



Hornsea Project Four: Additional Application Information

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F1.1: Planning Statement

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Table of Contents

1	Introduction.....	7
1.2	Hornsea Projects	7
1.3	Development Consent	8
1.4	Proportionate Approach to EIA.....	8
2	Project Description.....	9
2.1	Introduction	9
2.2	Design Envelopes	9
2.3	Site Location.....	10
2.4	Commitments Register.....	10
2.5	Offshore Components	11
2.6	Onshore Components.....	12
2.7	Grid Connection Export Cable	14
2.8	Ancillary Operations	14
2.9	Construction Programme	15
2.10	Reinstatement	15
3	Site Selection	16
3.1	Introduction	16
3.2	Site Selection Approach.....	16
3.3	Site Selection Process	16
3.4	Refinement	17
4	Consultation	18
4.1	Introduction	18
4.2	Development Consent Requirements	18
4.3	Consultation Summary.....	18
5	Planning Policy Context	21
5.1	Introduction	21
5.2	Climate Change and Energy	21
5.3	Planning Act 2008	22
5.4	National Planning Policy for Offshore Wind Power	22

5.5	National Planning Policy Framework (2021)	26
5.6	The Marine Policy Framework	27
5.7	Local Policy	28
6	Technical Studies Summary – Offshore	30
6.1	Introduction	30
6.2	Marine Geology and Oceanography and Physical Processes	30
6.3	Benthic and Intertidal Ecology	30
6.4	Fish and Shellfish Ecology	31
6.5	Marine Mammals.....	32
6.6	Offshore Ornithology.....	32
6.7	Commercial Fisheries	33
6.8	Shipping and Navigation	34
6.9	Aviation and Radar.....	35
6.10	Marine Archaeology.....	35
6.11	Seascape Landscape and Visual Resources	36
6.12	Infrastructure and Other Users.....	37
7	Technical Studies Summary – Onshore.....	38
7.1	Introduction	38
7.2	Geology and Ground Conditions.....	38
7.3	Hydrology and Flood Risk.....	38
7.4	Ecology and Nature Conservation	39
7.5	Landscape and Visual.....	40
7.6	Historic Environment	41
7.7	Land Use and Agriculture.....	42
7.8	Traffic and Transport	43
7.9	Noise and Vibration	43
7.10	Air Quality.....	44
7.11	Socio-Economics.....	44
8	Planning Balance.....	45
8.1	Introduction	45
8.2	National Policy Statements	45
	The Market for Offshore Wind.....	46

8.3	46
8.4	Electricity Storage and Balancing 47
8.5	Planning Balance 48
9	Conclusions 50

List of Figures

Figure 1: Construction Programme.....	15
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Glossary

Term	Definition
Commitment	A term used interchangeably with mitigation and enhancement measures. Commitments are Embedded Mitigation Measures. The purpose of Commitments is to reduce and/or eliminate Likely Significant Effects (LSEs), in EIA terms. 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 ES). Secondary commitments are incorporated to reduce LSE to environmentally acceptable levels following initial assessment i.e. so that residual effects are acceptable.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
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).
Export cable corridor (ECC)	The specific corridor of seabed (seaward of Mean High Water Springs (MHWS)) and land (landward of MHWS) from the Hornsea Project Four array area to the Creyke Beck National Grid substation, within which the export cables will be located.
High Voltage Alternating Current (HVAC)	High voltage alternating current is the bulk transmission of electricity by alternating current (AC), whereby the flow of electric charge periodically reverses direction.
High Voltage Direct Current (HVDC)	High voltage direct current is the bulk transmission of electricity by direct current (DC), whereby the flow of electric charge is in one direction.

Term	Definition
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.
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).
Planning Inspectorate (PINS)	The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects (NSIPs).

Acronyms

Acronym	Definition
AfL	Agreement for Lease
ALC	Agricultural Land Classification
BEIS	Business, Energy and Industrial Strategy
BRAG	Black, Red, Amber, Green
CCA2008	Climate Change Act 2008
CCC	Committee on Climate Change
CGS	Clean Growth Strategy
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
DNO	Distribution Network Operator
EBI	Energy Balancing Infrastructure
ECC	Export Cable Corridor
EP	Evidence Plan
EYRC	East Riding of Yorkshire Council
EU	European Union
EIA	Environmental Impact Assessment
EISA	Electrical Infrastructure Study Area
GHG	Greenhouse Gas
HDD	Horizontal Directional Drilling
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IEMA	Institute of Environmental Management and Assessment
IPCC	Intergovernmental Panel on Climate Change
LAT	Lowest Astronomical Tide
MMO	Marine Management Organisation
MNR	Mean Neap Range
MPS	Marine Policy Statement
MSR	Mean Spring Range

Acronym	Definition
NGESO	National Grid Electricity System Operator
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
OSCG	Onshore Substation Consultation Group
PA2008	Planning Act 2008
PEIR	Preliminary Environmental Information Report
PINS	The Planning Inspectorate
PRoW	Public Right of Way
SoS	Secretary of State
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TCE	The Crown Estate

Units

Unit	Definition
GW	Gigawatts
km	Kilometre
m	Metre
MW	Megawatts

1 Introduction

- 1.1.1.1 Ørsted Hornsea Project Four Limited (the 'Applicant') is proposing to develop Hornsea Four Offshore Wind Farm (hereafter 'Hornsea Four'). Hornsea Four 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 (see [Volume A1, Chapter 4: Project Description](#)).
- 1.1.1.2 This Planning Statement has been produced to support the Hornsea Four Project on behalf of the Applicant. Ørsted Hornsea Project Four Limited and Ørsted Power (UK) are owned by Ørsted A/S.
- 1.1.1.3 Ørsted A/S specialises in procuring, producing, distributing and trading energy and related products in Northern Europe. Ørsted A/S is the world leader in the construction and operation of offshore wind farms, with more than 25 years' experience and a strong track record in delivering successful projects, with approximately 6.8 GW of operational offshore wind farms worldwide, and a further 3.1 GW under construction.
- 1.1.1.4 National Policy Statement (NPS) references throughout this Planning Statement refer to the versions of EN-1, EN-3 and EN-5 that were designated in 2011. A recent consultation on updated draft NPSs is ongoing (until 29 November 2021). The transitional provisions in draft NPS EN-1 state that the 2011 NPSs will be the applicable national policy statements for any DCO application that is accepted for examination before the designation of the updated NPSs. However, the policies set out in the emerging draft NPSs (or those designated but not having effect) are potentially capable of being important and relevant considerations in the decision-making process. The extent to which they are relevant is a matter for the relevant Secretary of State (SoS) to consider within the framework of the Planning Act 2008 (PA2008) and with regard to the specific circumstances of each DCO application. An overview of the draft NPS documents in relation to the need for offshore wind is covered in [Section 5.4.5](#).

1.2 Hornsea Projects

- 1.2.1.1 As part of The Crown Estate's (TCE) third round of offshore wind licensing, the former Hornsea Zone formed one of the nine offshore wind generation zones in the UK. In 2016, the Hornsea Zone Development Agreement that was entered into with TCE in 2009 was terminated. As a result of this project specific agreements and Agreements for Leases (Afls) were agreed with TCE for a number of projects comprising Hornsea Project One, Hornsea Project Two, Hornsea Project Three and Hornsea Project Four.
- 1.2.1.2 Hornsea Project One was granted consent by the SoS in December 2014 and comprises up to three offshore wind farms with a maximum generating capacity of 1,200 MW. Following on from this, Hornsea Two which comprises up to two offshore windfarms with a maximum generating capacity of 1,800 MW was granted consent in August 2016. A third project (Hornsea Three) was granted consent on 31st December 2020 and comprises up to 300

turbines. Hornsea Three has the capacity to generate at least 2,400 MW of electricity. Hornsea Four will have similarities to the existing Hornsea projects in terms of the nature and location of the project.

1.3 Development Consent

1.3.1.1 Hornsea Four qualifies as a Nationally Significant Infrastructure Project (NSIP) as identified in the PA2008 under Section 15 (3): an Offshore Generating Station, with a capacity of more than 100 MW.

1.3.1.2 For the purposes of section 46 of the PA2008 the Applicant has notified the SoS (via the Planning Inspectorate) that an application for an order granting development consent will be submitted in the last quarter of 2021.

1.3.1.3 The Applicant has also issued notification in accordance with Regulation 8(1)(b) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 that they propose to provide an environmental statement (ES) in respect of the proposed development.

1.3.1.4 Section 37 of the PA2008 requires an application for an order granting development consent to be made to the SoS. An application for a development consent order (DCO) must:

- (a) Specify the development to which it relates,
- (b) Be made in the prescribed form,
- (c) Be accompanied by the consultation report, and
- (d) Be accompanied by documents and information of a prescribed description.

1.3.1.5 There is no requirement for a Planning Statement under the PA2008 or the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009. However, it is considered that the Planning Statement forms a useful summary of the project with an analysis of relevant planning policy and will assist the SoS in the determination of this DCO.

1.4 Proportionate Approach to EIA

1.4.1.1 The Applicant is taking a proportionate approach to Environmental Impact Assessment (EIA). The benefits of delivering proportionate EIA, as defined by the Institute of Environmental Management and Assessment (IEMA) (2017) are to:

- Enhance People – so that those involved in EIA have the skills, knowledge and confidence to avoid an overly precautionary approach (the Applicant has actioned this via Proportionality Position papers, internal workshops, the Proportionate EIA Roadshow, general momentum for a proportionate EIA, culture and engagement);
- Improving Scoping – to generate a more consistently focussed approach throughout the EIA process (the Applicant has actioned this via an iterative scoping approach involving route planning and site selection, the Evidence Plan and project registers (see below for details);

- Sharing Responsibility – recognising that disproportionate EIA is driven by many factors and that enabling proportionate assessment will require collaborative actions that work towards a shared goal (the Applicant has actioned this via proactive engagement, working groups, expert groups, public commitments and project design quality); and
- Embracing Innovation and Digital – modernising EIA to deliver effective and efficient assessment and reporting that adds value to projects and their interaction with the environment (the Applicant has actioned this via digital mapping tools, community outreach tools and consultation use of Commonplace).

1.4.1.2 Several tools and approaches have been adopted by Hornsea Four that are aimed at delivering a proportionate EIA:

- The Impacts Register ([Volume A4, Annex 5.1](#));
- Early adoption of mitigation and the Commitments Register ([Volume A4, Annex 5.2](#));
- The DCO Application Document Register;
- Capitalising on the existing evidence base;
- Route planning and site selection ([Volume A1, Chapter 3](#));
- A tiered approach to define an appropriate level of assessment; and
- A Consult, Commit, Design ethos.

2 Project Description

2.1 Introduction

2.1.1.1 This section sets out a summary of the scheme to provide context. A detailed project description is set out in [Volume A1, Chapter 4: Project Description](#) and will subsequently not be repeated here.

2.2 Design Envelopes

2.2.1.1 Where precise details of the proposals are not known at the time of submission, the Rochdale Envelope approach should be applied. Advice Note Nine: Rochdale Envelope and number of NPSs such as EN-1 and EN-3, recognise the need for flexibility within certain NSIPs.

2.2.1.2 Where an applicant decides that there is a need to incorporate flexibility to address uncertainty, it is vital that the applicant ensures that the approach is explained clearly for the purposes of consultation and publicity at the pre-application stage, that the ES explains how the flexibility sought has been taken into account in the assessments and why it is required, and that there is consistency across the application documents.

2.2.1.3 Relevant parameters that enable flexibility within a DCO are project and sector-specific, for an offshore wind farm this may include maximum/minimum numbers of turbines or maximum turbine blade tip height.

2.2.1.4 NPS for Renewable Energy (EN-3) highlights that:

“Owing to the complex nature of offshore wind farm development, many of the details of a proposed scheme may be unknown to the applicant at the time of the application to the IPC [now the Secretary of State (SoS)], possibly including:

- *precise location and configuration of turbines and associated development;*
- *foundation type;*
- *exact turbine tip height;*
- *cable type and cable route; and*
- *exact locations of offshore and/or onshore substations”.*

2.2.1.5 EN-3 requires the maximum case scenario to be assessed and the decision taker should allow for this uncertainty in the consideration of the application and consent. Therefore, the maximum design parameters have been included in the Project Description (see [Volume A1, Chapter 4: Project Description](#)).

2.3 Site Location

2.3.1.1 The Hornsea Four array area is situated approximately 69km east of Flamborough Head at its closest point, in the southern North Sea and west of the existing Hornsea Project One and Two. The array area would comprise the offshore wind generating station which consists of the turbines, array cables, accommodation platforms, substations, offshore interconnector cables and export cables.

