



Hornsea Project Four: Environmental Statement (ES)

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F2.14: Outline Enhancement Strategy

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Glossary

Term	Definition
Commitment	<p>A term used interchangeably with mitigation and enhancement measures. The purpose of Commitments is to reduce and/or eliminate Likely Significant Effects (LSEs), in EIA terms.</p> <p>Primary (Design) or Tertiary (Inherent) are both embedded within the assessment at the relevant point in the EIA (e.g. at Scoping, Preliminary Environmental Information Report (PEIR) or Environmental Statement).</p> <p>Secondary commitments are incorporated to reduce LSE to environmentally acceptable levels following initial assessment i.e. so that residual effects are acceptable.</p>
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
EIA Directive	European Union Directive 85/337/EEC, as amended by Directives 97/11/EC, 2003/35/EC and 2009/31/EC and then codified by Directive 2011/92/EU of 13 December 2011 (as amended in 2014 by Directive 2014/52/EU).
EIA Regulations	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.
Energy Balancing Infrastructure (EBI)	The onshore substation includes energy balancing Infrastructure. These provide valuable services to the electrical grid, such as storing energy to meet periods of peak demand and improving overall reliability.
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Directive and EIA Regulations, including the publication of an Environmental Statement (ES).
Environmental Statement (ES)	A document reporting the findings of the EIA and produced in accordance with the EIA Directive as transposed into UK law by the EIA Regulations
Environmental Enhancement	An improvement to sociocultural and/or ecological features or provision of new sociocultural and/or ecological features, resulting in a net benefit to people and/or biodiversity. These measures are not linked to any negative impacts associated with Hornsea Four and are additional to those measures required to mitigate/compensate for impacts.
Export Cable Corridor (ECC)	The specific corridor of seabed (seaward of Mean High Water Springs (MHWS)) and land (landward of MHWS) from the Hornsea Four array area to the Creyke Beck National Grid substation, within which the export cables will be located.
Hornsea Project Four offshore wind farm	The term covers all elements of the project (i.e. both the offshore and onshore). Hornsea Four infrastructure will include offshore generating stations (wind turbines), electrical export cables to landfall, and connection to the electricity transmission network. Hereafter referred to as Hornsea Four.
Landfall	The generic term applied to the entire landfall area between Mean Low Water Spring (MLWS) tide and the Transition Joint Bay (TJB) inclusive of all

Term	Definition
	construction works, including the offshore and onshore ECC, intertidal working area and landfall compound. Where the offshore cables come ashore east of Fraisthorpe.
Landfall compound	Compound at landfall within which HDD drilling would take place
Link boxes	Underground chambers or above ground cabinets next to the cable trench housing low voltage electrical earthing links.
Mitigation	A term used interchangeably with Commitment(s) by Hornsea Four. Mitigation measures (Commitments) are embedded within the assessment at the relevant point in the EIA (e.g. at Scoping, PEIR or ES).
National Grid Electricity Transmission (NGET) substation	The grid connection location for Hornsea Four.
Onshore substation (OnSS)	Comprises a compound containing the electrical components for transforming the power supplied from Hornsea Project Four 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. If a HVDC system is used the OnSS will also house equipment to convert the power from HVDC to HVAC.
Order Limits	The limits within which Hornsea Four (the 'authorised project') may be carried out.
Orsted Hornsea Project Four Ltd.	The Applicant for the proposed Hornsea Project Four Offshore Wind Farm Development Consent Order (DCO).
Trenchless Techniques	Also referred to as trenchless crossing techniques or trenchless methods. These techniques include Horizontal Directional Drilling (HDD), thrust boring, auger boring, and pipe ramming, which allow ducts to be installed under an obstruction without breaking open the ground and digging a trench.

Acronyms

Acronym	Definition
BAP	Biodiversity Action Plan
CoCP	Code of Construction Practice
DCO	Development Consent Order
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
ES	Environmental Statement
EBI	Energy Balancing Infrastructure
HDD	Horizontal Directional Drilling
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
JB	Joint Bays
LB	Link Box
MLWS	Mean Low Water Spring
NGET	National Grid Energy Transmission
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
SoS	Secretary of State
TJB	Transition Joint Bays

Units

Unit	Definition
GW	Gigawatt (power)
kV	Kilovolt (electrical potential)
kW	Kilowatt (power)
KJ	Kilojoules (energy)
m	meters
km	kilometers

1 Introduction

1.1.1.1 Orsted Hornsea Project Four Limited (the 'Applicant') is proposing to develop the Hornsea Project Four Offshore Wind Farm (hereafter 'Hornsea Four') which will be located approximately 69 km from the East Riding of Yorkshire in the southern North Sea and will be the fourth project to be developed in the former Hornsea Zone. Hornsea Four will include both offshore and onshore infrastructure including an offshore generating station (wind farm), export cables to landfall, and on to an onshore substation (OnSS) with energy balancing infrastructure (EBI), and connection to the electricity transmission network.

