC substation are both based upon the generic objectives below. Proposals are designed to:

- Reduce the landscape and visual impacts of Hornsea Three during operation by filtering and screening views of the developments and integrating them into their landscape contexts;
- Retain and protect all existing trees, hedgerows and other vegetation except where removal is necessary to construct and maintain Hornsea Three;
- Enhance existing landscape features such as hedgerows by planting gaps with hedgerow plants and trees along field edges adjacent to the onshore HVAC booster station and onshore HVDC converter/HVAC substation;
- Compliment, extend and join existing landscape elements and habitats including hedgerows, trees and woodlands; and
- Utilise native species that are present locally.

3.1.1.2 The onshore HVAC booster station and onshore HVDC converter/HVAC substation lie within different landscapes and are different in terms of, inter alia, scale and appearance. In addition to the generic objectives listed above, the design principles followed are specifically designed to respond to the proposals and contexts for each development as described below.

3.1.2 Onshore HVAC Booster Station

3.1.2.1 The illustrative landscape proposals for the onshore HVAC booster station are shown on the following drawings in Appendix A:

Drawing number	Drawing title
6117_499	Onshore HVAC Booster Station Illustrative Landscape Proposals
6117_500	Onshore HVAC Booster Station Illustrative Planting and Seeding Proposals Sheet 1 of 2

Drawing number	Drawing title
6117_501	Onshore HVAC Booster Station Illustrative Planting and Seeding Proposals Sheet 2 of 2

3.1.2.2 Key principles followed during the design process were as follows and would be maintained during the preparation of the final landscape plans:

- The onshore HVAC booster station would be located close to existing woodlands and in local low point in the landscape so that it would be largely screened in views from the east, and seen with a woodland backdrop in views from the west.
- Create a HVAC booster station enclosed by a mixed wood which appears as an extension to the existing woods to the east. This would be appropriate to local landscape character and also help to screen and filter views of the onshore HVAC booster station infrastructure from surrounding landscape and visual receptors, and integrate it into its landscape context.
- Along the line of the onshore cable corridor, a strip of mature trees and scrub along the field boundary immediately north of the onshore HVAC booster station, and hedgerows bounding fields further to the north and to the south, would be retained by installation of cables by trenchless techniques (e.g. Horizontal Directional Drilling, HDD).
- Create areas of new woodland and scrub, and new and strengthened hedgerows with hedgerow trees that would provide further screening and filtering of views, enhance landscape character and provide enhanced habitats for wildlife.

3.1.3 Onshore HVDC Converter/HVAC Substation

3.1.3.1 Illustrative landscape proposals for the onshore HVDC converter/HVAC substation are shown on the following drawings in Appendix A:

Drawing number	Drawing title
6117_509	Onshore HVDC Converter/HVAC Substation Illustrative Landscape Proposals
6117_510	Onshore HVDC Converter/HVAC Substation Illustrative Planting and Seeding Proposals Sheet 1 of 2
6117_511	Onshore HVDC Converter/HVAC Substation Illustrative Planting and Seeding Proposals Sheet 2 of 2

Drawing number	Drawing title
6117_512	Onshore HVDC Converter/HVAC Substation Indicative Areas of Vegetation to be Removed

3.1.3.2 Key principles followed during the design process were as follows and would be maintained during the preparation of the final landscape plans:

- v. The onshore HVDC converter/HVAC substation would be contained within existing hedged field boundaries, two lines of pylons and overhead lines to the south west, the B1113 to the west and the A47 to the north. These features and associated vegetation would help to limit the spread of effects on landscape character beyond the site and provide some filtering and screening of views.
- vi. Existing hedgerows and hedgerow trees along the route of the onshore cable corridor would be retained at the site boundaries of the onshore HVDC converter/HVAC substation by use of trenchless techniques (e.g. HDD) except where removal is necessary to allow construction and operation access. There would be some locations where hedges and trees would need to be removed such as at the proposed site entrance and where cables are to be installed; the locations for this removal would be confirmed post consent / pre commencement of the onshore HVDC converter/HVAC substation. Indicative areas of vegetation which may potentially be removed are shown on drawing 6117_512 in Appendix A.
- vii. New woodland and scrub planting is proposed around the onshore HVDC converter/HVAC substation. This would be appropriate to local landscape character and also help to screen and filter views of the onshore HVDC converter/HVAC substation from surrounding landscape and visual receptors, and integrate it into its landscape context.
- viii. Strengthen existing hedgerows by planting gaps with new hedge plants and hedgerow trees that would provide further screening and filtering of views, enhance landscape character and provide enhanced habitats for wildlife.
- ix. Minimise harm to the Norwich Southern Bypass Landscape Protection Zone (NSBLPZ). Policy DM4.6 Landscape Setting of Norwich of the South Norfolk Development Management Policies Document (2015) aims to protect the openness of the NSBLPZ around the southern bypass (A47) and, where possible, enhance the landscape setting of the southern bypass. There are existing open views of countryside looking south across the site from the A47 and these would be obscured by the onshore HVDC converter/HVAC substation. A short distance west and east of the site existing southern views from the A47 are obscured by roadside vegetation or embankments, restricting views of open countryside (see the Environmental Statement chapter 6, annex 4.5: Photograph Panels, Wirelines and Photomontages, section 4: Views from the A47).
The proposed onshore HVDC converter/HVAC substation would be set back from the A47 with woodland and woodland edge planting proposed between the substation and the road. This would, as planting matures, create a view of woodland in the foreground with the onshore HVDC converter/HVAC substation beyond. This would create a longer section of A47 with views of open

countryside obscured, but views of the onshore HVDC converter/HVAC substation would be filtered by proposed and existing vegetation and existing landform.