2.3.1.2 In keeping with the Hornsea Four approach to Proportionate EIA, careful consideration was given to the size and location (within the exiting offshore AfL area) of the Project taken forward. Hornsea Four adopted a major site reduction from the AfL presented at Scoping (868 km²) to the Preliminary Environmental Information Report (PEIR) boundary (600 km²). This site boundary has been further reduced for the ES and DCO application (468 km²) due to the findings of the impact assessment presented at PEIR, technical considerations and stakeholder feedback. The narrative of the site reduction is captured in [Volume A1, Chapter 3: Site Selection and Consideration of Alternatives](#).

2.3.1.3 The offshore export cable corridor (ECC) travels easterly towards the coast from the array area with a landfall point proposed east of Fraisthorpe. From here, the onshore ECC travels in a south westerly direction through the East Riding of Yorkshire area to the west of Beverley. The OnSS is proposed to the west of the existing National Grid Creyke Beck substation.

2.4 Commitments Register

2.4.1.1 Hornsea Four has adopted commitments (primary design principles inherent as part of Hornsea Four, installation techniques and engineering designs/modifications) as part of its pre-application consultation and design phase, to eliminate and/or reduce the likely significant effect (LSE) of a number of impacts. These are outlined in [Volume A4, Annex 5.2 Commitments Register](#). Further commitments (adoption of best practice guidance), referred

to as tertiary commitments are embedded as an inherent aspect of the EIA process. Secondary commitments are incorporated to reduce LSE to environmentally acceptable levels following initial assessment i.e. so that residual effects are reduced to environmentally acceptable levels.

2.5 Offshore Components

2.5.1 Wind Turbines

2.5.1.1 Hornsea Four will comprise up to 180 wind turbine generators with all of the necessary infrastructure required to transmit the generated power to the Creyke Beck National Grid substation.

2.5.1.2 Hornsea Four may use High Voltage Alternating Current (HVAC) or High Voltage Direct Current (HVDC) transmission or a combination of both technologies. The type of transmission to be used will be decided post-consent after a review of various factors such as economics and technology risk.

2.5.1.3 The maximum number of structures within the Hornsea Four array area would be 190 made up of 180 turbines, one accommodation platform, up to six offshore transformer substations and up to three offshore converter stations (if required).

2.5.1.4 Key components of the wind turbines comprise rotor blades, gearboxes, transformers, power electronics and control equipment. Offshore wind turbine models are constantly improving as new technology evolves. Therefore, the exact design of the turbine will be finalised post-consent. It is likely that they will have three blades and a horizontal rotor axis following the design of traditional turbines.

2.5.1.5 The indicative design parameters would comprise a maximum rotor diameter of 305 m, a maximum blade tip height of 370 m above Lowest Astronomical Tide (LAT) and a minimum blade tip height of 42.43 m above LAT.

2.5.2 Cables

2.5.2.1 A network of cables will be laid in the array area to transmit the power generated between the various offshore and onshore components. These cables include array cables, interconnector cables and export cables.

2.5.3 Offshore Substations

2.5.3.1 Offshore substations would house electrical equipment to either change the voltage (transformer substation), change the current type (converter station) or change the power factor (HVAC booster station).

2.5.3.2 The offshore transformer substations would comprise either six small substations, maximum topside design parameters (including ancillary structures) of 100 m (L) x 100 m (W) x 100 m

(H), or three large substations with maximum topside design parameters (including ancillary structures) of 180 m (L) x 90 m (W) x 100 m (H).

2.5.3.3 An offshore HVDC converter station would only be required as part of the HVDC transmission system to convert the AC power generated at the turbines into DC power. The maximum design parameters would be in accordance with those for the offshore transformer stations. It is likely that this would comprise multiple smaller units (up to three).

2.5.3.4 If required, a HVAC booster station would be installed along the ECC due to the limited operating distance of the HVAC electrical infrastructure. The booster station(s) would be situated offshore at a mid-point between the offshore wind farm and the grid connection point with the exact location to be determined post-consent within the HVAC booster station location search area. The final location of the offshore HVAC booster station(s) within the identified search area will be defined in the detailed design stage, post consent. The siting will take into account final electrical design, water depth, ground conditions, marine traffic, proximity to shore, other existing/planned offshore infrastructure and other engineering and economic factors.

2.5.4 Accommodation Platform

2.5.4.1 One accommodation platform may be constructed within the Hornsea Four array area. This would allow up to 150 operations staff to be housed for several weeks and also the storage of equipment. This would reduce the number of trips required and time spent travelling. The accommodation platform would be accessed by vessel and/or helicopter. The maximum design parameters for the offshore accommodation platform comprises a length and height of 60 m, 64 m above LAT and a maximum bridge link length of 100 m.

2.6 Onshore Components

2.6.1 Export Cables

2.6.1.1 The offshore export cables will make landfall east of Fraisthorpe. The offshore export cables will be connected to the onshore cables at the transition joint bays that will be located onshore. The maximum number of transition joint bays is eight, allowing for two failures.

2.6.1.2 The landfall works include:

- Construction of landfall compound;
- Horizontal Directional Drilling works;
- Construction of transition joint bays;
- Installation of offshore high voltage cables;
- Installation of onshore high voltage cables;
- Transition jointing offshore/onshore cables;
- Backfilling of joint bays; and
- Reinstatement works.

- 2.6.1.3 The onshore ECC comprises an 80 m onshore temporary easement within which a 60 m permanent easement post installation is located. The width of the temporary and/or permanent areas may change if obstacles are encountered. For example, the width has been increased to 120 m at the crossing of the National Rail Network at Beswick. The 120 m has been based on experience from similar projects and would provide sufficient flexibility. The maximum approximate length of the Hornsea Four onshore ECC is 39 km.
- 2.6.1.4 Joint bays will be installed along the length of the onshore ECC which are typically concrete lined pits which provide a suitable environment for jointing sections of cable. Link boxes are also required which are smaller pits than the joint bays but will house connections between cable shielding, joints for fibre optic cables and other auxiliary equipment.
- 2.6.1.5 35 access points would be required from the public highway to access construction works and logistics compounds and will be required from the start of construction. In order to provide access to the onshore ECC, a haul road will be constructed and would typically be 6 m in width.
- 2.6.1.6 Temporary logistics compounds will be required along the onshore ECC for laydown and storage of materials, plant and staff and space for temporary offices, welfare facilities, security and parking.

2.6.2 Onshore Substation

- 2.6.2.1 The OnSS is located north of Cottingham, approximately 175 m west of the National Grid Energy Transmission 400kV substation at Creyke Beck, to which Hornsea Four will connect to.
- 2.6.2.2 The substation will comprise a range of equipment such as transformers, shunt reactors, dynamic reactive power compensation plant, harmonic filters and various switchgear, alongside auxiliary and supporting equipment for the running and control of the substation. The equipment may be contained within either a single or multiple building(s), in an open yard or a combination of these.
- 2.6.2.3 The maximum parameters for the main building (if using a single building) include 25 m in height, 240 m in length and 80 m width. The MDS for secondary buildings are 15 m in height, covering a total area of 7,000 m².
- 2.6.2.4 Temporary construction access and permanent operational access to the substation will come from the northbound carriageway of the A1079 from which a two-way road system would be constructed.

2.6.3 Energy Balancing Infrastructure

- 2.6.3.1 EBI will be constructed within the site of the OnSS and will be connected directly to either the OnSS infrastructure or the National Grid Creyke Beck substation.

2.6.3.2 EBI is becoming more widespread and will provide valuable services to the electricity grid. EBI is used to effectively and efficiently balance the supply and demand of electricity.

2.6.3.3 Up to two separate EBI plants may be constructed and would consist of:

- Energy storage building(s);
- Transformers and converter area;
- Switchgear and control room building(s);
- Energy Balancing Equipment building(s);
- Connection of EBI Plant to the OnSS or alternatively directly to National Grid Creyke Beck substation;
- Required access (utilising the same access road off the A1079 as the OnSS) and internal roads, drainage systems, perimeter and internal fences; and
- Required external lighting and lightning pylons.

2.6.3.4 The maximum parameters for the main buildings include 15 m in height, 100 m in length and 25 m width. The MDS for secondary buildings (type one) are 20 m in height, 40 m in length and 40 m width.

2.7 Grid Connection Export Cable

2.7.1.1 A section of onshore export cable is required to connect the OnSS to the existing National Grid substation. It will be similar in design to the onshore export cabling but will be HVAC at 400kV with a permanent easement of 40 m within a 60 m cable corridor.

2.8 Ancillary Operations

2.8.1.1 In order to prepare the seabed prior to the construction of the offshore components, several activities will be required including but not limited to:

- Boulder clearance which will be informed by geophysical surveys within the array area and offshore ECC;
- Pre-lay grapnel run and an associated route clearance survey of the final cable route following the pre-construction survey route and boulder clearance;
- Sandwave clearance in some areas within the array area and offshore ECC to ensure a relatively flat seabed for the installation tools and to ensure the cable remains buried for the duration of Hornsea Four's lifespan; and
- Two wave buoys which will be required for the full construction period, one of which will be removed following completion of construction and the other will be retained for the first three years of operation.

2.8.1.2 Prior to the commencement of the connection works for the onshore components, a number of pre-construction surveys and activities may be required. The pre-construction surveys include ground investigations, topographical, ground penetrating radar, ecological and archaeological surveys, soil surveys, utility and private supplies surveys. The works are generally non-intrusive or are targeted excavations.

2.8.1.3 Where hedgerows and/or trees require removal, this will be undertaken prior to topsoil removal. Sections of hedgerows and trees which are removed will be replaced using like for like hedgerow species (Co26) and will be carried out in accordance with the principles detailed in the Outline Landscape Management Plan (F2.8) and Outline Ecological Management Plan (F2.3).

2.8.1.4 A contractor will develop a drainage strategy (Co14, in accordance with F2.6: Outline Onshore Infrastructure Drainage Strategy) in consultation with landowners as it is likely that existing field drainage could be severed by the cable installation works. Initial works will encompass the installation of preconstruction drainage with the purpose of bypassing the existing drainage system.

2.9 Construction Programme

2.9.1.1 An indicative construction programme is presented in Figure 1 which shows the likely construction duration of major components. It is anticipated that the maximum total construction duration is five years and one month (61 months).

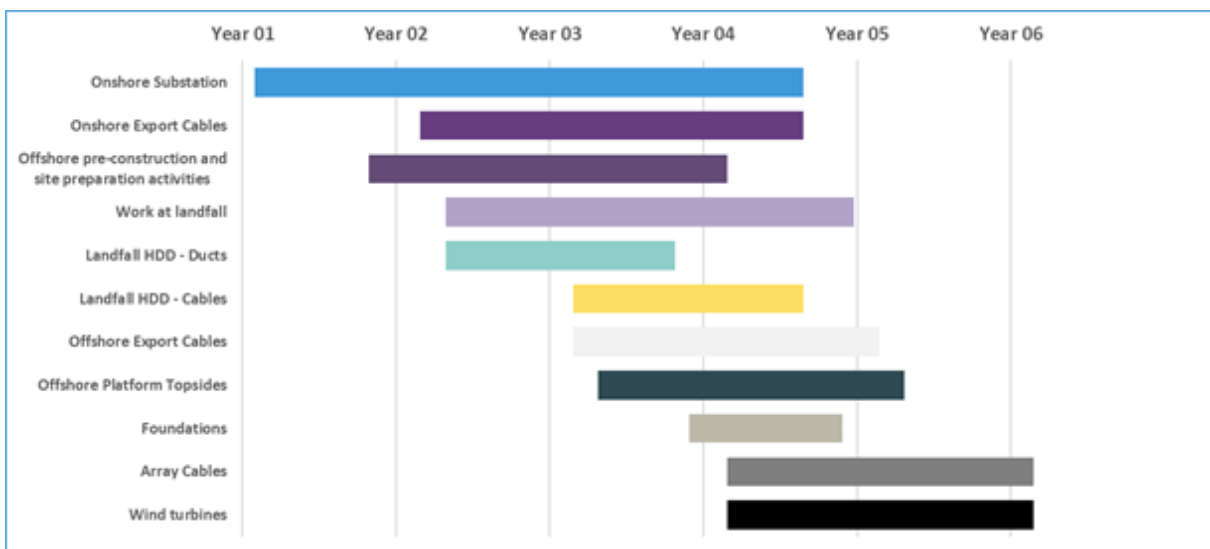


Figure 1: Construction Programme.

2.10 Reinstatement

2.10.1.1 Following the completion of the construction works, temporary working areas at the OnSS, temporary construction access points and the haul road will be reinstated back to its original use.

2.10.1.2 Once the onshore export cables are installed and the trenches backfilled, the stored topsoil will be replaced, and the land reinstated back to its previous use as far as reasonably practical and handed back to the landowner.