1.1.1.2 Details of the activities and infrastructure associated with Hornsea Four are fully set out in [Volume A1, Chapter 4: Project Description](#). In summary, the onshore elements of Hornsea Four will comprise of:

- **Landfall** – including transition joint bays connecting the offshore export cable corridor (ECC) and onshore ECC, one temporary landfall compound and temporary access tracks;
- **Onshore ECC** – including the onshore export cables, eight temporary logistics compounds, joint bays and link boxes, and temporary access tracks;
- **OnSS and EBI** – including the temporary working area, temporary and permanent access tracks, the permanent working area (inclusive of the OnSS, EBI and associated landscaping and attenuation feature(s)); and
- **400 kV National Grid Electricity Transmission (NGET) connection area** – the area within which a 400 kV section of the onshore ECC will connect to the existing National Grid Electricity Transmission (NGET) substation at Creyke Beck.

1.1.1.3 Hornsea Four has adopted several commitments (primary design principles inherent as part of the project). These commitments (set out within [Volume A4, Annex 5.2: Commitment Register](#)) include; installation techniques and engineering designs/modifications, to avoid a number of impacts or to reduce impacts as far as possible.

2 Purpose and Implementation of the Outline Enhancement Strategy

2.1.1.1 The Outline Enhancement Strategy sets out environmental enhancement measures identified by the Applicant for the onshore elements of Hornsea Four landward of Mean Low Water Springs (MLWS). No environmental enhancement measures are considered for the offshore elements of Hornsea Four seaward of MLWS.

2.1.1.2 Environmental enhancement measures are those that seek to improve the overall environmental (ecological and sociocultural) condition of the development site upon completion of construction. The production of an Outline Enhancement Strategy fulfils project commitment Co198 ([Volume A4, Annex 5.2: Commitment Register](#)) which requires an Enhancement Strategy to be developed in accordance with the Outline Enhancement Strategy. Proposed environmental enhancement measures might include (but are not limited to) the provision of educational signage for historic artefacts along the coastline; improving accessibility and quality of local public rights of way; or improving the quality of local habitats for biodiversity.

2.1.1.3 The production of an Outline Enhancement Strategy aims to secure the proposed enhancement measures over and above primary, secondary and tertiary mitigation measures as set out in [Volume A3: Onshore Environmental Assessment](#) and [Volume A4, Annex 5.2: Commitment Register](#). The proposed enhancement measures described in this document are additional to any avoidance, mitigation and compensation measures required to reduce potential impacts through the Environmental Impact Assessment (EIA) process and will be subject to landowner and Local Planning Authority agreement where required prior to implementation. This Outline Enhancement Strategy should be read in conjunction with [Volume A4, Annex 4.2: Onshore Crossing Schedule](#).

2.2 Implementation of the Outline Enhancement Strategy

2.2.1.1 The Outline Enhancement Strategy establishes the principles for promoting an enhanced environmental value of the onshore project elements. The project has identified a number of potential environmental enhancement measures which are deemed to provide positive environmental outcomes for local people and biodiversity. The proposed environmental enhancement measures described in this outline document are typical of onshore environmental enhancement practices (see [Table 5](#)) and will be subject to landowner and Local Planning Authority agreement where required prior to implementation.

2.2.1.2 Following the granting of the DCO for Hornsea Four, and once the final project design has been confirmed, a detailed Enhancement Plan will be prepared and agreed with the relevant planning authority prior to the relevant part of the construction of the connection works, following the principles established in this Outline Enhancement Strategy. This is secured by Requirement 22 of the draft DCO Schedule 1 which states:

22.—(1) No stage of the connection works may commence until written details of an enhancement strategy (which accords with the outline enhancement strategy) for that stage of the connection works has been submitted to and approved by the relevant planning authority.

(2) The enhancement strategy must be implemented as approved.

2.2.1.3 Hornsea Four will adopt a staged approach to the approval of DCO requirements enabling requirements to be approved in part or in whole prior to the commencement of the relevant stage of works according to whether a staged approach is to be taken to construction of the works in question. This approach will be governed by the inclusion of Requirement 27 within the draft DCO which requires a written scheme setting out the stages of construction to be approved prior to the commencement of the authorised development. The Construction Staging Scheme must be approved by the relevant Planning Authority in respect of the onshore connection works and by the MMO in relation to authorised works seaward of MHWS.

2.2.1.4 The Construction Staging Scheme will detail the stages of construction and the timing of approval of relevant DCO requirements with respect to the relevant construction stages identified within the scheme.

(1) The authorised development may not be commenced until a written scheme setting out the stages of construction of the authorised development has been submitted to and approved by the relevant planning authority, in relation to the connection works, or the MMO, in relation to works seaward of MHWS.

(2) The stages of construction referred to in sub-paragraph (1) shall not permit the authorised development to be constructed in more than one overall phase.

(3) The scheme must be implemented as approved.

2.2.1.5 The following objectives are supported by the implementation of The Outline Enhancement Strategy:

- Describe a range of potential enhancements to new or existing ecological features within the Order Limits landward of MLWS which enhance local environment opportunities for wildlife;
- Describe a range of potential enhancements to new or existing sociocultural features within the Order Limits landward of MLWS which enhance the environment for local people;
- Ensure all proposed measures respond to the needs of local people and biodiversity (identified through landowner and Local Planning Authority consultation), are cost effective and can be incorporated into existing site plans and designs;
- Ensure the needs of local people and biodiversity are considered through linking potential enhancements to consultation feedback received through the Hornsea Four pre-application stage;
- Ensure all proposed measures are considered in the context of local landowner agreement and can be implemented in a manner that is both sensitive to their needs and can be sustainably managed over the long term; and
- Ensure all proposed measures can be implemented in a manner which supports local biodiversity enhancement and connectivity within existing ecological networks.

