Hornsea Project Four: Preliminary Environmental Information Report (PEIR)

Volume 3, Chapter 4: Landscape and Visual Assessment

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Glossary

Term	Definition
Code of Construction Practice (CoCP)	A document detailing the overarching principles of construction, contractor protocols, construction-related environmental management measures, pollution prevention measures, the selection of appropriate construction techniques and monitoring processes
Commitment	A term used interchangeably with mitigation. Commitments are Embedded Mitigation Measures. Commitments are either Primary (Design) or Tertiary (Inherent) and embedded within the assessment at the relevant point in the EIA (e.g. at Scoping or PEIR). The purpose of Commitments is to reduce and/or eliminate Likely Significant Effects (LSE's), in EIA terms.
Cumulative effects	The combined effect of Hornsea Four in combination with the effects from a number of different projects, on the same single receptor/resource. Cumulative impacts are those that result from changes caused by other past, present or reasonably foreseeable actions together with Hornsea Project Four.
Design Envelope	A description of the range of possible elements that make up the Hornsea Project Four design options under consideration, as set out in detail in the project description. This envelope is used to define Hornsea Project Four for Environmental Impact Assessment (EIA) purposes when the exact engineering parameters are not yet known. This is also often referred to as the "Rochdale Envelope" approach.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria.
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).

Term	Definition
EIA Directive	European Union Directive 85/337/EEC, as amended by Directives 97/11/EC, 2003/35/EC and 2009/31/EC and then codified by Directive 2011/92/EU of 13 December 2011 (as amended in 2014 by Directive 2014/52/EU.
EIA Regulations	The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations').
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.
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.
Haul Road	The track along the onshore ECC which the construction traffic would use to access work fronts.
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.
Hornsea Project Four offshore wind farm	The term covers all elements of the project (i.e. both the offshore and onshore). Hornsea Four infrastructure will include offshore generating stations (wind turbines), electrical export cables to landfall, and connection to the electricity transmission network. Hereafter referred to as Hornsea Four.
Landfall	The generic term applied to the entire landfall area between Mean Low Water Spring (MLWS) tide and the Transition Joint Bay (TJB) inclusive of all construction works, including the offshore and onshore ECC, intertidal working area and landfall compound.
Maximum design scenario	The maximum design parameters of each Hornsea Four asset (both on and offshore) considered to be a worst case for any given assessment.
Mitigation	A term used interchangeably with Commitment(s) by Hornsea Four. Mitigation measures (Commitments) are embedded within the assessment at the relevant point in the EIA (e.g. at Scoping or PEIR).
National Grid Electricity Transmission (NGET) substation	The grid connection location for Hornsea Four at Creyke Beck.
Onshore export cables	Cables connecting the landfall first to the onshore substation and then on to the NGET substation at Creyke Beck.
Onshore substation (OnSS)	Located as close as practical to the NGET substation at Creyke Beck and will include all necessary electrical plant to meet the requirements of the National Grid.
Planning Inspectorate (PINS)	The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects (NSIPs).

Acronyms

Acronym	Definition
AONBs	Areas of Outstanding Natural Beauty
CoCP	Code of Construction Practice
DCO	Development Consent Order
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
ENV	East Riding Local Plan
ERYC	East Riding of Yorkshire Council
ES	Environmental Statement
GLVIA3	Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (Landscape Institute and Institute of Environmental Management and Assessment, 2013)
ILA	Important Landscape Area
LCA	Landscape Character Area
LCT	Landscape Character Type
LDWR	Long-Distance Walking Route
LVIA	Landscape and Visual Impact Assessment
MLWS	Mean Low Water Springs
NCA	National Character Area
NCN	National Cycle Network
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
OnSS	Onshore substation
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PRoW	Public right of way
SoCC	Statement of Community Consultation
SoS	Secretary of State
SSSI	Site of Special Scientific Interest
TCE	The Crown Estate
ZTV	Zone of Theoretical Visibility