- 2.10.1.3 Land above transition joint bays will be reinstated but may have manhole covers for access. Land above joint bays and link boxes will also be reinstated, but as with the transition joint bays, they may have manhole covers.

3 Site Selection

3.1 Introduction

- 3.1.1.1 Schedule 4 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 requires a description of the reasonable alternatives, in terms of location, studies by the developer which are relevant to the proposed project and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.
- 3.1.1.2 [Volume A1, Chapter 3: Site Selection and Consideration of Alternatives](#) sets out the full details of the site selection process that has been undertaken. The following chapter provides a brief summary of the process.

3.2 Site Selection Approach

- 3.2.1.1 Site selection comprised five separate processes which each related to different parts of the project. Due to the spatial connections between each of the processes, they progressed in parallel. The five processes include:
- Stage 1 - Identification of the AfL and Grid Connection;
 - Stage 2 - Identification of the Electrical Infrastructure Study Area (EISA);
 - Stage 3 - Location of the Landfall;
 - Stage 4 - Identification of the OnSS Site; and
 - Stage 5 - Development and refinement of the Offshore and Onshore ECC and associated infrastructure (including offshore array refinement).
- 3.2.1.2 The site selection process has been based on technical, physical and environmental constraints utilising a colour rating system, referred to as the BRAG approach:
- Black – potential showstoppers to development;
 - Red – high potential for the development to be constrained;
 - Amber – intermediate potential for the development to be constrained; or
 - Green – low potential for the development to be constrained.

3.3 Site Selection Process

- 3.3.1.1 NPS EN-5 summarises the factors that influence the site selection for electricity transmission networks by stating *"The general location of electricity network projects is often determined by the location, or anticipated location, of a particular generating station and the existing network infrastructure taking electricity to centres of energy use"*. The two end points for

Hornsea Four have been defined as the AfL and National Grid Connection point at Creyke Beck.

3.3.1.2 An EISA was established to use as an initial search area for the route planning and site selection work.

3.3.1.3 The landfall search area included the coastal stretch within the EISA. The land was divided into zones and rated using the BRAG approach. The Holderness Inshore Marine Conservation Zone was removed from the search area (Co45). Several general guiding principles were established for the landfall site selection:

- Select the shortest route;
- Avoid key sensitive features where possible and where not, seek to mitigate impacts;
- Minimise disruptions to populated areas; and
- Find a site large enough to accommodate the connection technology.

3.3.1.4 When searching for a site for the OnSS, a 3 km radius was applied to Creyke Beck to allow for a location as close as reasonably possible to the grid connection point.

3.3.1.5 To establish the location of the onshore and offshore ECC, straight lines were drawn from the potential landfall location to Creyke Beck for the onshore cable and from the AfL to the landfall locations for the offshore cables. After constraints mapping, the lines were rerouted to avoid the black and red areas.

3.3.1.6 The centrelines of the onshore ECCs were based on the following guiding principles:

- Routed throughout open agricultural land where possible to avoid towns, villages, buildings and residential areas;
- Shortest possible connection between the start and end points; and
- Major existing infrastructure would be crossed perpendicular to the existing infrastructure.

3.3.1.7 Whilst the offshore ECC was based on the guiding principles of:

- Select the shortest route; and
- Avoid key sensitive features where possible and where not, seek to mitigate impacts; and
- The need to accommodate the range of technology sought within the design envelope and exclude those options outwith the envelope.

3.4 Refinement

3.4.1.1 As the application process evolved, the number of options, areas and width of the corridors decreased since the EIA scoping and PEIR stage as outlined in [Volume A1, Chapter 3: Site Selection and Consideration of Alternatives](#). The refinement process has been based on stakeholder consultation, public consultation and landowner liaison. This process has been supported by an ethos of 'Commit, Consult, Design', which has been embedded for Hornsea

Four and adopted throughout the pre-application phase. This ethos has supported the development and implementation of proportionality across the project including supporting a number of proportionality tools and processes such as route planning and site selection and adoption of project commitments in response to stakeholder feedback (further details are set out in [Volume A6, Chapter 6: Consultation](#)).

4 Consultation

4.1 Introduction

4.1.1.1 This section summarises the consultation that has been undertaken by the Applicant prior to the submission of the DCO that is required in accordance with the PA2008. For a detailed overview of the consultation process see [Volume A1, Chapter 6: Consultation](#) and for full details see [Volume B1, Chapter 1: Consultation Report](#).

4.2 Development Consent Requirements

4.2.1.1 Under Section 47 of the PA2008, the applicant has a duty to consult the local community and other organisations in the 'vicinity' of Hornsea Four who may be affected both directly and indirectly by Hornsea Four. Prior to the submission of the DCO application, a Statement of Community Consultation (SoCC) was published in accordance with Section 47 (6) of the PA2008. Consultation with the community has been carried out in accordance with this statement.

4.2.1.2 Alongside this, pre-application consultation under section 42 has taken place with:

- Prescribed bodies listed in Schedule 1 of the APFP Regulations where relevant to the proposed application;
- The Marine Management Association (in accordance with section 42(1)(aa) of the PA2008);
- Host and neighbouring local authorities (in accordance with section 42(1)(b) and section 43 of the PA2008); and
- Those persons that fall within the categories in section 44 of the PA2008 (in accordance with section 42(1)(d) of the PA2008).

4.3 Consultation Summary

4.3.1 Community Consultation

4.3.1.1 The Applicant has carried out a series of consultation events and meetings with various community groups and stakeholders including:

- The host local authority and neighbouring local authorities;
- Members of the public;
- Commercial stakeholders; and
- Environmental bodies.

- 4.3.1.2 Consultation and feedback on proposals has been a key part of the Hornsea Four development process. A Statement of Community Consultation (SoCC) was published on 06 September 2018 which set out how Hornsea Four intended to consult with the local community.
- 4.3.1.3 Two phases of community consultation were set out in the SoCC to enable the iterative development of Hornsea Four in accordance with feedback received throughout pre-application from the community, landowners, and prescribed consultees. By undertaking iterative consultation, consultees have been able to observe how their feedback has influenced the proposal as the final design has emerged.
- 4.3.1.4 Stakeholder briefings and local information events began in autumn 2018 to introduce members of the community to the proposals. The local information events were open to all members of the public and provided them with the chance to view informative information about the proposals and provide their feedback. There were 226 people at the events.
- 4.3.1.5 The aspect of the proposals that was most important to community members was landscape and visual impact onshore closely followed by traffic and transport. 73% of respondents agreed with the proposals for the project with 90% agreeing that offshore wind had the potential to contribute significantly towards the UK's low carbon economy.
- 4.3.1.6 A second round of consultation events were held in September 2019 (phase two). At these events, the Applicant consulted on the PEIR and PEIR Non-Technical Summary (NTS). The Applicant presented a refined onshore ECC, and further information was available on the proposed location of the OnSS, including the refined search area for all associated infrastructure and two proposed landfall site locations.
- 4.3.1.7 There were 113 people at the events and in total, the Applicant received 59 responses from the local community. 92% of respondents found the information events informative with 79% agreeing that the location of the project is potentially suitable with appropriate mitigation and 52% supporting the proposals based on the information provided at this stage.

4.3.2 Targeted Section 42 Consultation

- 4.3.2.1 Three rounds of Targeted Section 42 consultation were held in March and August 2020 and in July 2021. In March 2020, the consultation covered a number of proposed changes including an alternative onshore ECC route option, a number of minor onshore route amendments and operational access rights. The August 2020 consultation covered amendments to the OnSS construction and operation and maintenance access strategy. The July 2021 consultation covered the proposed relocation of an existing construction access location to collaborate with the A164 Jock's Lodge Highway Improvement Scheme.

4.3.3 Stakeholder Consultation

4.3.3.1 The onshore works of Hornsea Four lie entirely within the boundary of East Riding of Yorkshire Council (ERYC). Under Section 43 of the PA2008 there is a requirement to consult the local authority. Consultation was undertaken between June 2018 and July 2018 with ERYC and neighbouring authorities including:

- Hull City Council;
- Scarborough Borough Council;
- Ryedale District Council;
- North Yorkshire County Council;
- York City Council;
- Selby District Council;
- Doncaster Metropolitan Borough Council; and
- North Lincolnshire Council.

4.3.3.2 Hornsea Four is taking a proportionate approach to EIA, therefore a Proportionality Roadshow has been undertaken with a range of key stakeholders. The aim of the Roadshow was to familiarise the consultees with the approach Hornsea Four has taken in relation to the PEIR.

4.3.3.3 An Evidence Plan (EP) process commenced in September 2018 to ensure key stakeholders were consulted on a regular basis to agree the evidence required within the ES. The EP process has been ongoing throughout the pre-application stage and has been used to supplement the Proportionality Roadshow. The EP steering group consists of:

- The Applicant;
- PINS;
- Natural England;
- MMO;
- ERYC; and
- Historic England.

4.3.3.4 The Applicant met with stakeholders and interested parties, setting up the following working groups to discuss the project and take account of feedback; Onshore Substation Consultation Group (OSCG), Onshore Export Cable Corridor Working Group and Intertidal Working Group to allow members of the local community to materially influence the site selection, alternatives, design and mitigation of the onshore electrical infrastructure.

4.3.3.5 The Applicant visited local residents and held briefing sessions with local community groups, environmental groups, local authorities, and their locally elected representatives to present information about the project, answer key questions and take account of feedback.

4.3.3.6 Targeted Non-Statutory consultation was undertaken on the compensation measures resulting from the Hornsea Four Without Prejudice Derogation case in August 2021. This was undertaken with relevant coastal stakeholders including:

- MMO;
- SNCB;
- Wildlife Trusts;
- IFCA;
- Fishing Organisations;
- Local Authorities;
- Parish Councils; and
- Local Interest Groups.

4.3.4 Ongoing Consultation

4.3.4.1 Throughout the consultation process, seven community access points have been available throughout East Riding of Yorkshire where hard copies of the Statement of Community Consultation and newsletters have been available.

4.3.4.2 Various communication lines have been available throughout the entire consultation period to allow members of the public to get in contact with the project team.

5 Planning Policy Context

5.1 Introduction

5.1.1.1 This section sets out the planning policy context against which Hornsea Four will be determined, and the policy that may be considered as part of the background to the need for the scheme. The section covers primary legislation, national policy, marine policy and local policy. Further details on planning and policy can be found in [Volume A1, Chapter 2: Planning and Policy Context](#) and [H2.6: Statement of Need](#).

5.2 Climate Change and Energy

5.2.1.1 The Climate Change Act 2008 (CCA2008) forms the basis of the UK's approach to tackling and responding to climate change. The Act transposed the 2005 Kyoto Protocol commitments to reduce greenhouse gas (GHG) emissions.

5.2.1.2 In November 2008 when the bill was passed into law, Section 1 (1) set a target for the SoS to ensure that the net UK carbon account for the year 2050 is at least 80% lower than the 1990 baseline. In June 2019, this figure was increased to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline.

5.2.1.3 The 100% target was based on advice from the Committee on Climate Change 2019 report 'Net Zero – The UK's contribution to stopping global warming'.

5.3 Planning Act 2008

5.3.1.1 The PA2008 was introduced to provide an effective and efficient system for approving major infrastructure projects of national importance, both offshore and onshore. The objective of the PA2008 is to streamline decisions and avoid long public enquiries.

5.3.1.2 The statutory framework for the decisions on NSIPs is provided in the PA2008. Where a NPS has an effect in relation to decisions on NSIPs, Section 104 of the PA2008 applies requiring decisions to be made in accordance with the relevant NPS. Section 104 (2) states that:

5.3.1.3 In deciding the application the SoS must have regard to:

*“(a) any national policy statement which has effect in relation to development of the description to which the application relates (a "relevant national policy statement");
(aa) the appropriate marine policy documents (if any), determined in accordance with section 59 of the Marine and Coastal Access Act 2009;
(b) any local impact report (within the meaning given by section 60(3)) submitted to the Secretary of State, before the deadline specified in a notice under section 60(2),
(c) any matters prescribed in relation to development of the description to which the application relates, and
(d) any other matters which the Secretary of State thinks are both important and relevant to the Secretary of State's decision. ”*

5.3.1.4 Section 104 (3) details a number of exemptions to a decision being made in accordance with NPSs, at least one of which must be satisfied, including:

- Where it would lead to the UK being in breach of any of its international obligations;
- Would lead to the Secretary of State being in breach of any duty imposed by or under any enactment;
- Would be unlawful;
- The adverse impact of the proposed development would outweigh its benefits; or
- Be contrary to regulations about how its decisions are to be taken.