2.2.1.6 This Outline Design Plan sits within a wider suite of documents (as shown in [Figure 1](#), which utilises the same colour scheme to denote levels) which comprise the following:

DCO Parameters and Maximum Design Scenario

Volume C1.1: Hornsea Four Draft Development Consent Order – Consents the overarching maximum parameters associated with Hornsea Four infrastructure.

Volume A1, Chapter 4: Project Description – Further refines the maximum design scenario (MDS) for the Hornsea Four infrastructure providing additional parameters not outlined in the draft DCO.

Detailed Design

Volume F2, Chapter 13: Outline Design Plan – Provides the outline approach and key embedded design mitigations of the OnSS and EBI which will inform the detailed design to be approved under Requirement 7 of the draft DCO.

Mitigation Measures

Volume A3, Chapter 1-10: Onshore Environmental Assessment – Comprises ten environmental topic areas subject to Environmental Impact Assessment (EIA), setting out primary, tertiary and secondary mitigation measures (secured through various DCO provisions as identified in **Volume A4, Annex 5.2: Commitments Register**) to avoid or reduce environmental effects.

Volume F2, Chapter 8: Outline Landscape Management Plan - Sets out the outline approach to landscaping works which will inform the detailed landscaping to be approved under Requirement 8 of the draft DCO. The indicative landscape masterplan also includes some embedded enhancement measures.

Further mitigation measures associated with Hornsea Four are secured in the Outline Ecological Management Plan (**Volume F2, Chapter 3**), Outline Onshore Infrastructure Drainage Strategy (**Volume F2, Chapter 6**), Outline Onshore Written Scheme of Investigation (**Volume F2, Chapter 10**), Outline Code of Construction Practice (**Volume F2, Chapter 2**).

Biodiversity Net Gain

Volume F2, Chapter 15: Outline Net Gain Strategy – Covering only matters that are measurable, linked to biodiversity net gain. The outline measures will be developed further post-consent of Hornsea Four and approved under Requirement 6 of the draft DCO.

Enhancement Measures

Volume F2, Chapter 14: Outline Enhancement Strategy – Sets out outline enhancement measures (measures identified over and above mitigation measures) associated with both the natural and human environment. The outline measures will be developed further post-consent of Hornsea Four and approved under Requirement 22 of the draft DCO.

Design Vision

The core principals of each of the documents outlined above are combined in **Volume A4, Annex 4.6: Design Vision Statement**. This document presents the 'vision' of Hornsea Four, setting out how the project design, mitigation, enhancement and net gain measures interact. This interaction is further illustrated in **Figure 1**. The core elements of the Design Vision Statement including the relevant project mitigations are secured via respective elements of the draft DCO (**Volume C1.1**) (the most relevant of which are outlined in the above boxes). The Design Vision Statement is therefore provided as a visual aid only.