Units

Unit	Definition
GW	Gigawatt (power)
kV	Kilovolt (electrical potential)
kW	Kilowatt (power)
km	Kilometre (distance)

4.1 Introduction

4.1.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents an assessment of the potential impacts of the Hornsea Project Four offshore wind farm (hereafter Hornsea Four) on Landscape and Visual. Specifically, this chapter considers the potential impact of Hornsea Four landward of Mean Low Water Springs (MLWS) during its construction, operation and maintenance and decommissioning phases on landscape and visual receptors. The impacts seaward of MLWS are considered in **Volume 2, Chapter 11: Seascape and Visual Resources**.

4.1.1.2 Orsted Hornsea Project Four Limited (the Applicant) is proposing to develop Hornsea Four which will be located approximately 65 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 (please see **Volume 1, Chapter 1: Introduction** for further details on 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 connection to the electricity transmission network (please see **Volume 1, Chapter 4: Project Description** for full details on the Project Design).

4.1.1.3 This chapter presents the landscape and visual impact assessment (LVIA), which considers the potential effects of Hornsea Four on:

- The landscape as a resource – as a result of changes to the constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape; and
- Views and visual amenity as experienced by people – as a result of changes in the appearance of the landscape.

4.1.1.4 This chapter summarises information contained within technical reports, which are included at **Volume 6, Annex 4.1: Landscape and Visual Resources: Photography and Photomontages**.

4.2 Purpose

4.2.1.1 This PEIR presents the preliminary environmental information for Hornsea Four and sets out the findings of the Environmental Impact Assessment (EIA) to date to support the pre-Development Consent Order (DCO) application consultation activities required under the Planning Act 2008.

4.2.1.2 The feedback from this consultation will be used to inform the final project design and the associated EIA (which will be reported in an Environmental Statement (ES)) that will accompany the DCO application to the Planning Inspectorate (PINS).

4.2.1.3 This PEIR chapter:

- Presents the existing environmental baseline established from desk studies, and consultation;
- Presents the potential environmental effects on Landscape and Visual Amenity arising from Hornsea Four, based on the information gathered and the analysis and assessments undertaken to date;
- Identifies any assumptions and limitations encountered in compiling the environmental information; and
- Highlights any necessary monitoring and/or mitigation measures which could prevent, minimise, reduce or offset the possible environmental effects identified in the EIA process.

4.3 Planning and Policy Context

4.3.1.1 Planning policy on offshore renewable energy Nationally Significant Infrastructure Projects (NSIPs), specifically in relation to landscape and visual, is contained in the Overarching National Policy Statement (NPS) for Energy (EN-1; DECC, 2011a).

4.3.1.2 NPS EN-1 includes guidance on what matters are to be considered in the assessment, an also highlights several factors relating to the determination of an application and in relation to mitigation. These are summarised in **Table 4.1** below.

Table 4.1: Summary of NPS EN-1 provisions relevant to LVIA.

Summary of NPS EN-1 provisions	How and where considered in the PEIR
Proposals for renewable energy infrastructure should demonstrate good design in respect of landscape and visual amenity (EN-1, paragraph 2.4.2).	Design is addressed in **Volume 4, Annex 4.6: Outline Design Vision Statement**.
The Applicant's landscape and visual assessment should include reference to any landscape character impacts relevant to the proposed project. Relevant policies in local development plans should also be considered (NPS EN-1, paragraph 5.9.5).	Landscape character impacts are considered in **Section 4.11**. Local development plan policies relating to landscape designation are discussed in **Section 4.7.2**.
The Applicant's assessment should include the likely effects on landscape components and landscape character during construction and operation (NPS EN-1, paragraph 5.9.6).	Effects which are scoped in to this LVIA are set out in **Table 4.12.** Effects on landscape components and landscape character during construction and operation are assessed in **Section 4.11**.