5.4 National Planning Policy for Offshore Wind Power

5.4.1 National Policy Statements

5.4.1.1 NPSs set out the Government's objectives for the development of nationally significant infrastructure in a particular sector and state. NPSs cover the sectors of energy, transport and water, waste water and waste. The energy NPSs were produced by the former Department of Energy and Climate Change, now the Department for Business, Energy and Industrial Strategy (BEIS). There are 12 designated NPSs, of which 3 are relevant to the determination of the DCO for Hornsea Four. All of the energy NPSs were designated on 19th July 2011.

5.4.1.2 A recent consultation on updated draft energy NPSs is ongoing (until 29 November 2021). The transitional provisions in draft NPS EN-1 state that the 2011 NPSs will be the applicable

national policy statements for any DCO application that is accepted for examination before the designation of the updated NPSs. However, the policies set out in the emerging draft NPSs (or those designated but not having effect) are potentially capable of being important and relevant considerations in the decision-making process. The extent to which they are relevant is a matter for the relevant SoS to consider within the framework of the PA2008 and with regard to the specific circumstances of each DCO application. An overview of the draft NPS documents in relation to the need for offshore wind is covered in [Section 5.4.5](#).

5.4.2 NPS for Overarching Energy (EN-1)

5.4.2.1 The NPS for Overarching Energy sets out the national policy for infrastructure on applications for energy development and should be read in conjunction with the relevant technology-specific NPSs for the energy sector.

5.4.2.2 EN-1 states that *“energy is vital to economic prosperity and social well-being and so it is important to ensure that the UK has secure and affordable energy. Producing the energy the UK requires and getting it to where it is needed necessitates a significant amount of infrastructure, both large and small scale”*.

5.4.2.3 The NPS EN-1 recognises that the UK needs to reduce its reliance on a high carbon energy mix to reduce GHG emissions and improve the security, availability and affordability of energy through diversification.

5.4.2.4 The Government is committed to increasing the amount of renewable energy capacity, much of which is likely to be through onshore and offshore wind. Large scale deployment of renewables is estimated to reduce the UK’s carbon emissions by over 750 million tonnes by 2030.

5.4.2.5 The urgent need for new electricity capacity, especially from low carbon sources, is emphasised in EN-1 which states that *“In order to secure energy supplies that enable us to meet our obligations for 2050, there is an urgent need for new (and particularly low carbon) energy NSIPs to be brought forward as soon as possible, and certainly in the next 10 to 15 years, given the crucial role of electricity as the UK decarbonises its energy sector”*.

5.4.2.6 EN-1 sets out that the SoS should start with a presumption in favour of granting consent to applications for energy NSIPs unless more specific policies set out in relevant NPSs clearly indicate that consent should be refused. When considering any proposed development, account should be taken of:

- Its potential benefits including its contribution to meeting the need for energy infrastructure, job creation and any long-term or wider benefits; and
- Its potential adverse impacts, including any long and cumulative adverse impacts, as well as any measure to avoid, reduce or compensate for any adverse impacts.

5.4.2.7 EN-1 states that the UK needs all the types of energy infrastructure covered by the NPS in order to ensure energy security whilst reducing GHG emissions, hence the Government did

not deem it appropriate for planning policy to set targets or limits on each type of technology. Therefore, the decision maker should assess all applications for development consent covered by this NPS on the basis that the Government has demonstrated that there is a need for those types of infrastructure.

5.4.2.8 The policy in NPSs is intended to make existing policy and practice clearer and more transparent. Paragraph 4.1.5 states that the energy NPSs have taken account of relevant Planning Policy Statements (PPSs) and older-style Planning Policy Guidance Notes (PPGs). It is important to note that most PPSs and PPGs have since been superseded by the National Planning Policy Framework (NPPF) (and accompanying Planning Practice Guidance). The decision maker may take into account other documents such as Development Plan Documents that may be considered both important and relevant.

5.4.3 NPS for Renewable Energy (EN-3)

5.4.3.1 The NPS EN-3 covers nationally significant renewable energy infrastructure including energy from biomass and/or waste greater than 50 MW, offshore wind greater than 100 MW and onshore wind greater than 50 MW.

5.4.3.2 Hornsea Four is expected to have a capacity greater than 100 MW and therefore, EN-3 is applicable to the determination of this DCO.

5.4.3.3 Electricity generation from renewable sources of energy is an important element in the Government's development of a low-carbon economy. EN-3 recognises that offshore windfarms are expected to make up a significant proportion of the UK's renewable energy generation capacity up to 2020 and towards 2050.

5.4.3.4 Paragraph 2.4.2 requires proposals for renewable energy infrastructure to demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology.

5.4.3.5 EN-3 details a number of technical considerations, such as grid connection and flexibility in project details, and impacts that should be taken into account when determining proposals for offshore windfarms including ecology, historic environment, and navigation and shipping. These are considered as part of the planning balance in [Section 8](#).

5.4.4 NPS for Electricity Networks Infrastructure (EN-5)

5.4.4.1 The NPS EN-5 is relevant for proposals that include transmission lines and distribution systems and associated infrastructure such as substations and converter stations.

5.4.4.2 EN-5 recognises that electricity generating infrastructure that is required in the UK needs to move to a low carbon economy and that maintaining security of supply will be heavily

dependent on a fit for purpose electricity network. This will need to be able to cope with a more complex supply system and cope with more generation.

- 5.4.4.3 Alongside EN-3, this NPS also sets out a number of generic impacts that should be considered when determining a DCO. The generic impacts listed in EN-5 include biodiversity and geological conservation, landscape and visual, noise and vibration, and electric and magnetic fields. It is emphasised in paragraph 2.6.3 (of EN-5) that this list is not intended to be exhaustive and applicants are required to assess all likely significant effects of their proposals.

5.4.5 Overview of Draft National Policy Statements EN-1 and EN-3 (2021)

- 5.4.5.1 The Needs Statement (see [H2.6](#)) sets out the emerging Government policy in draft NPSs EN-1 and EN-3 for the delivery of major energy infrastructure, including onshore and offshore renewable electricity generation. The draft NPSs refer to the Government's target of 40GW of offshore wind by 2030 and the expectation that there will be a need for substantially more installed offshore capacity beyond 2030 to achieve net-zero by 2050 (paragraph 3.3.50 of draft EN-1). A summary of the provisions in the draft NPSs that detail the urgent need for offshore wind is set out below.

- 5.4.5.2 Paragraph 3.3.21 of draft EN-1 states that wind and solar *"are the lowest cost ways of generating electricity, helping to reduce costs and providing a clean and secure source of electricity supply (as they are not reliant on fuel for generation)".* Draft EN1 confirms that *"a secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar."*

- 5.4.5.3 Draft NPS EN-1 recognises *"the challenge of connecting a large volume of generation located beyond the periphery of the existing transmission network"* and expects that a more coordinated approach to connection will be adopted wherever possible. However, it is acknowledged that the completion of new offshore transmission infrastructure and associated onshore reinforcements may not be completed in time to deliver 40GW by 2030 (paragraph 3.3.52). Therefore, the importance of accelerating new offshore transmission infrastructure does not mitigate against *"the need for standalone electricity network projects, and these projects should continue to be assessed on their own merits"* (paragraph 3.3.58)

- 5.4.5.4 In relation to storage technologies, paragraphs 3.3.16 and 3.3.17 of draft NPS EN-1 state that:

"New generating plants can deliver a low carbon and reliable system, but we need the increased flexibility provided by new storage and interconnectors (as well as demand side response, discussed above) to reduce costs in support of an affordable supply. Storage and interconnection can provide flexibility, meaning that less of the output of plant is wasted as it can either be stored or exported when there is excess production".

- 5.4.5.5 Draft EN-1 goes on to explain that storage is needed to reduce the costs of the electricity system and increase reliability by storing surplus electricity in times of over-supply, to provide electricity when demand is higher. The local and national services which can be

provided by storage are also referenced in draft EN-1, being “*peak shaving*” constraint management and the provision of a range of balancing services. The role of “*low-carbon hydrogen*” is also signalled as likely growing in significance in the future GB energy system, and therefore supports the need for the infrastructure required to generate low-carbon power, and produce, store and transport hydrogen to where it is needed.

5.5 National Planning Policy Framework (2021)

- 5.5.1.1 The National Planning Policy Framework (NPPF) sets out the Government's definition of sustainable development and identifies how planning policies for England are expected to be applied.
- 5.5.1.2 The NPPF is purposefully positive, opportunity focused and pro-growth in seeking to facilitate development which will contribute to meeting the wider Government objectives.
- 5.5.1.3 Paragraph 7 of the NPPF explains that 'the purpose of the planning system is to contribute to the achievement of sustainable development' which can be summarised as 'meeting the needs of the present without compromising the ability of future generations to meet their own needs'.
- 5.5.1.4 The NPPF does not contain specific policies for nationally significant infrastructure projects. These are determined in accordance with the decision-making framework in the PA2008 (as amended) and relevant NPSs for major infrastructure, as well as any other matters that are relevant (which may include the NPPF (as a material consideration).
- 5.5.1.5 NPSs form part of the overall framework of national planning policy and may be a material consideration in preparing plans and making decisions on planning applications.
- 5.5.1.6 However, in accordance with paragraph 4.1.5 of NPS EN-1, the SoS should consider the NPPF as 'important and relevant' in the decision-making progress.
- 5.5.1.7 The move to a low carbon economy is emphasised in Paragraph 152 of the NPPF stating that the planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change., which states *“It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.”*
- 5.5.1.8 When determining planning applications for renewable and low carbon development, local planning authorities should not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting GHG emissions.

5.6 The Marine Policy Framework

5.6.1 Marine and Coastal Access Act 2009

5.6.1.1 Section 58 (1) of the Marine and Coastal Access Act 2009 requires a public authority to take any authorisation decision in accordance with the appropriate marine policy documents, unless relevant considerations indicate otherwise. This is in accordance with Section 104 (2) (aa) of the PA2008. Where an authorisation or enforcement decision is not taken in accordance with the appropriate marine policy documents, the public authority must state its reasons. The relevant marine policy documents comprise the UK Marine Policy Statement (2011) and the East Inshore and East Offshore Marine Plans (2014).

5.6.2 Marine Policy Statement 2011

5.6.2.1 The Marine Policy Statement (MPS) is the framework for preparing Marine Plans and taking decisions affecting the marine environment with an aim to contribute towards the achievement of sustainable development in the UK marine areas.

5.6.2.2 The UK vision for the marine environment is for 'clean, healthy, safe, productive and biologically diverse oceans and seas'.

5.6.2.3 In 2011, the UK was the leading country for offshore wind deployment and potential sites identified for offshore renewables showed huge exploitable renewable energy resource in the UK waters. The UK remains as the leader in offshore power.

5.6.2.4 The MPS states that whilst harnessing and connecting offshore wind is more technologically challenging and expensive than onshore wind, it has larger potential due to a stronger and more consistent wind source leading to higher power outputs. Offshore wind has the potential to have the biggest impact in the medium-term on security of energy supply and carbon emission reductions.

5.6.2.5 The MPS sets out that when decision makers are determining applications for energy infrastructure they should take into account:

- The national level of need for energy infrastructure, as set out in the Overarching NPS for Energy (EN-1 which applies in England and Wales, the National Planning Framework which applies in Scotland and the Strategic Energy Framework in Northern Ireland);
- The positive wider environmental, societal and economic benefits of low carbon electricity generation and carbon capture and storage as key technologies for reducing carbon dioxide emissions; and
- The potential impact of inward investment in offshore wind, wave, tidal stream and tidal range energy related manufacturing and deployment activity; as well as the impact of associated employment opportunities on the regeneration of local and national economies. All of these activities support the objective of developing the UK's low carbon manufacturing capability.

5.6.3 East Inshore and East Offshore Marine Plans

5.6.3.1 The East Inshore and East Offshore Marine Plans ('the Marine Plans') were the first marine plans to be adopted in England. Together with the MPS, the Marine Plans underpin the new planning system for England's seas. They provide a clear approach to managing resources, and the activities and interactions in the East Inshore and Offshore areas.

5.6.3.2 The Marine Plans aim to support and complement existing plans where appropriate such as Local Plans. This avoids replications of policies and ensures new plan policies and supporting information focus on issues where they can add value.

5.6.3.3 The East Inshore Marine Plan Area includes the area of sea stretching from Flamborough Head to Felixstowe and extends out to the seaward limit of the territorial sea (approximately 12 nautical miles). The East Offshore Marine Plan Area extends from the seaward limit of the territorial sea out to the boundary of the Exclusive Economic Zone including maritime borders with the Netherlands, Belgium and France.