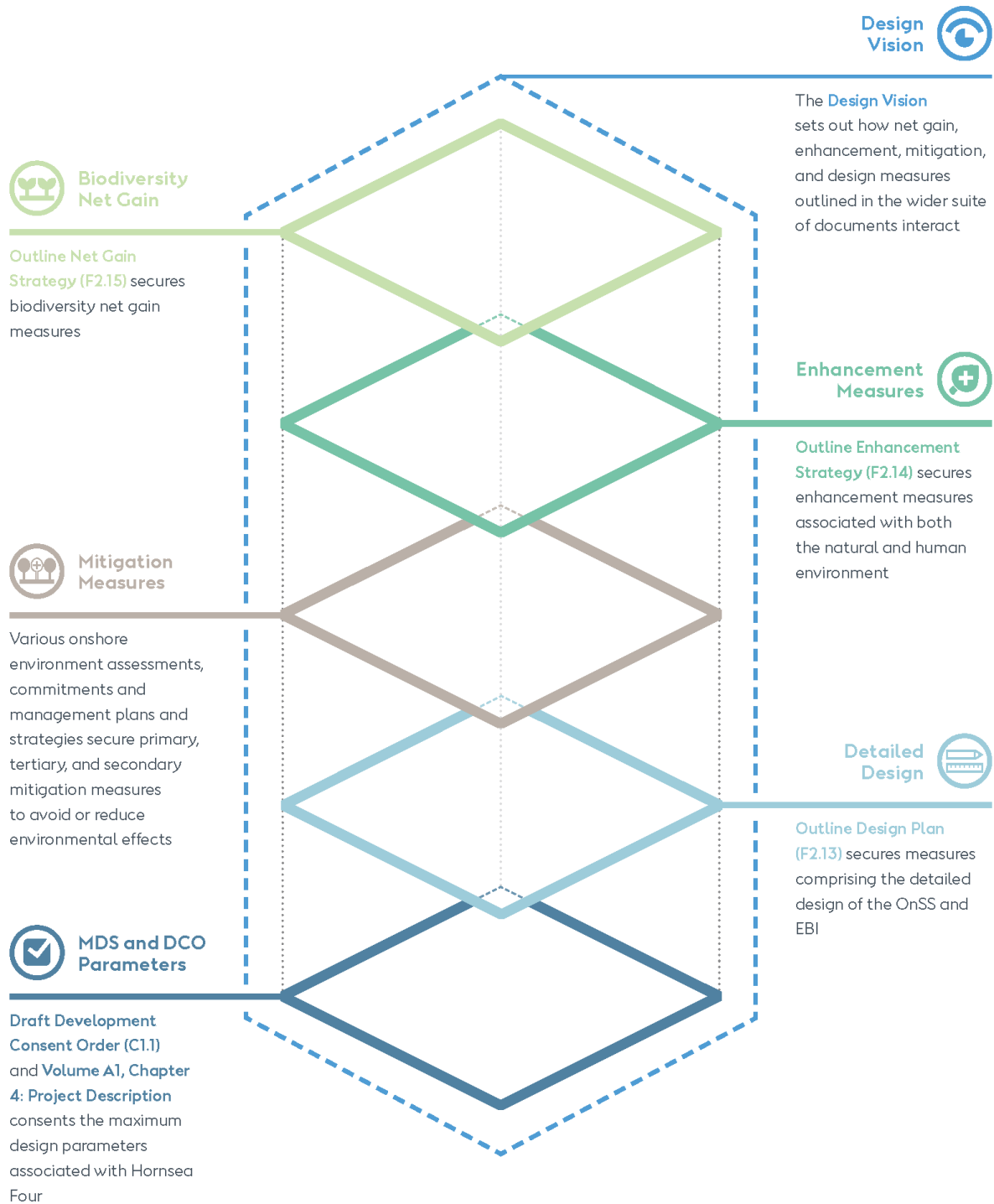


Figure 1: Hornsea Four Document Interaction.

3 Commitments

3.1.1.1 The Applicant has developed a range of Commitments to eliminate or reduce impacts and effects as far as possible. All Commitments identified for Hornsea Four are detailed within the Commitments Register (see [Volume A4, Annex 5.2: Commitments Register](#)).

3.1.1.2 The Commitments Register includes a number of commitments relevant to enhancement (see [Table 1](#)).

Table 1: Enhancement Commitments.

Commitment ID	Measure Proposed	How the measure will be secured
Co194	Enhancement: Where agreed with landowners, removed hedgerows and trees will be replaced with hedgerows of a more diverse and locally native species composition than that which was removed.	DCO Requirement 22 (Enhancement Strategy)
Co196	Enhancement: The design of the attenuation feature will incorporate an appropriate landscaping to create an area of biodiverse habitat, as outlined in the Outline Enhancement Strategy	
Co198	Enhancement: An Enhancement Strategy will be developed in accordance with the Outline Enhancement Strategy. The Outline Enhancement Strategy will include proposed measures to provide enhancement and will not inform the EIA process. Proposed enhancement measures include but are not limited to; provision of historic signage at landfall; improvements to PRoWs; wider biodiversity, hydrological and social enhancement measures across the onshore Order Limits.	

4 Planning and Policy Context

4.1 National Planning Policy

4.1.1.1 National planning policy in relation to environmental enhancement and offshore renewable energy Nationally Significant Infrastructure Projects (NSIP) is contained in the National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-1, Department for Environment and Climate Change (DECC), 2011). These are summarised in [Table 2](#).

Table 2: Summary of NPS EN-1 policy provision relevant to environmental enhancement.

Summary of NPS EN-1 Provisions	How and Where Considered in the ES
<i>"The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests."</i> (paragraph 5.3.4 of NPS EN-1).	The protection of biodiversity and geological receptors is covered through the route planning and site selection process (Volume A1, Chapter 3: Site Selection and Consideration of Alternatives). Opportunities for enhancement are outlined in this document, with biodiversity net gain covered

Summary of NPS EN-1 Provisions	How and Where Considered in the ES
<p><i>"The IPC [hereafter the Secretary of State (SoS)] will aim to maximise opportunities to build in beneficial biodiversity features when considering proposals as part of good design." (paragraph 5.3.15 of NPS EN-1).</i></p>	<p>in Volume F2, Chapter 16: Outline Net Gain Strategy.</p> <p>Opportunities for enhancement are outlined in this document, with biodiversity net gain covered in Volume F2, Chapter 16: Outline Net Gain Strategy.</p>
<p><i>"The applicant should include appropriate mitigation measures as an integral part of the proposed development and demonstrate that: Opportunities will be taken to enhance existing habitats and, where practicable, to create new habitats of value within the site landscaping proposals." (paragraph 5.3.18 of NPS EN-1).</i></p>	<p>Ecological management and mitigation measures are presented in Volume F2, Chapter 3: Outline Ecological Management Plan.</p> <p>Opportunities for enhancement are outlined in this document, with biodiversity net gain covered in Volume F2, Chapter 16: Outline Net Gain Strategy. Landscaping proposals are presented in Volume F2, Chapter 8: Outline Landscape Management Plan.</p>
<p><i>"In considering the impact on maintaining coastal recreation sites and features, the SoS should expect applicants to have taken advantage of opportunities to maintain and enhance access to the coast. In doing so the SoS should consider the implications for development of the creation of a continuous signed and managed route around the coast, as provided for in the Marine and Coastal Access Act 2009." (paragraph 5.10.16 of NPS EN-1).</i></p>	<p>Coast recreation has been considered during the route planning and site selection process (Volume A1, Chapter 3: Site Selection and Consideration of Alternatives). The Applicant has committed to maintaining beach access to the public during construction, unless an unforeseen and unplanned event occurs during which emergency access is required (Co192). Opportunities for enhancement at landfall are presented in this document.</p> <p>Consideration of the English Coast Path is presented in Volume A3, Chapter 6: Land Use and Agriculture. The Applicant has engaged with natural England regarding the development of the English Coastal Path to ensure up-to-date information is available and identify opportunities for support. These discussions are ongoing at the time of application.</p>
<p><i>"Where green infrastructure is affected, the SoS should consider imposing requirements to ensure the connectivity of the green infrastructure network is maintained in the vicinity of the development and that any necessary works are undertaken, where possible, to mitigate any adverse impact and, where appropriate, to improve that network and other areas of open space including appropriate access to new coastal access routes. (paragraph 5.10.20 of NPS EN-1.)</i></p>	<p>The proposals avoid direct effects (including construction) on open space including parks; ornamental gardens; natural/semi-natural green space; green corridors; amenity green space; sports/playing pitches; allotments; cemeteries / churchyards; and open space provision for young people.</p> <p>The Applicant has committed to maintaining beach access to the public during construction,</p>