- x. Minimise harm to the Undeveloped Approaches to Norwich. Policy DM4.6 Landscape Setting of Norwich of the South Norfolk Development Management Policies Document (2015) aims to protect Undeveloped Approaches to Norwich, including the B1113. The policy states that all development proposals within the visual zone of influence viewed from the identified Undeveloped Approaches to Norwich should reinforce and avoid undermining the rural character of the Undeveloped Approaches to Norwich.
The onshore HVDC converter/HVAC substation would be set back from the B1113 with woodland and woodland edge planting proposed between the substation and this road. Existing trees and hedges along the B1113 would be retained and protected except where it is necessary for them to be removed for construction and operation of the onshore HVDC converter/HVAC substation. A permanent gap would be required at the site entrance on the B1113, but its width would be the minimum required for construction and operation in order to maximise screening of the onshore HVDC converter/HVAC substation.

3.1.3.3 The illustrative landscape proposals on drawings 6117_509 and 6117_511 in Appendix A also show potential tree planting within the edges of fields adjacent to residential properties to the south west (House on the Hill) and south east (Pond Cottage, Holly View Cottage, Park View Cottage, Mangreen Cottage) to provide additional screening. This would be offered as optional mitigation, to be taken forward should residents wish this, and it is not essential to mitigate the effects. Some residents may prefer to retain the openness of views (including some visibility of the onshore HVDC converter/HVAC substation) rather than having a tree belt close to their house.

4. Onshore Cable Corridor Trees and Hedges

- 4.1.1.1 Section 2.2.7 of the Outline EMP describes that approximately 14.35 km of hedgerows occur within the Hornsea Three onshore cable corridor, many of these would be retained by methods including crossing using trenchless techniques such as HDD and, in total, up to approximately 7.39 km of existing hedgerows would be removed to allow construction of Hornsea Three. Some of these hedges contain trees which will also be removed.
- 4.1.1.2 Protection and re-planting of hedgerows will be implemented to minimise adverse landscape, visual and other potential effects arising as a result of Hornsea Three. Furthermore, enhancement of hedgerows that are retained, currently in poor condition, provides an opportunity to achieve long term benefits.
- 4.1.1.3 Section 2.2.7 of the Outline EMP states that all sections of hedgerow removed to enable construction of the onshore cable corridor will be replanted as soon as practicable after each phase of cable installation. Replacement planting will comprise native shallow-rooting hedgerow species typical of the area, planted as 40 – 60 cm high whips, protected with spiral rabbit guards or other forms of protection from grazing. To prevent future root damage to cables, no trees will be planted along the Hornsea Three onshore cable corridor. In addition to the reinstatement of hedgerows severed by the onshore cable corridor, where practicable and as agreed with the land owner, hedgerow enhancement will be undertaken within a 100 m wide corridor that will contain the working corridor. The aim of enhancement will be to increase native species diversity and / or improve habitat structure and connectivity across the landscape. Trees will not be planted above the onshore cable corridor. However, where practicable, broadleaved native trees will be planted along hedgerows elsewhere in the enhancement corridor.
- 4.1.1.4 Where hedgerows and tree lines are crossed using open cut trenching techniques, measures will be taken to minimise vegetation removal and damage. These measures are likely to include reducing the length of hedgerow removed at crossing points, where this is possible.

5. Management

5.1.1.1 This section sets out the management prescriptions (regimes) for proposed vegetation, to be carried out during the first five years following planting.

5.2 Health & Safety

5.2.1.1 At all times it is a requirement that the relevant British Standards, Statutory Regulations and Codes of Practice are complied with. Particular attention should be paid to the latest issues of the following:

- The Food and Environment Protection Act;
- The Control of Pesticides Regulations;
- The Control of Substances Hazardous to Health Regulations;
- The Code of Practice for using Plant Protection Products; and
- The Health and Safety Work etc. Act.

5.2.1.2 The work should be undertaken using appropriate and well-maintained equipment operated by qualified and supervised staff.

5.2.1.3 Work should be planned and carried out in a manner and at times to minimise unnecessary disturbance to local residents, as well as 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.

5.3 Woodland and Woodland Edges

5.3.1.1 Woodland is a key component of the landscape proposals for the onshore HVAC booster station and onshore HVDC converter/HVAC substation. The aim of the management prescriptions is to guide the creation of a well-balanced, naturalistic woodland, with a dense and varied woodland edge and a dense canopy to provide screening.