5.6.3.4 The overall vision for the Marine Plan areas is:

"By 2034, sustainable, effective and efficient use of the East Inshore and East Offshore Marine Plan Areas has been achieved, leading to economic development while protecting and enhancing the marine and coastal environment, offering local communities new jobs, improved health and well-being. As a result of an integrated approach that respects other sectors and interests, the East marine plan areas are providing a significant contribution, particularly through offshore wind energy projects, to the energy generated in the United Kingdom and to targets on climate change".

5.6.3.5 In accordance with Policy EC3, proposals that will help the East marine plan areas to contribute to offshore wind energy generation should be supported. This is also reinforced by Policy WIND2 which states that proposals for Offshore Wind Farms inside Round 3 zones, including relevant supporting projects and infrastructure, should be supported.

5.6.3.6 Appropriate provision should be made for infrastructure on land which supports activities in the marine area and vice versa in line with Policy GOV1.

5.7 Local Policy

5.7.1.1 In accordance with Section 104 of the Planning Act, there is no obligation for the SoS to have regard to the Local Development Plan, however, this may be deemed 'important and relevant'.

5.7.1.2 The SoS must have regard to any Local Impact Report produced by the Local Authority. Section 60 (3) of the PA2008 defines a Local Impact Report as 'a report in writing giving details of the likely impact of the proposed development on the authority's area (or any part

of that area)'. The content of the Local Impact Report is a matter for the Local Authority but this may include relevant development plan policies.

5.7.2 East Riding of Yorkshire Development Plan

5.7.2.1 The onshore elements of Hornsea Four lie within the administrative boundary of ERYC. The Development Plan for East Riding of Yorkshire comprises:

- The Strategy document (adopted April 2016);
- The Allocations document (adopted July 2016); and
- Bridlington Town Centre Area Action Plan (adopted January 2013).

5.7.2.2 The Strategy document provides the overall strategic vision and objectives for the Local Plan, providing strategic policies to guide decisions up to 2029.

5.7.2.3 Policy S2 Addressing Climate Change states that the Local Plan and development decisions will support a reduction in GHG emissions and adaptation to the expected impacts of climate change.

5.7.2.4 Policy EC5 Supporting the Energy Sector will be considered in Local Impact Reports for nationally significant infrastructure projects. Policy EC5 states that proposals involving wind energy development will be determined in accordance with national planning policy and practice guidance.

5.7.2.5 The East Riding Local Plan Vision states that *"The opportunities presented by the renewable and low carbon energy sector will have been embraced and maximised, creating employment opportunities, helping to reduce carbon emissions and increasing fuel security"*.

6 Technical Studies Summary – Offshore

6.1 Introduction

6.1.1.1 This section briefly summarises the findings of the ES for the offshore elements. The full report can be found in ES [Volume A2 Chapters 1 – 11](#).

6.2 Marine Geology and Oceanography and Physical Processes

6.2.1.1 NPS EN-1 applies to any onshore infrastructure situated on the coast that may lead to, or is at risk from, flooding or coastal change, including provisions for climate change, whilst NPS EN-3 relates specifically to offshore renewable energy infrastructure and its impacts.

6.2.1.2 As part of the EIA process, an assessment of the Hornsea Four project has been undertaken, with the aim of determining what environmental impacts, if any, the proposal will have on the physical environment during all stages of development (i.e. construction, operation and decommissioning). Full details of the assessment and potential impacts on the marine physical environment can be found in [Volume A2, Chapter 1: Marine Geology, Oceanography and Physical Processes](#) of the ES.

6.2.1.3 The landfall study area is an open intertidal sandy beach, backed by soft cliffs, gently shelving into a shallow subtidal environment. Subtidal sediments across the offshore ECC and at the offshore Array Area comprise sands, gravelly sands, sandy gravel, and muddy sands.

6.2.1.4 In satisfying the requirements of EN-1 and EN-3, all potential impacts assessed for marine processes resulted in either a negligible adverse or slight (i.e. not significant) level of significance, with just the potential impact of changes to waves affecting coastal morphology (MP-O-3) and changes to nearshore sediment pathways (MP-O-4) requiring mitigation related to design, however no further mitigation is required beyond the already existing commitments.

6.2.1.5 Therefore, it can be considered that Hornsea Four complies with the policies set out in EN-1 and EN-3 in relation to this topic.

6.3 Benthic and Intertidal Ecology

6.3.1.1 There are a wide range of legislative provisions, both at national and international level, which seek to protect and conserve marine based species and habitats. These provisions are documented in the NPSs, including within EN-1, which sets out the national position with regard to electromagnetic fields associated with energy NSIPs. EN-3 is also considered relevant to this topic, as it highlights factors relating to the determination of an application and mitigation.

6.3.1.2 An assessment was undertaken of the potential impacts that could arise as a result of the from the construction, operation and decommissioning of Hornsea Four (including

cumulatively) on intertidal and subtidal benthic ecology, in order to satisfy EN-1 and EN-3 for this topic.

- 6.3.1.3 Across the study area, a total of 2,678 individuals were recorded while across the offshore ECC a total of 2,813 individuals were recorded. The potential impact on benthic habitats is predicted to be of local spatial extent (i.e. restricted to discrete areas within Hornsea Four), short term duration (as it is limited to the duration of construction activities), intermittent and with high reversibility.
- 6.3.1.4 In addition to this, it was found that all of the potential impacts arising from the construction, operation and decommissioning of Hornsea Four (including cumulatively) on intertidal and subtidal benthic ecology receptors will result in only a neutral or slight level of significance.
- 6.3.1.5 Therefore, it can be considered that Hornsea Four avoids causing 'significant harm' to benthic and intertidal ecology at the proposed site, a key test set out in EN-1, therefore complying with EN-1 and EN-3.

6.4 Fish and Shellfish Ecology

- 6.4.1.1 As stated above, there are a wide range of legislative provisions, both at national and international level, which seek to protect and conserve marine based species and habitats.
- 6.4.1.2 EN-3 requires that an assessment of offshore ecology and biodiversity should be undertaken by applicants for all stages of the lifespan of the proposed offshore wind farm, and that the assessment should include the potential for the scheme to have both positive and negative effects on marine ecology and biodiversity. EN-1 is also considered relevant to this topic, as it sets out the national position with regard to EMFs associated with energy NSIPs.
- 6.4.1.3 The fish communities in the vicinity of Hornsea Four are considered typical of this part of the southern North Sea, with a high abundance of species such as whiting, plaice, dab, solnette and grey gurnard. Hornsea Four overlaps with areas used as fish spawning and nursery habitats, including those used by herring and sandeel. Commercially important shellfish species are also present including brown crab, European lobster and whelk. A number of migratory fish species, some of which are of conservation interest, including Atlantic salmon, sea trout and European eel are known to inhabit the region.
- 6.4.1.4 Direct damage and disturbance in the Hornsea Four fish and shellfish study area will be a likely occurrence from foundation seabed preparation, the use of jack-ups and anchored vessels and cable seabed preparation and installation works during the construction phase of the development.
- 6.4.1.5 Full details of the EIA and the Hornsea Four project's potential impacts on fish and shellfish can be found in [Volume A2, Chapter 3: Fish and Shellfish Ecology](#).
- 6.4.1.6 However, throughout the construction, operation and decommissioning phases, all impacts assessed were found to have either neutral or slight level of significance on fish or shellfish receptors within the study area, therefore avoiding 'significant harm' to fish and shellfish

ecology, a key test set out in EN-1 as aforementioned in this section. The assessment also met the requirements of EN-3, considering all potential effects which could derive from Hornsea Four. In conclusion, it can be considered that Hornsea Four complies with policies EN-1 and EN-3 on this factor.

6.5 Marine Mammals

- 6.5.1.1 Similarly to the previous two sections, it is considered in the ES for this chapter ([Volume A2, Chapter 4: Marine Mammals](#)) that the most relevant NPSs for topics relating to the protection and conservation of marine based species and habitats are EN-1 and EN-3.
- 6.5.1.2 EN-1 and EN-3 both set out similar requirements, focusing around the honest assessment of the effect a potential scheme could have on any species and habitats that have been identified as being of principal importance for the conservation and biodiversity within a specified area.
- 6.5.1.3 The following species of marine mammals were identified as most likely to be present at Hornsea Four and were the focus of the baseline characterisation and the impact assessment: harbour porpoise, minke whale, white-beaked dolphin, bottlenose dolphin, harbour seal and grey seal. The Hornsea Four site-specific surveys suggested that the area is particularly important for harbour porpoise.
- 6.5.1.4 During construction, the impact assessment considered the impacts of underwater noise arising from the piling of foundations on marine mammals, including the potential for auditory injury, temporary disturbance, vessel collisions, disturbance from vessels, reduction in prey availability and disturbance from the clearance of UXO. Impacts have also been considered during the operation and decommissioning phases.
- 6.5.1.5 The results showed that the impact at all phases of the Hornsea Four project (construction, operation and decommissioning) would have no higher than a slight level of significance on marine mammals, with commitments to mitigation, most notably in relation to the reduction of underwater noise levels, already in place. The full details of these mitigation commitments and this assessment as a whole can be found in [Volume A2, Chapter 4: Marine Mammals](#) of the ES.
- 6.5.1.6 Therefore, with the results of this assessment on marine mammals anticipating no significant harm to any related species or habitats, it can be considered that Hornsea Four complies with both EN-1 and EN-3, which requires applicants to avoid causing significant harm, a key test set out in EN-1.

6.6 Offshore Ornithology

- 6.6.1.1 EN-3 sets out specific considerations which apply to the effect of offshore wind energy infrastructure proposals on birds, and the potential of projects like Hornsea Four to impact birds through collision with rotating blades, direct habitat loss, or disturbance/displacement from construction, operational or decommissioning activities. EN-1 is also considered

relevant to this topic, as it sets out the general guidance to assessing the effects of a scheme on related species and habitats.

- 6.6.1.2 The species identified for analysis in this process (gannet, kittiwake and auk species) were selected as they were the most abundant within the survey data, making them potentially the most sensitive to impacts associated with the construction and operation of Hornsea Four. Full details of this assessment can be found in the ES, [Volume A2, Chapter 5: Offshore and Intertidal Ornithology](#).
- 6.6.1.3 The results of this assessment found that the construction, operation and decommissioning phases would be of no significance to any of the species identified.
- 6.6.1.4 In addition to this, cumulatively, the impact of operation at Hornsea Four, along with other projects affecting offshore and intertidal ornithology, was found to have no more than a slight level of significance on the identified species and habitats, with no mitigation proposed beyond the existing commitments that are in place.
- 6.6.1.5 Therefore, it can be considered that the requirements of EN-1 and EN-3 have been met, as there is predicted to be no significant harm caused by Hornsea Four to the offshore and intertidal ornithology.

6.7 Commercial Fisheries

- 6.7.1.1 EN-3 presents the potential impacts that the construction and operation of offshore wind farms can have on fish and shellfish stocks. For example, whilst the footprint of the offshore wind farm and any associated infrastructure may be a hindrance to certain types of commercial fishing activity, the establishment of a wind farm could also increase the potential for some other types of fishing activities, such as potting. EN-1 is also considered relevant to this factor, as it sets out the general guidance to assessing the effects of a scheme on related species and habitats.
- 6.7.1.2 For the purposes of this assessment, the key fleets operating across the Hornsea Four include (in no particular order):
- UK potters targeting lobster, brown crab and whelk;
 - UK demersal otter trawlers targeting Nephrops and mixed demersal species;
 - French demersal trawlers targeting whiting;
 - UK, Belgian, and Dutch beam trawlers targeting sole, plaice, Nephrops and mixed demersal species;
 - Dutch, German, Danish, French and Swedish pelagic trawlers, targeting herring that consistently move/shoal throughout the wider southern North Sea; and
 - Danish, Swedish and Norwegian demersal trawlers targeting sandeel throughout the North Sea with occasional effort within the array area.

- 6.7.1.3 Full details of this assessment and the potential impacts can be found in [Volume A2, Chapter 6: Commercial Fisheries](#) of the ES.
- 6.7.1.4 The results of this assessment found that during construction of the Hornsea Four array area, associated infrastructure and cabling, commercial fisheries will be prevented from fishing where construction activities are taking place.
- 6.7.1.5 Overall, the potential impacts of Hornsea Four during construction, operation and decommissioning range from a neutral to slight adverse level of significance on commercial fisheries. Following the requirements of EN-1 and EN-3, which both wish for minimal harm to be caused to marine based species and habitats, it can be considered that Hornsea Four complies with the relevant policies on this topic.