Summary of NPS EN-1 Provisions	How and Where Considered in the ES
	unless an unforeseen and unplanned event occurs during which emergency access is required (Co192). Opportunities for enhancement at landfall are presented in this document.

4.1.1.2 Local Planning Policy **Table 3** provides details of the local planning policy relevant to enhancement.

Table 3: Summary of local planning policy provisions.

Summary of local planning policy provisions	How and where Considered in the ES
<p>Development proposals should “where possible, seek to make the most of the opportunities to protect and enhance landscape characteristics and features. To achieve this, development should:</p> <ul style="list-style-type: none"> • Protect and enhance important open spaces within settlements which contribute to their character. • Ensure important hedgerows and trees are retained unless their removal can be justified in the wider public interest. Where important hedgerows and trees are lost replacements will usually be required. • Maintain or enhance the character and management of woodland where appropriate. • Retain, not detract from, and enhance wetland and water feature characteristics. • Protect and enhance views across valued landscape features, including flood meadows, chalk grassland, lowland heath, mudflats and salt marsh, sand dunes and chalk cliffs. • Protect and enhance the undeveloped coast.” <p>(Policy ENV2, ERYC Local Plan Strategy Document, 2016)</p>	<p>Hornsea Four does not directly impact areas of open space or areas of wetland.</p> <p>Important hedgerows and trees are considered in Volume A6, Annex 3.14: Hedgerow and Arboricultural Survey Report. Mitigation measures and/or reinstatement works relating to important hedgerows and veteran trees that will be adhered to during the construction works associated with the onshore aspects of Hornsea Four, as agreed with stakeholders during the onshore Evidence Plan Technical Panel meeting process, are presented in Volume F2, Chapter 3: Outline Ecological Management Plan and Volume F2, Chapter 8: Outline Landscape Management Plan.</p> <p>The Applicant seeks, through the provision of this outline strategy, to ensure the character and management of woodland is enhanced at specific locations along the onshore ECC and onshore substation locations. Additionally, the Applicant has engaged with East Riding of Yorkshire Council and the HEYwoods community forest partnership in order to identify provisional opportunities to support the Northern Forest Project and other woodland creation and tree planting projects across the area. Should development consent be granted, a detailed Enhancement Plan will be prepared and agreed with the relevant planning authority prior to construction of the relevant</p>

Summary of local planning policy provisions	How and where Considered in the ES
	<p>connection works commencing. This is secured by Requirement 22 of the draft DCO (Volume C1, Chapter 1: Hornsea Four Draft Development Consent Order).</p> <p>Visual impacts associated with Hornsea Four are covered in Volume A2, Chapter 10: Seascape, Landscape and Visual Resources and Volume A3, Chapter 4: Landscape and Visual. Protected landscape areas have been avoided by Hornsea Four.</p>
<p><i>"Proposals should further the aims of the East Riding of Yorkshire Biodiversity Action Plan (ERYBAP), designated Nature Improvement Areas (NIAs) and other landscape scale biodiversity initiatives. To optimise opportunities to enhance biodiversity, proposals should seek to achieve a net gain in biodiversity where possible and will be supported where they:</i></p> <ol style="list-style-type: none"> 1. Conserve, restore, enhance or recreate biodiversity and geological interests including the Priority Habitats and Species (identified in the ERYBAP) and Local Sites (identified in the Local Sites in the East Riding of Yorkshire). 2. Safeguard, enhance, create and connect habitat networks..." <p>(Policy ENV4, ERYC Local Plan Strategy Document, 2016)</p>	<p>Ecological management and mitigation measures are presented in Volume F2, Chapter 3: Outline Ecological Management Plan. Opportunities for enhancement are outlined in this document, with biodiversity net gain covered in Volume F2, Chapter 16: Outline Net Gain Strategy. Landscaping proposals are presented in Volume F2, Chapter 8: Outline Landscape Management Plan.</p> <p>It is noted that one of the areas identified for potential biodiversity net gain by Hornsea Four, aligns with an area identified in the ERYBAP as Priority Landscape-scale Project Areas (No. 16) see Volume F2, Chapter 16: Outline Net Gain Strategy.</p>
<p>Development proposals should:</p> <ol style="list-style-type: none"> 1. Incorporate existing and/or new green infrastructure features within their design; and 2. Capitalise on opportunities to enhance and/or create links between green infrastructure features such as those listed in Table 10. Links should be created both on-site and, where possible, with nearby green infrastructure features. <p>B. Development proposals within, or in close proximity to, a green infrastructure corridor should enhance the functionality and connectivity of the corridor.</p> <p>(Policy ENV5, ERYC Local Plan Strategy Document, 2016)</p>	<p>The proposals avoid direct effects (including construction) on open space including parks; ornamental gardens; natural/semi-natural green space; green corridors; amenity green space; sports/playing pitches; allotments; cemeteries / churchyards; and open space provision for young people.</p> <p>The Applicant has considered the provision of woodland as part of the landscape proposals adjacent to the OnSS and EBI. Enhancement opportunities associated with this are presented in Table 5 with full Landscaping proposals are presented in Volume F2, Chapter 8: Outline Landscape Management Plan.</p>
<p><i>"Existing and disused public transport, cycling and footpath networks and facilities, including Public Rights of Way (PRoW), will be enhanced and/or protected, particularly within and linking to the</i></p>	<p>The potential for enhancement of PRoWs is outlined in Table 6. Mitigation measures to be utilised during construction are outlined in the</p>