- xi. Adjust stakes and ties at the end of each growing season or at any other time as necessary to maintain support and avoid chafing damage and thus minimise the possibility of infection taking hold within any wounds.
- xii. Inspect and if necessary repair deer, livestock and rabbit protection fencing regularly to ensure that it is effective at preventing browsing of plants by deer, livestock and rabbits.
- xiii. Maintain the ground around each plant weed free for the first five years to minimise competition allowing plants to grow unimpeded.
- xiv. Replace all plants that die annually at the end of each growing season during the first five years, or when it is agreed that the woodland has established effectively and individual plant replacement is unnecessary.

- xv. By year 3 woodland may need to be thinned. When choosing the specimens to be retained, it should be remembered that the primary functions of the woodland are to lessen landscape and visual impacts of Hornsea Three and help to integrate it into its setting. Some specimens with interesting form, windswept habit etc. should be retained alongside more conventional specimens.
- xvi. Remove stakes and ties in year 5, or when each plant is deemed firm and self-supporting.
- xvii. 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.
- xviii. 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.
- xix. Brushwood and other vegetative arisings, will be stacked within the woodland as small habitat piles, or disposed of off site as instructed.
- xx. 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
- xxi. Plants that pose a health and safety risk will be managed appropriately.

5.3.2 Longer Term Management

- xxii. Beyond the first five years the woodland will require thinning, starting a coppicing process. Cuts will be made on a cyclical rotation to ensure that the screening benefits are not compromised. Coppice cuts should be made to the same level as the previous cut, without stumps proud of the knob. Cuts should be made at an angle, to direct water away from the knob and stop it pooling.
- xxiii. As the woodland matures it is important to identify and develop a plan of succession. The age structure should to be diversified to benefit the widest range of wildlife, the highest level of resilience, and long term effectiveness of screening.

5.4 Hedges

5.4.1.1 New and replacement hedges, and existing hedges with gaps planted with new hedge plants and trees, will be managed as described below.

5.4.1.2 The objective is to increase the habitat potential of the hedges, some of which may also have mature trees in them, whilst maintaining them as key features of the surrounding landscape, and to provide screening of Hornsea Three.

- xxiv. Adjust stakes and ties of hedgerow trees at the end of each growing season or at any other time as necessary to maintain support and avoid chafing damage and thus minimise the possibility of infection taking hold within any wounds.
- xxv. Maintain the ground around each plant weed free for the first five years to minimise competition allowing plants to grow unimpeded.

- xxvi. Replace all plants that die annually at the end of each growing season.
- xxvii. Remove stakes and ties in year 5, or when the trees are deemed firm and self-supporting.
- xxviii. If used, plant shelters and guards should be removed once the trees/shrubs reach a level of maturity where they can withstand browsing wildlife.
- xxix. Cut hedges annually between September and February to approximately 2m height, or the height of existing hedges as appropriate. The hedgerows should be managed to create a thick base with a good density of stems.
- xxx. Plants that pose a health and safety risk will be managed appropriately.

5.5 Meadow Grass

- 5.5.1.1 A strip of meadow grass is proposed along the north side of the onshore HVDC converter/HVAC substation to retain a gap between an existing French drain and proposed woodland and woodland edge planting, to allow access for maintenance of the French drain.
- 5.5.1.2 Meadow grass will be cut every 6 to 8 weeks during the first year following seeding. From the second year onwards it will be cut twice per year, in early spring and late summer. All cuttings will be removed and unwanted weed species (e.g. creeping thistle and spear thistle) will be removed, either by topping before flowering or using spot treatment with an appropriate herbicide.

6. References

Department for Environment, Food and Rural Affairs (2006). The Code of Practice for using Plant Protection Products 2006;

South Norfolk Council (2015). South Norfolk Local Plan Development Management Policies Document Adoption Version.

The Control of Pesticides Regulations 1986. London, The Stationary Office;

The Control of Substances Hazardous to Health Regulations 2002. London, The Stationary Office;

The Food and Environment Protection Act 1985. London, The Stationary Office; and

The Health and Safety Work etc. Act 1974. London, The Stationary Office.

Appendix A Drawings

Drawing number	Drawing title
6117_499	Onshore HVAC Booster Station Illustrative Landscape Proposals
6117_500	Onshore HVAC Booster Station Illustrative Planting and Seeding Proposals Sheet 1 of 2
6117_501	Onshore HVAC Booster Station Illustrative Planting and Seeding Proposals Sheet 2 of 2
6117_509	Onshore HVDC Converter/HVAC Substation Illustrative Landscape Proposals
6117_510	Onshore HVDC Converter/HVAC Substation Illustrative Planting and Seeding Proposals Sheet 1 of 2
6117_511	Onshore HVDC Converter/HVAC Substation Illustrative Planting and Seeding Proposals Sheet 2 of 2
6117_512	Onshore HVDC Converter/HVAC Substation Indicative Areas of Vegetation to be Removed