6.8 Shipping and Navigation

- 6.8.1.1 EN-3 requires applicants to undertake a Navigational Risk Assessment, in accordance with relevant Government guidance, and to consider the impact a project may have on recreational craft. EN-3 further states that where there is a possibility that safety zones will be sought around offshore infrastructure, potential effects should be assessed based on a worst case scenario where the exact locations of the safety zones are unknown. EN-1, although it does not specifically refer to shipping and navigation, still remains relevant due to its overarching guidance principles.
- 6.8.1.2 A Navigational Risk Assessment has been undertaken for this project and the full details of this can be found in [Volume A2, Chapter 7: Shipping and Navigation](#) of the ES.
- 6.8.1.3 Hornsea Four is located near a number of major shipping routes, some of which pass through the array area. These are predominantly vessels transiting northeast/southwest between the Humber Estuary and the Baltic Sea, with other routes running between northeast England and mainland European ports in the southern North Sea. Shipping traffic is at its greatest density in the offshore ECC, with some vessels anchoring in the nearshore section, behind the shelter of Flamborough Head. The Newcastle to Amsterdam ferry route, which operates daily, passes through the array area. A large proportion of the vessel traffic in and around the array is made up of oil and gas industry vessels.
- 6.8.1.4 For all phases of development, the highest significance of effect was determined to be slight for impacts relating to increased vessel to vessel collision risk due to deviations and resulting increased vessel to vessel encounters, powered and drifting collision risk and restricted emergency response capability.
- 6.8.1.5 EN-3 states to ensure safety of shipping, it is Government policy that wind farms should not be consented where they would pose unacceptable risks to navigational safety after mitigation measures have been adopted. Therefore, it can be considered that with the

maximum level of significance for any potential impacts on shipping and navigation being measured as slight, Hornsea Four complies with policies EN-1 and EN-3 on this topic.

6.9 Aviation and Radar

- 6.9.1.1 EN-1 states that where the proposed development may have an effect on civil or military aviation and/or other defence assets, an assessment of the potential effects should be set out in the ES. The full details of the assessment of aviation and radar can be found in [Volume A2, Chapter 8: Aviation and Radar](#) of the ES.
- 6.9.1.2 The assessment found that Hornsea Four turbines could be detected by air traffic control radar at Claxby, as well as by radar systems operated by the Ministry of Defence at Trimmingham. The Hornsea Four wind farm area will be transited by helicopters, which could result in the need for them to fly higher when using this route.
- 6.9.1.3 Furthermore, there is the potential for: the creation of aviation obstacles to fixed wing and rotary aircraft offshore; increased air traffic in the area related to wind farm activities affecting the available airspace for other users; wind turbines causing permanent interference on civil and military radar systems; and wind turbines creating an impact to offshore helicopter operations to oil and gas platforms.
- 6.9.1.4 As a result of this, there are a number of commitments in place to reduce impacts on aviation and radar. These include the development of an Emergency Response Co-operation Plan and ensuring aviation lighting is fitted to all structures higher than 60 m.
- 6.9.1.5 EN-1 states that it is essential that the safety of UK aerodromes, aircraft and airspace is not adversely affected by new energy infrastructure. Therefore, with the above commitments in place, it can be considered that Hornsea Four complies with EN-1 with regards to this topic.

6.10 Marine Archaeology

- 6.10.1.1 EN-1 also states that applicants should provide a description of the significance of the heritage assets affected by the proposed development and the contribution of their setting to that significance. EN-3 also explains how avoidance of important heritage assets, including archaeological sites and historic wrecks, is the most effective form of protection and can be achieved through the implementation of Archaeological Exclusion Zones (AEZs).
- 6.10.1.2 There are 18 known wrecks within the marine archaeology study area, with all 18 of these located within the Order Limits. There are also five foul and seabed obstructions within the Order Limits. The majority of the known wrecks are dated to the twentieth century and exclusion zones were applied to all known wrecks. Full details of this assessment can be found in [Volume A2, Chapter 9: Marine Archaeology](#) of the ES.
- 6.10.1.3 The marine archaeology assessment has considered the effects of the operation and decommissioning of Hornsea Four particularly through processes such as compression (crushing) on buried archaeology, coming to the conclusion that the impacts on marine

archaeology are assessed to be negligible. Therefore, due to the lack of significant harm caused to the site's marine archaeology, it can be considered that Hornsea Four complies with EN-1 and EN-3 on this topic.

6.11 Seascape Landscape and Visual Resources

6.11.1.1 EN-1 requires that applicants should carry out a landscape and visual impact assessment, and that the landscape and visual assessment should include reference to any landscape character assessment and associated studies as a means of assessing landscape impacts relevant to the proposed project.

6.11.1.2 EN-1 further states that the applicant's assessment should include the effects during construction of the project and the effects of the completed development and its operation on landscape components and landscape character.

6.11.1.3 EN-3 states that proposals for renewable energy infrastructure should demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology.

6.11.1.4 The seascape offshore for the Hornsea Four project can be described as open sea with occasional offshore structures, such as oil and gas platforms. Due to the distance of the offshore array from the coast, the development will be mostly visible to those present in the offshore environment.

6.11.1.5 No part of the offshore components of Hornsea Four are located within a landscape planning designation or defined area of landscape. The Seascape, Landscape and Visual Resources HVAC booster station study area includes an area identified as being part of the Flamborough Head Heritage Coast, part of which is also within the Yorkshire Wolds Important Landscape as identified in the East Riding Local Plan. Full details of the SLVR assessment can be found in [Volume A2, Chapter 10: Seascape Landscape and Visual Resources](#) of the ES.

6.11.1.6 The results of the SLVR assessment predicts that there will be no significant effects on seascape and visual resources as a result of the construction, operation and decommissioning of Hornsea Four.

6.11.1.7 Commitments (secured by the HVAC Booster Station Lighting Plan ([F2.17](#))) will satisfactorily mitigate the potential effect on the lighting of the HVAC Booster Stations so that the effects on the dark skies out to sea Special Character of the Flamborough Head Heritage Coast would be not significant.

6.11.1.8 Therefore, due to the lack of significant impact Hornsea Four will have on seascape and visual resources, along with the good design of the project and its embedded mitigation, it can be considered that Hornsea Four complies with EN-1 and EN-3.

6.12 Infrastructure and Other Users

- 6.12.1.1 EN-3 requires that applicants should undertake an assessment of the potential effect of the proposed development on existing or permitted offshore infrastructure or activities. EN-3 also states that where a proposed development is likely to affect the future viability or safety of an existing or approved/licensed offshore infrastructure or activity, these adverse effects should be given substantial weight in the decision-making process. EN-1 was also considered when assessing this topic for its general guidance related to energy.
- 6.12.1.2 The infrastructure and other users study area for Hornsea Four includes the Hornsea Four array area, the offshore ECC and the HVAC booster station search area. The study areas consist of several buffers depending upon the potential impact and/or receptor being considered. Full details of the assessment can be found in [Volume A2, Chapter 11: Infrastructure and Other Uses](#) of the ES.
- 6.12.1.3 The results of the assessment found that for the construction, operation and decommissioning phases, all impacts bar those relating to the proposed Endurance CCS site and associated development activity and infrastructure (IOU-C-1, IOU-O-10, IOU-D-23) were considered to be of no significance.
- 6.12.1.4 For those impacts relating to the proposed Endurance CCS site, the significance was ranked as moderate/large, however mitigation has been proposed to reduce significance to slight. Therefore, it can be considered that the Hornsea Four will not have a significant effect on existing or permitted offshore infrastructure and activities, complying with policies EN-1 and EN-3.

7 Technical Studies Summary – Onshore

7.1 Introduction

7.1.1.1 This section briefly summarises the findings of ES for the onshore elements. The full report can be found in ES [Volume A3 Chapters 1 – 10](#).

7.2 Geology and Ground Conditions

7.2.1.1 EN-1 requires that development should aim to avoid significant harm to geological conservation interests, including through mitigation and consideration of reasonable alternatives. EN-1 also sets out that where the development is subject to EIA, the applicant should ensure that the ES clearly presents any effects on internationally, nationally and locally designated sites.

7.2.1.2 The geology underlying Hornsea Four is made up of a range of near surface deposits including sand, gravel and silty clay with a predominantly chalk bedrock. Hornsea Four is not located within a coal mining area; however, Hornsea Four intersects a number of Mineral Safeguarding Areas.

7.2.1.3 A number of aquifers underlie Hornsea Four with the chalk aquifers being the most important. Areas of high groundwater vulnerability risk are also present, and these indicate that the soil is easily able to transmit pollution to groundwater. No designated geological sites have been identified within the Order Limits. Full details of this assessment can be found in [Volume A3, Chapter 1: Geology and Ground Conditions](#) of the ES.

7.2.1.4 The assessment found that, through implementation of the mitigation measures identified (both embedded and additional) to prevent or reduce impacts to exposure of workforce to health impacts and encountering contamination during intrusive works, impacts of the project in relation to geology and ground conditions is anticipated to be not significant. Therefore, Hornsea Four can be considered to comply with EN-1 as it avoids significant harm to geological conservation interests, including through mitigation.

7.3 Hydrology and Flood Risk

7.3.1.1 EN-1 states that applicants should undertake an assessment of the existing status and impacts of the proposed project on water quality, water resources and the physical characteristics of the water environment. EN-3 requires that the assessment should be undertaken for all stages of the lifespan of the proposed wind farm. EN-5 asks for applicants to set out to what extent the proposed development is expected to be vulnerable, and, as appropriate, how resilient it would be to flooding.

7.3.1.2 The Hornsea Four onshore infrastructure would be located within two main surface water drainage catchments, Barmston Sea Drain and the River Hull. Parts of the Upper River Hull catchment are designated as part of the River Hull Headwaters SSSI.

7.3.1.3 The Environment Agency online Flood Map for Planning shows that the landfall is largely located within Flood Zone 1. Small parts of the landfall site fall within Flood Zones 2 and 3 due to the proximity of Earl's Dike. The onshore ECC will pass primarily through Flood Zone 1, although some locations are located in Flood Zone 2 and 3. However, as the cables are below-ground infrastructure they will not themselves be at risk from flooding. The OnSS is predominantly located within Flood Zone 1. Full details of this assessment can be found in [Volume A3, Chapter 2: Hydrology and Flood Risk](#) in the ES.

7.3.1.4 The results of this assessment found that there is likely to be no significant effects as a result of the development during the construction, operation and decommissioning stages, following implementation of the Hornsea Four's mitigation and commitments. Therefore, it can be considered that Hornsea Four complies with NPSs EN-1, EN-3 and EN-5 and provides all the relevant information they require.

7.4 Ecology and Nature Conservation

7.4.1.1 As explained throughout this section, EN-1 states that, as a general principle, development should aim to avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives. EN-3 requires proposals for renewable energy infrastructure to demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology.

7.4.1.2 The predominant habitats within Hornsea Four include arable land with woodland, scrub, hedgerows, improved grassland, poor semi-improved grassland and freshwaters. Only one statutory site designated to protect nature (the River Hull Site of Special Scientific Interest (SSSI)) overlaps with Hornsea Four. As the most northerly chalk stream in Britain, the River Hull is valued for its clear water and the rich invertebrate, plant and fish life that it supports. Additionally, there are six non-statutory designated sites to protect wildlife proposed to be crossed by Hornsea Four.

7.4.1.3 The following UK Habitats of Principal Importance are present within the Hornsea Four Order Limits:

- Coastal and Floodplain Grazing Marsh;
- Maritime Cliff and Slope; and
- Reedbeds.

7.4.1.4 The predominant habitats within Hornsea Four include arable land with woodland, scrub, hedgerows, improved grassland, poor semi-improved grassland and freshwaters.

7.4.1.5 Key species within the Extended Phase 1 Habitat Survey area include badgers, birds, over-wintering birds, breeding birds, bats, water voles and great crested newts. Full details of this assessment can be found in [Volume 3, Chapter 3: Ecology and Nature Conservation](#) of the ES.

- 7.4.1.6 The results of this assessment found that, provided the mitigation measures and individual commitments are in place to prevent impacts on those receptors from Hornsea Four, potential impacts are expected to be not significant in relation to habitats and species.
- 7.4.1.7 Therefore, it can be considered that Hornsea Four avoids significant harm to biodiversity conservation interests, a key test set out in EN-1, and complies with EN-1 and EN-3.