Summary of local planning policy provisions	How and where Considered in the ES
<p><i>Major Haltemprice Settlements, Principal Towns, and Towns.</i>" (Policy S8, ERYC Local Plan Strategy Document, 2016)</p>	<p>Outline PRoW Management Plan, which forms and appendix to Volume F2, Chapter 2: Code of Construction practice.</p>
<p><i>"Proposals should maintain and/or enhance the quantity, quality and accessibility of open space and address any shortfalls in provision".</i> (Policy C3, ERYC Local Plan Strategy Document, 2016)</p>	<p>The proposals avoid direct effects (including construction) on open space including: parks; ornamental gardens; natural/semi-natural green space; green corridors; amenity green space; sports/playing pitches; allotments; cemeteries / churchyards; and open space provision for young people.</p> <p>The Applicant has considered the provision of woodland as part of the landscape proposals adjacent to the OnSS and EBI. Enhancement opportunities associated with this are presented in Table 5 with full Landscaping proposals are presented in Volume F2, Chapter 8: Outline Landscape Management Plan.</p>
<p><i>"Sensitively maintain the character of the undeveloped coast, particularly the Flamborough Heritage Coast, and improve public access to, and enjoyment of, the coast, ensuring that development proposals protect and enhance its distinctive landscape, conservation initiatives and the quality of the natural environment."</i> (Policy A2, ERYC Local Plan Strategy Document, 2016)</p>	<p>The character of the coastline is protected through the commitment to horizontal direction drilling (HDD) (or other trenchless technologies) at the landfall (Co187).</p> <p>The Applicant has committed to maintaining beach access to the public during construction, unless an unforeseen and unplanned event occurs during which emergency access is required (Co192). Opportunities for enhancement at landfall are presented in this document.</p>

4.1.1.3 Through the provision of this outline strategy, project commitment Co198 ([Volume A4, Annex 5.2: Commitment Register](#)) and the Hornsea Four design vision (see [Figure 1](#)), the Applicant supports The National Infrastructure Commissions Design Principles for National Infrastructure, which makes reference to environmental enhancement through four key principles (climate, people, places and value). This document specifies that the design process for national infrastructure projects should explore *"every option for increasing value alongside the creative process"* so that *"opportunities to secure economic, environmental and social benefits and identified, pursued and articulated for local and national audiences."*

4.1.1.4 This is discussed in further detail in [Volume A1, Chapter 5: Environmental Impact Assessment Methodology](#).

5 Consultation

5.1.1.1 Consultation is a key part of the DCO application process. Consultation regarding environmental enhancement has been conducted through informal meetings with stakeholders (the Evidence Plan process), the EIA scoping process (Orsted, 2018) and formal consultation on the Preliminary Environmental Impact Assessment (PEIR). An overview of the project consultation process is presented within **Volume A1, Chapter 6: Consultation**.

5.1.1.2 A summary of the key comments specific to enhancement raised during consultation is outlined below in **Table 4**, together with how these issues have been considered.

Table 4: Consultation responses.

Consultee	Date, Document, Forum	Issues raised	Response to issue and where addressed in the ES
The Wildlife Trusts and Yorkshire Wildlife Trust	Section 42	Furthermore, the commitments register includes the proposed enhancement of habitats post construction as per the Landscape Management Plan, which is not provided at this time. Again, further clarification would be appreciated over how this will be achieved. We would assume most of the land will be returned to agricultural land; hence we would appreciate confirmation of this assumption and how a net gain in biodiversity can be achieved through restored habitat as per the NPPF. This should, as a minimum, include enhancements of hedgerows, field margins and grassland to be impacted by works. A timeline of when habitats are expected to be restored would also be helpful to assess the overall impacts of the scheme.	<p>Ecological management and mitigation measures are presented in Volume F2, Chapter 3: Outline Ecological Management Plan.</p> <p>Opportunities for enhancement are outlined in this document, with biodiversity net gain covered in Volume F2, Chapter 16: Outline Net Gain Strategy.</p> <p>Landscaping proposals are presented in Volume F2, Chapter 8: Outline Landscape Management Plan.</p>
East Riding of Yorkshire and Kingston upon Hull Joint Local Access Forum (JLAC)	Section 42	The National Planning Policy Framework (paragraph 98) states that 'Planning policies and decisions should protect and enhance public rights of way and access, including taking opportunities to provide better facilities for users'. Given the inevitable disruption to the PROW network during project delivery, JLAF is disappointed that the scope for potential enhancements to the network – in accordance with	<p>The Applicant is committed to protecting and, where feasible, enhancing public rights of way and access. The potential for enhancement of PROWs is outlined in Table 6.</p> <p>Mitigation measures to be utilised during construction are outlined in the Outline PROW Management Plan, which forms</p>