7.5 Landscape and Visual

- 7.5.1.1 EN-1 requires applicants to carry out a landscape and visual assessment and report it in the ES. EN-1 states that the landscape and visual assessment should include reference to any landscape character assessment and associated studies as a means of assessing landscape impacts relevant to the proposed project. EN-1 requires the applicant's assessment to also take account of any relevant policies based on these assessments in local development documents in England.
- 7.5.1.2 EN-1 states that the applicant's assessment should include the effects during construction of the project and the effects of the completed development and its operation on landscape components and landscape character. EN-1 states that the assessment should include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity.
- 7.5.1.3 There are no nationally designated landscapes such as Areas of Outstanding Natural Beauty (AONB) within the Hornsea Four landscape and visual study area. The south-western extent of the Hornsea Four study area includes a small part of the locally designated Yorkshire Wolds Important Landscape Area (ILA). The majority of the study area lies in the Holderness National Character Area, a rural low-lying plain with open views and sparse woodland.
- 7.5.1.4 Assessments on temporary changes to the landscape at the landfall, along the onshore ECC and at the OnSS have all been undertaken for the construction phase. Assessment of long-term effects on landscape and views associated with the OnSS have also been undertaken.
- 7.5.1.5 No significant effects have been identified as a result of construction of the onshore ECC or at the landfall area, with the exception of localised effects of the landfall works on views experienced by the local community and visitors to the beach. Construction works at the OnSS are likely to have significant effects on the local landscape within the immediate vicinity of the site. During operation, significant effects of the OnSS on the landscape will be similarly localised. Beyond this local area there will be no significant effects on landscape character, including that of the Yorkshire Wolds ILA. Significant effects on views are predicted for a number of locations with clear views of the OnSS from within 2 km. Beyond this distance, or from locations where intervening vegetation filters views, effects will be not significant. Full details of this assessment can be found in [Volume A3, Chapter 4: Landscape and Visual](#) of the ES.
- 7.5.1.6 To combat these effects, a landscape mitigation plan ([F2.8](#)) has been developed which has been designed to reduce landscape and visual effects and to help absorb the OnSS into the

local landscape. As this proposed planting matures, some of the identified effects will be reduced, though they are predicted to remain significant. Additionally, an Outline Design Plan (F2.13) has been developed to inform the design of the OnSS. However, the benefits of Hornsea Four are considered to outweigh the localised landscape and visual effects.

- 7.5.1.7 In summary, this section has satisfied the tests set out in Policy EN-1, by providing a detailed landscape and visual impact assessment highlighting the effects of the proposed development.

7.6 Historic Environment

- 7.6.1.1 EN-1 states that, as part of the ES, the applicant should provide a description of the significance of the heritage assets affected by the proposed development and the contribution of their setting to that significance. EN-1 also states that applicants should ensure that the extent of the impact of the proposed development on the significance of any heritage assets affected can be adequately understood from the application and supporting documents. EN-1 sets out that any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage asset the greater the justification will be needed for any loss. EN-3 and EN-5 are also considered relevant to this topic.
- 7.6.1.2 Hornsea Four is located within the East Riding of Yorkshire which has a rich historical and archaeological heritage. Settlement in the area began in the Mesolithic period and evidence from this period right through to the modern day can be found both from finds and from changes within the landscape (field layout/boundaries for example). One designated heritage asset (e.g. scheduled monuments and listed buildings) is located within the footprint of the Hornsea Four boundary (the Beverley Sanctuary Limit Stone, Bishop Burton (HP4-56)), but over 600 have been identified and avoided in the wider study area
- 7.6.1.3 Assessment of the potential setting effects has identified that the OnSS would form a new permanent intrusive visual element within the wider setting of some heritage assets, however this change in setting would not adversely affect the ability to appreciate heritage significance or adversely impact the significance of those heritage assets.
- 7.6.1.4 Direct (physical) impacts could occur to the Beverley Sanctuary Limit Stone Scheduled Monument located within the onshore ECC. With mitigation measures in place, alongside the Commitments set out by Hornsea Four, the residual level of impact would be not significant.
- 7.6.1.5 Direct (physical) impacts could occur as a result of intrusive groundworks and other construction-related activities on non-designated heritage assets. Impacts would be offset or reduced through either preservation in-situ or archaeological fieldwork and reporting (as set out in F2.10: Outline Onshore Written Scheme of Investigation). Full details of this assessment can be found in Volume A3, Chapter 5: Historic Environment of the ES.

7.6.1.6 Therefore, results of this assessment show that no potentially significant impacts have been identified in relation to the construction, operation and maintenance or decommissioning of Hornsea Four on the historic environment, therefore Hornsea Four can be considered compliant with EN-1, EN-3 and EN-5, as the significance of the impact to the historic environment is minimal and does not outweigh the public benefit of the development.

7.7 Land Use and Agriculture

7.7.1.1 EN-1 states that the ES should identify existing and proposed land uses near the project, any effects of replacing an existing development or use of the site with the proposed project or preventing a development or use on a neighbouring site from continuing.

7.7.1.2 EN-1 also sets out how, although in the case of much energy infrastructure there may be little that can be done to mitigate the direct effects of a project on the existing use of the proposed site, applicants should nevertheless seek to minimise these effects and the effects on existing or planned uses near the site by the application of good design principles, including the layout of the project.

7.7.1.3 The assessment considers the impacts that occur to the following receptors:

- Land use: human beings (including landowners, occupiers, local communities and other land users), as well as Public Rights of Way (PRoW), cycle routes and coastal paths; and
- Agriculture: The availability and use of the land for agricultural practice.

7.7.1.4 Hornsea Four is located in an area of fertile soils where agriculture dominates the landscape. Soil types are mixed, and conditions enable the cultivation of cereals, root/fodder crops, potatoes and field vegetables. Some livestock grazing is also present. The OnSS will be located on farmland but in close proximity to the Creyke Beck National Grid substation, to the north of Cottingham. Full details of this assessment can be found in [Volume A3, Chapter 6: Land Use and Agriculture](#) of the ES.

7.7.1.5 Impacts on agriculture are mainly restricted to the construction phase where temporary construction areas will be required and restrictions on farming activities in place for up to a maximum of 43 months (36 months for the landfall and onshore ECC (including logistics compounds)). Some agricultural land will therefore be taken out of active management for these periods, but permanent loss of agriculture is restricted to the substation site and access track. Existing commitments would mitigate this disruption.

7.7.1.6 There are no recreational facilities located within the direct footprint of the landfall apart from Fraisthorpe Beach itself. Thirty-six crossing points for PRoW (Public Rights of Way) and cycle routes have been identified along the entirety of the Hornsea Four Order Limits. These comprise of 23 existing footpaths, one proposed footpath (the England Coast Path), eight bridleways, three cycle path crossings and an additional marked way not associated with a designated footpath or bridleway.

7.7.1.7 Following the incorporation of commitments no significant effects have been identified in relation to land use or agriculture. Therefore, no significant impacts to the existing land use and agriculture were identified, meaning Hornsea Four can be considered to comply with EN-1 on this topic, as through good design and existing commitments to mitigation, any direct effects of the proposal have been minimised accordingly.

7.8 Traffic and Transport

7.8.1.1 EN-1 states that the consideration and mitigation of transport impacts is an essential part of the Government's wider policy objectives for sustainable development, and that if a project is likely to have significant transport implications, the applicant's ES should include a Transport Assessment. EN-1 also explains that a new energy NSIP may give rise to substantial impacts on the surrounding transport infrastructure, and the SoS should therefore ensure that the applicant has sought to mitigate these impacts, including during the construction phase of the development.

7.8.1.2 An assessment of potential impacts associated with an increase in construction traffic has been undertaken. The assessment covers a range of issues including driver delay; severance; pedestrian amenity; accidents and road safety; and abnormal loads.

7.8.1.3 A range of mitigation will be committed to by Hornsea Four to manage the impact of construction traffic including committing to core working hours within defined times and the development of a Construction Traffic Management Plan.

7.8.1.4 No likely significant effects were identified for the construction, operation and maintenance and decommissioning with mitigation measures in place. The full details of this assessment can be found in [Volume A3, Chapter 7: Traffic and Transport](#) of the ES.

7.8.1.5 In summary, no residual impacts have been identified which are considered significant, therefore it can be considered that Hornsea Four complies with policies EN-1 and EN-3.

7.9 Noise and Vibration

7.9.1.1 EN-1 states that applicants should provide a noise assessment that is proportionate to the likely noise impact of the development. EN-1 requires the project to demonstrate good design through selection of the quietest cost-effective plant available; containment of noise within buildings wherever possible; optimisation of plant layout to minimise noise emissions; and, where possible, the use of landscaping, bunds or noise barriers to reduce noise transmission. EN-3 notes the potential effect of offshore windfarm noise associated with land-based activities and traffic. EN-5 highlights the potential for noise to be generated by electricity transmission infrastructure such as substations.

7.9.1.2 The Hornsea Four baseline noise environment and conditions were established using a series of noise surveys undertaken in April 2019 at the landfall, along the onshore cable route and near the OnSS site. The full details of this assessment can be found in [Volume A3, Chapter 8: Noise and Vibration](#) of the ES.

7.9.1.3 Results found that, provided mitigation measures (both embedded and secondary) are in place to prevent impacts on receptors from Hornsea Four, potential impacts are anticipated to be not significant in relation to noise and vibration receptors. Therefore, it can be considered that through good design Hornsea Four avoids causing significant harm, complying with policies EN-1, EN-3 and EN-5.

7.10 Air Quality

7.10.1.1 EN-1 states that the ES should describe any significant air emissions, their mitigation and any residual effects distinguishing between the project stages and taking account of any significant emissions from any road traffic generated by the project; and the predicted absolute emission levels of the proposed project, after mitigation methods have been applied.

7.10.1.2 The air quality study area for the assessment included the main trunk roads in the vicinity of the onshore ECC, including the A165, A1033, A1165, A164, A1079 and the A63. The Hull Air Quality Management Area encompasses part of the A63, which is included in the air quality study area. The full details of this assessment can be found in [Volume A3, Chapter: Air Quality](#) of the ES.

7.10.1.3 Hornsea Four has made a number of commitments to reduce impacts on air quality, including adoption of a Construction Code of Practice (CoCP) which include measures to reduce temporary disturbance and incorporation of good practice measures to reduce dust from construction sites. Following the incorporation of such commitments no significant effects have been identified in relation to air quality. Therefore, due to the minor level of significance of Hornsea Four's impacts air quality in the area, it can be considered that Hornsea Four complies with EN-1 on this topic.

7.11 Socio-Economics

7.11.1.1 EN-1 states that where the project is likely to have socio-economic impacts at local or regional levels, the applicant should undertake and include in their application an assessment of these impacts as part of the ES.

7.11.1.2 The closest economic area to Hornsea Four was the Humber Local Enterprise Partnership (LEP) area (referred to as the former Humber LEP); however, in April 2021 the Humber LEP landscape changed with a newly created Hull and East Riding LEP established.

7.11.1.3 Hornsea Four will inevitably draw some of its labour from outside of the local economic development study area, however it is reasonable to expect that some new employment

opportunities will be created locally and could be taken up by people living in the Former Humber Local Enterprise Partnership (LEP) area.

7.11.1.4 The assessment of socio-economic effects concluded that Hornsea Four could have significant beneficial effects on enabling local residents to access employment opportunities through construction activities within the Former Humber LEP area.

7.11.1.5 For both the Humber Port and non-Humber UK Port scenarios, Hornsea Four could result in moderate beneficial impacts on the Humber LEP study area during construction.

7.11.1.6 The assessment does not identify any necessary mitigation measures for socio-economic effects, and therefore Hornsea Four is compliant with EN-1, as Hornsea Four is not predicted to result in any significant adverse impacts.

8 Planning Balance

8.1 Introduction

8.1.1.1 This section demonstrates the need for Hornsea Four in the context of national policy. This section also considers the wider benefits of Hornsea Four and weighs them against any adverse impacts that have been identified.

8.2 National Policy Statements

8.2.1.1 NPSs provide the primary basis for decisions by the SoS. The NPS set out a case for the need and urgency for new energy infrastructure to be consented and built with the objective of supporting the Government's policies on sustainable development, in particular by:

- Mitigating and adapting to climate change; and
- Contributing to a secure, diverse and affordable energy supply.

8.2.1.2 A number of the arguments made nearly 9 years ago have shifted as a result of a growing urgency to reduce carbon emissions globally and locally; and the progress made by low-carbon technologies and initiatives which were expected to deliver a low-carbon electricity system. The circumstances of Net-Zero were not envisaged when the Energy NPSs were designated. The draft NPS EN-1 seeks to address this issue and confirms that there is still an urgent need for renewable energy, including offshore wind.

8.2.1.3 Part 3 of NPS EN-1 establishes an urgent policy need for all types of energy infrastructure in order to achieve energy security and dramatically reduce carbon emissions (paragraph 3.1.1). It is made clear that without significant amounts of new large-scale energy infrastructure, the Government's energy and climate change objectives cannot be fulfilled and this will not be possible without some significant residual adverse impacts (paragraph 3.2.3). It is estimated that over £10 trillion of public and private investment in the global energy sector alone will be required by 2030 for signatories to meet their targets¹. The

¹ OWIC (2019) *The UK Offshore Wind Industry: Supply Chain Review*

investment provided by Orsted into Hornsea Four provides a significant contribution to the required investment to meet emission reduction targets.

- 8.2.1.4 Substantial weight should therefore be given to the contribution which projects would make towards satisfying this need when considering applications for development consent under the PA2008.
- 8.2.1.5 The need for new renewable electricity generation projects is therefore urgent. Offshore wind farms are expected to make up a significant proportion of the UK's renewable energy generating capacity up to 2030 and towards 2050.
- 8.2.1.6 The Needs Statement (see [H2.6](#)) that supports this DCO application explains in detail the UK's commitment to decarbonisation and should be read alongside this Planning Statement. The Needs Statement also demonstrates that there is an urgent need for offshore wind projects such as Hornsea Four.
- 8.2.1.7 Decarbonisation is a legal requirement in the UK and is of global significance. Wind generation is an essential element for the urgent decarbonisation of the energy sector in the UK. As part of a diverse generation mix, wind generation contributes to improve the stability of capacity utilisations among renewable generators. By being connected at the transmission system level, large-scale offshore wind generation can and will play an important role in the resilience of the GB electricity system from an adequacy and system operation perspective.
- 8.2.1.8 The Hornsea Four development proposes a substantial infrastructure asset, capable of delivering large amounts of low-carbon electricity - enough to power in excess of 2m homes each year, from as early as the mid-2020s. This is in line with the CCC's recent identification of the need for urgent action to increase the pace of decarbonisation in the GB electricity sector. Hornsea Four's connection to the NETS means that it will be required to play its part in helping National Grid Electricity System Operator (NGESO) manage the national electricity system. This includes participating in mandatory balancing markets (to help balance supply and demand on a minute-by-minute basis and provide essential ancillary services) as well as providing visibility to the GB power market of its expected generation.
- 8.2.1.9 Hornsea Four will therefore be a necessary part of the future generation mix, and as such will make a valuable contribution in the direction of adopted UK Government policy and achievement of decarbonisation commitments.

8.3 The Market for Offshore Wind

- 8.3.1.1 Offshore wind also plays a prominent part in the UK Government's Industrial Strategy, which identifies offshore wind as one of the biggest export opportunities. With the generating capacity of offshore wind reaching 8 GW as of 2019², comes investment potential and an extensive UK knowledge base. This provides a significant opportunity for UK companies to gain market share, allowing the UK to thrive as world leaders in the global market. This acts as a potential springboard for unlocking export potential as the global market continues to

² Committee on Climate Change (2019) *Net Zero Technical Report*

expand. The predicted export to global markets from the UK is estimated at £2.6 billion per annum by 2030³; Hornsea Four therefore represents a significant opportunity for tapping into this global market share. By developing local production capabilities, technical expertise and supporting supply chains, the UK can gain competitive advantage in the offshore wind export market.

- 8.3.1.2 Further development in the offshore wind sector can contribute to a skilled, diverse workforce and strengthen the existing manufacturing base. Offshore wind is a highly-skilled industry, which is well placed to create jobs and boost earning power in regions across the UK which require economic growth. Offshore wind farms are some of the largest construction projects in the UK accounting for 21% (£4.1 billion) of construction contracts in 2016, and representing a significant investment to stimulate the local and regional economy. Hornsea Four is expected to have significant socio-economic benefits at local and regional levels through its construction, operation and maintenance and decommissioning, the importance of which is recognised in NPS EN-1. The creation of jobs and potential cumulative effects would provide benefits which would comply with the socio-economic considerations set out in national policy. For example, a report commissioned by the Offshore Wind Industry Council⁴ showcases the wide variety of opportunities for UK companies of all sizes to be involved in the offshore wind supply chain.

8.4 Electricity Storage and Balancing

- 8.4.1.1 Current and future energy policy and related actions must also ensure that security of supply is maintained, and that electricity is affordable for all. A long-standing challenge to the ability of wind generation to play a significant role in electricity supply relates to the uncontrollable nature of the weather. The variability of wind generation can be mitigated by developing larger generation capacities (to maximise output during periods of low wind); by connecting as-sets to different parts of the national electricity transmission system (NETS); by developing projects with complementary profiles (for example solar); or by developing integration technologies (for example, battery storage or participation in the hydrogen economy). There are a number of other technologies which can be used to compensate for the intermittency of renewable generation, such as electricity storage, interconnection and demand-side response
- 8.4.1.2 The activities associated with integrating renewables into the GB electricity system will increase with their penetration⁵. Energy balance must be managed at all times; and as renewable capacity increases, more services will be required to regain supply / demand balance when demand is either very high or very low. Further, when demand is low and renewables provide a significant share of total power generated, the maintenance of power quality and system stability levels may also require more services to achieve.

³ OWIC (2019) *The UK Offshore Wind Industry: Supply Chain Review*

⁴ OWIC (2019) *The UK Offshore Wind Industry: Supply Chain Review*

⁵ National Grid (2017) *System needs and product strategy*

8.4.1.3 In high renewable energy source systems:

- Voltage and frequency may not evolve linearly in unbalanced or distributed systems and faults may evolve quickly;
- Generators may find it challenging to remain synchronous to systems following fast-evolving faults, increasing the risk of cascading faults;
- Fast-moving fault conditions will be more complicated and may not be predictable; and
- High-renewable systems will be harder to mimic for test, research or safety justification purposes.

8.4.1.4 Critically, electricity storage is increasingly well placed to deliver a number of ancillary services for NGENSO, and this is of growing importance in GB. Some ancillary services must be delivered at specific locations, but others are location-independent. While the co-location of offshore wind generation assets with energy storage assets is not essential for either asset to make a significant contribution to the future operation of the NETS, the co-location of those assets enables additional operational capabilities to be accessed for system benefit. Co-location is especially beneficial where connections are to the transmission, rather than to the distribution network.

8.4.1.5 A 2016 study commissioned by the former Department for Energy and Climate Change (DECC), concluded that energy storage could result in savings of around £2.4 billion per year from 2030 for the UK⁶. Through Government and industry actions, GB is pursuing a number of projects which aim to deliver some of these benefits, although it is currently lagging behind the global leaders in battery storage.

8.4.1.6 The Prime Minister's 10 Point Plan, announced in November 2020, includes 'nearly £500m for battery manufacture in the Midlands and north-east England'⁷ to help make the vision of the UK becoming a leader in battery manufacturing capability a reality, with further cost reduction through giga-scale manufacturing facilities. Additionally, the target of 40 GW of offshore wind by 2030 is likely to increase the important role of electricity storage within the GB electricity system and this is recognised in the draft NPSs. The proposal to include electricity balancing infrastructure (which could comprise of battery electricity storage or other technologies) at Hornsea Four is therefore logical. The grant of a consent for such energy balancing infrastructure at Hornsea Four, would therefore allow Hornsea Four to provide valuable services to the whole energy system; such as importing, storing and exporting energy or converting to other energy sources to meet the grid needs, improve stability and reliability and support the UK's transition to NetZero.

8.5 Planning Balance

8.5.1.1 Section 104(3) of the PA2008 confirms that the SoS should decide applications in accordance with relevant NPSs (except to the extent that one or more of the matters set

⁶ Carton Grimwood, G. and Ares, E.(2016) *Energy storage in the UK*

⁷ Roger Harrabin (2020) *Ban on new petrol and diesel cars in UK from 2030 under PM's green plan*

out in sections 104(4) to (8) of the PA2008 applies). The key test therefore is to assess whether, on balance, the Hornsea Four is in accordance with the relevant NPSs.

- 8.5.1.2 The wider benefits of Hornsea Four and the need for offshore wind energy must therefore be weighed against the adverse impacts that have been identified as well as any local issues and concerns. This balancing exercise must also consider the context of national and international policies and obligations and the urgent need to decarbonise to achieve net-zero by 2050. The Government is committed to increasing the amount of electricity generated through renewable energy sources as demonstrated in the Energy White Paper 'Powering Our Net-Zero future' and draft NPS EN-1. A target has been set to increase the amount of electricity generated by offshore wind to 40 GW by 2030.
- 8.5.1.3 Support for the energy sector is evident in ERYC's Local Plan stating *"The energy sector in the East Riding is important to both the UK and East Riding economy, and plays a significant role in ensuring the UK's fuel security"* and *"an increase in renewable energy generation over the plan period will help reduce emissions that cause climate change"*.
- 8.5.1.4 Part 3 of NPS EN-1 establishes an urgent policy need for all types of energy infrastructure in order to achieve energy security and dramatically reduce carbon emissions. There is a presumption in favour of granting consent to DCO applications for energy NSIPs unless the adverse impacts of the NSIP outweigh its benefits.
- 8.5.1.5 NPS EN-3 and NE-5 set out a number of generic impacts that should be considered when determining a DCO. The ERYC Local Plan also requires environmental, social or economic impacts to be addressed.
- 8.5.1.6 **Sections 6 and 7** of this Planning Statement have provided a summary of the ES that has been submitted in support of the Hornsea Four, covering both the onshore and offshore elements. The summary shows that with mitigation measures in place, no significant impact have been identified other than on landscape and visual (onshore). The summary also demonstrates that Hornsea Four complies with the relevant policy tests set out in the NPSs for each environmental topic.
- 8.5.1.7 The landscape and visual impacts have been assessed as localised during the construction and operation phases of the development. A landscape mitigation plan has been developed which has been designed to reduce landscape and visual effects and to help absorb the OnSS into the local landscape, although the effects are predicted to remain significant.
- 8.5.1.8 EN-3 requires proposals for renewable energy infrastructure to demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology.
- 8.5.1.9 The Applicant has sought to integrate 'good design' throughout the process. The Outline Design Plan (**F2.13**) sets out the OnSS detail design. **F2.14: Outline Enhancement Strategy** and **F2.16: Outline Biodiversity Net Gain Strategy** secure environmental and social enhancement measures, in addition to biodiversity net gain at the OnSS site. The design

vision statement ([Volume A4, Annex 4.6](#)) brings these measures together to present the vision of Hornsea Four's design.

8.5.1.10 The Applicant considers that the benefits of Hornsea Four outweigh the localised landscape and visual effects.

8.5.1.11 Overall, the Applicant considers that there are no adverse impacts that cannot be mitigated or that outweigh the benefits associated with Hornsea Four.

9 Conclusions

9.1.1.1 This Planning Statement has been prepared to assist the SoS with the determination of the DCO application for Hornsea Four.

9.1.1.2 The Planning Statement has given an overview of the project description, site selection and consultation process and detailed the planning policy context against which this DCO application should be decided.

9.1.1.3 Hornsea Four will support the UK in its transition to a low carbon economy, helping meet the target of ensuring that the UK net carbon account in the year 2050 is at least 100% lower than the 1990 baseline (in accordance with the CCA2008). The Needs Statement that supports this DCO application (see [H2.6](#)) explains in detail the UK's commitment to decarbonisation and should be read alongside this Planning Statement.

9.1.1.4 An increase in the amount of renewable energy generated by offshore wind will contribute to better energy security and the resilient network required to meet future demand.

9.1.1.5 Hornsea Four will be a necessary part of the future generation mix, and as such will make a valuable contribution in the direction of adopted UK Government policy and achievement of decarbonisation commitments.

9.1.1.6 With the energy sector contributing approximately 24% of all GHG emissions in the UK and the urgent need to replace polluting generating stations such as coal, Hornsea Four will play a critical role in helping to reduce carbon emissions.

9.1.1.7 Alongside the overall environmental benefits, further development in the offshore wind sector can contribute to a skilled, diverse workforce and strengthen the existing manufacturing base. Offshore wind is a highly-skilled industry, which is well placed to create jobs and boost earning power in regions across the UK which require economic growth.

9.1.1.8 There is a large amount of policy support for offshore windfarms in the NPSs and also the East Inshore and East Offshore Marine Plan. The NPSs provide the basis against which the DCO application should be assessed against as stated by Section 104 (2) of the PA2008. NPS EN-1 sets out that given the level and urgency of need for energy infrastructure, the decision maker should start with a presumption in favour of granting consent to applications for energy NSIPs unless more specific policies set out in relevant NPSs clearly indicate that consent should be refused or the adverse impacts will outweigh the benefits. Hornsea Four

has been developed to limit any adverse impacts in line with the NPSs as demonstrated in the policy analysis.

9.1.1.9 Extensive ongoing consultation with the community and key stakeholders has led to a limitation in impacts with a number of mitigation measures proposed.

9.1.1.10 When taking into account the evidence presented in the ES and this Planning Statement, it is not considered that there are any adverse impacts that cannot be mitigated or that outweigh the benefits associated with Hornsea Four. It has been demonstrated that the project is in accordance with both national and local planning policy. Therefore, consent for Hornsea Four should be granted.

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