Consultee	Date, Document, Forum	Issues raised	Response to issue and where addressed in the ES
		<p>paragraph 98 - is not strongly evident within the PEIR (Volume 3, Chapter 6). It is however acknowledged that enhancements could potentially be delivered through the allocation of Section 106 (or other similar) funding specifically relating to rights of way and public access, and JLAF therefore requests the provision of such funding for this project to mitigate the negative impacts and ensure that PROW enhancements are delivered.</p>	<p>and appendix to Volume F2, Chapter 2: Code of Construction practice.</p>
Environment Agency	Section 42	<p>We also propose that a commitment should be added to the Commitment Register to ensure that environmental / biodiversity net gains (enhancements) are delivered as part of the proposed development. The details of the proposed enhancement should be provided as the detailed design of the scheme is finalised and should be agreed with us prior to construction. See below for more detail. For a development of this size we would not only expect embedded mitigation to offset any adverse environmental impacts, but also a commitment to environmental enhancement that is commensurate to the scale of the scheme.</p>	<p>Ecological management and mitigation measures are presented in Volume F2, Chapter 3: Outline Ecological Management Plan.</p> <p>Opportunities for enhancement are outlined in this document, with biodiversity net gain covered in Volume F2, Chapter 16: Outline Net Gain Strategy.</p> <p>Landscaping proposals are presented in Volume F2, Chapter 8: Outline Landscape Management Plan.</p>
Environment Agency	Section 42	<p>As mentioned above, there are no clear plans to provide environmental enhancement. Opportunities for environmental improvement should be identified and funding made available to carry out these works included in the project budget. Tree and hedge planting, wetland creation or restoration, grassland creation or improvement are amongst the possible ideas for environmental enhancement. Enhancement projects can be taken "off-site" in partnership with local conservation groups, such as the Yorkshire Wildlife Trust.</p>	<p>The Applicant seeks, through the provision of this outline strategy, to ensure opportunities for environmental enhancement at specific locations along the onshore ECC and onshore substation location are provided. Should development consent be granted, a detailed Enhancement Plan will be prepared and agreed with the relevant planning authority prior to construction of the</p>

Consultee	Date, Document, Forum	Issues raised	Response to issue and where addressed in the ES
			relevant connection works commencing. This is secured by Requirement 22 of the draft DCO (C1.1: Hornsea Four Draft Development Consent Order).
Natural England	Section 42	<p>Without a sufficient baseline, it is not clear how the project will prevent no net loss. It is not clear that the measures included in this document will lead to a biodiversity enhancement. There is no mention of how the project will attempt to achieve a biodiversity net gain.</p> <p>NER: Update and provide adequate mitigation and enhancements/net gain once baseline is sufficient.</p>	The Applicant confirms a full onshore ecology baseline has been achieved. Additional opportunities for onshore enhancement are outlined in this document, with onshore biodiversity net gain proposals presented in Volume F2, Chapter 16: Outline Net Gain Strategy .

6 Outline Enhancement Measures

- 6.1.1.1 The following section provides an overview of the environmental enhancements (both ecological and sociocultural) being considered. Full details of site-specific measures to be implemented will be described in the Enhancement Strategy submitted pre-construction of the relevant connection works. This is secured by Requirement 22 of the draft DCO ([C1.1: Hornsea Four Draft Development Consent Order](#)).

6.2 Natural Environment Enhancement

Table 5: Proposed Natural Environment Enhancement Initiatives.

Enhancement Measure	Proposed Approach
<p>Onshore substation ecologically diverse planting</p>	<p>An ecologically diverse planting scheme will be designed to replace, improve and enhance existing ecological connections around the infrastructure within the OnSS area. This may comprise a mix of nurse woodland and core woodland based on indigenous woodland species. It is anticipated the woodland bands would be set along the boundaries and enclose a broad band of species rich grassland.</p> <p>Within the landscaped area, grassland may be seeded with a wildflower seed mix, pollen and nectar strips and clover leys. Diverse mixtures of short turf, tall herbs, scrub and woodland may be created, providing varying heights and a mosaic habitat for native invertebrates, reptiles and mammals. Retention of brash as deadwood, for the creation of hibernacula and inclusion of bird (i.e. barn owl) and bat (and other small mammal) boxes may be considered. Planting should be of a quantity and ecological quality beyond visual screening for impact mitigation purposes and tie in with any local biodiversity targets.</p> <p>The locations for landscape planting will be selected to ensure that ecological connections across the site, between larger blocks of habitat are maintained and improved where possible, to enhance overall ecological connectivity of habitat surrounding the OnSS. Examples of enhancement planting incorporated into the project design is presented in the Outline Landscape management Plan (Volume F2, Chapter 8) and the Design Vision Statement (Volume A4, Annex 4.6).</p> <p>The specific interaction between enhancement measures and biodiversity net gain measures (Volume F2, Chapter 16) (those that are measurable for net gain) at the OnSS will be defined and established during the detailed design stage. Measures relevant to biodiversity net gain will be included within the final Net Gain Strategy and used for net gain calculations.</p>
<p>Onshore substation creation of a water attenuation feature</p>	<p>An integrated sustainable drainage system within the OnSS, including a natural attenuation feature integrated into a biodiverse landscaped design will provide environmental enhancement through a variety of both covered and open water habitats, favouring different flora and fauna. Planting may consist of native aquatic planting and a varied wetland edge for bankside marginal planting, developing a mosaic which maximises structural diversity. Ecological value may be further enhanced through the creation of small pools around the margins of any attenuation basin, to allow a wider range of animals and plants to use the site. Examples of an attenuation area incorporated into the project design is presented in the Design Vision Statement (Volume A4, Annex 4.6). It is noted that natural attenuation features are anticipated to be located outside of the security fencing at the OnSS, with the potential for engineered solutions within the security fencing. Further information regarding planting is included in the Outline Landscape Management Plan (Volume F2, Chapter 8), with drainage methodology presented in the Outline Onshore Infrastructure Drainage Strategy (Volume F2, Chapter 6).</p>

Enhancement Measure	Proposed Approach
	<p>The specific interaction between enhancement measures and biodiversity net gain measures (Volume F2, Chapter 16) (those that are measurable for net gain) at the OnSS will be defined and established during the detailed design stage. Measures relevant to biodiversity net gain will be included within the final Net Gain Strategy and used for net gain calculations.</p>
<p>Onshore cable corridor hedgerow planting</p>	<p>Planting hedgerow gaps along the onshore export cable corridor with native woody species such as spindle, hawthorn, rowan and hazel and an emphasis on species bearing nectar, berries, fruit and nuts will enhance foraging opportunities of local fauna and provide benefits for nesting birds, invertebrates and bats. Planting will be of a quantity and ecological quality beyond that required for mitigation purposes.</p> <p>Hedgerows removed for onshore export cable installation may be replanted to an improved ecological standard, one that aligns with local guidance of hedgerow planting i.e. the East Riding of Yorkshire hedgerow Biodiversity Action Plan (BAP) strategy. Where possible hedges will be double planted with 2 m grassland strips on both sides so there is always a leeward side to forage. Hedgerow planting schemes will be subject to landowner agreement prior to construction of the relevant connection works. Examples of enhancement planting incorporated into the project design is presented in the Design Vision Statement (Volume A4, Annex 4.6). Ecological management measures are presented in the Outline Ecological Management Plan (Volume F2, Chapter 3).</p>
<p>Onshore cable corridor ground flora planting</p>	<p>Re-seeding disturbed ground along the onshore export cable corridor with native species rich seed mixes designed to encourage insect biomass.</p>
<p>Onshore cable corridor improving bat habitat</p>	<p>Hedgerows may be allowed to overgrow thereby improving their habitat value for foraging and commuting bats (Bat Conversation Trust, 2015). Improving hedgerow habitat for bats will be subject to landowner agreement prior to construction of the relevant connection works.</p>
<p>Supporting regional reforestation projects</p>	<p>The Applicant has engaged with East Riding of Yorkshire Council and the HEYwoods community forest partnership in order to identify provisional opportunities to support the Northern Forest Project and other woodland creation and tree planting projects across the area. Such enhancement measures are subject to further stakeholder engagement.</p>
<p>Supporting the Yorkshire Wildlife Trust's wetland restoration</p>	<p>The Applicant has engaged with the Yorkshire Wildlife Trust and Natural England to identify opportunities to support offsite biodiversity enhancement project sites. Such enhancement measures are subject to further stakeholder engagement.</p>

Note: All environmental enhancements will be subject to landowner agreement prior to implementation.

6.3 Human Environment Enhancement

Table 6: Proposed Human Environment Enhancement Initiatives.

Enhancement Measure	Proposed Approach
Onshore cable corridor improving Public Rights of Way	Improving public footpath accessibility along the onshore export cable corridor through the provision of signage, gates, clearance of vegetation and improved surfacing may be implemented. The exact measures will be agreed with ERYC as part of the detailed Enhancement Strategy, focussing on footpaths that would benefit most from such measures. Some examples or visualisations of how enhanced footpath measures could be incorporated into the project design is presented in the Design Vision Statement (Volume A4, Annex 4.6).
Onshore cable corridor local historical artefact signage	Educational signposting along the coastal footpath may be installed to encourage engagement with local wartime history associated with the existing historic artefacts in the landfall area. Such enhancement measures are subject to further stakeholder engagement. Further information regarding such artefacts is presented in the Historic Environment Desk Based Assessment (Volume A6, Annex 5.1).

Note: All environmental enhancements will be subject to landowner agreement prior to implementation.

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7 References

Alderton, E., Sayer, C.D., Davies, R., Lambert, S.J., Axmacher, J.C. (2017) Buried alive: Aquatic plants survive in 'ghost ponds' under agricultural fields. *Biological Conservation*, Volume 212, Part A, August 2017, Pages 105-110

Bat Conservation Trust (2015). Bat Conservation Trust (2016). National Bat Monitoring Programme: Annual Report 2015.

CIEEM (2019) Biodiversity net gain. Good practice principles for development. Part A: A practical guide. Baker, J, Hoskin, R, Butterworth, T. Webpage: <https://cieem.net/wp-content/uploads/2019/02/C776a-Biodiversity-net-gain.-Good-practice-principles-for-development.-A-practical-guide-web.pdf>