Summary of NPS EN-1 provisions	How and where considered in the PEIR
The assessment should report on the visibility and conspicuousness of the project at construction as well as the operational effects on views and visual amenity. This should include effects of light pollution on local amenity and nature conservation (NPS EN-1, paragraph 5.9.7).	Effects on visual amenity and views during construction and operation area assessed in **Section 4.11**. This includes consideration of the effects of light pollution on visual amenity. Effects of lighting on nature conservation interests are considered in **Volume 3, Chapter 3: Ecology and Nature Conservation**.
The existing character of the local landscape, its quality, its value and its capacity to accommodate change should all be considered in judging the impact of a project on landscape (NPS EN-1, paragraph 5.9.8).	The existing character of the local landscape is discussed in **Section 4.7**. The value and sensitivity to change of the local landscape is considered in **Section 4.10**. Effects on landscape character are assessed in **Section 4.11** with reference to the susceptibility of the landscape to the change proposed, and the value placed on the landscape, in accordance with good practice guidance (Landscape Institute and Institute of Environmental Management and Assessment, 2013).
NPS EN-1, Paragraphs 5.9.9 to 5.9.11 provide advice in relation to applications affecting nationally designated landscapes (National Parks and Areas of Outstanding Natural Beauty).	There are no nationally designated areas within the Hornsea Four landscape and visual study area, as set out in **paragraph 4.7.2.1**.
The fact that a proposed project will be visible from within a nationally designated area should not in itself be a reason for refusing consent (NPS EN-1, paragraph 5.9.13).	There are no nationally designated areas within the Hornsea Four landscape and visual study area, as set out in **paragraph 4.7.2.1**.
Local landscape designations should not be used in themselves to refuse consent. Attention should be given to local planning policies based on landscape character assessment (NPS EN-1, paragraph 5.9.14).	Local landscape designations are introduced at **Section 4.7.2**, and are considered in the assessment of effects in **Section 4.11**.
The IPC (hereafter Secretary of State) should consider the overall balance of any adverse effects and whether any adverse impact on the landscape would be so damaging that is not offset by the benefits (including need) of the project (NPS EN-1, paragraph 5.9.15).	The predicted adverse effects of Hornsea Four are clearly set out in **Section 4.11** to inform the decision-making process.
The Secretary of State should consider the duration and reversibility of any adverse effects and whether any adverse impact on the landscape will be capable of being reversed in a timescale that the IPC considers reasonable (NPS EN-1, paragraph 5.9.16).	The duration and reversibility of all effects is considered as part of the impact assessment in **Section 4.11**, as prescribed by the methodology set out in **Section 4.10**.
The Secretary of State should consider the design mitigation of the project and whether this has sought	Proposed mitigation for the project is set out in relation to commitments already made (see **Table**

Summary of NPS EN-1 provisions	How and where considered in the PEIR
to minimise harm to the landscape (NPS EN-1, paragraph 5.9.17).	4.11), and further mitigation has been identified where appropriate in the assessment in Section 4.11. The design vision and design mitigation aspirations for Hornsea Four are also set out in Volume 4, Annex 4.6: Outline Design Vision Statement, which will be developed further an submitted as a part of the DCO.
The Secretary of State should consider whether the visual effects on sensitive receptors outweigh the benefits of the project (NPS EN-1, paragraph 5.9.181)	The predicted adverse effects of the Hornsea Four are clearly set out in Section 4.11 to inform the decision-making process.
The Secretary of State should consider the benefits of the landscape and visual mitigation against the functionality of the project (NPS EN-1, paragraph 5.9.21).	Proposed mitigation for the project is set out in relation to commitments already made (see Table 4.11), and further mitigation has been identified where appropriate in the assessment in Section 4.11.
Adverse landscape and visual effects may be minimised through appropriate siting of infrastructure, design including colours and materials, and landscaping schemes (NPS EN-1, paragraph 5.9.22).	Proposed mitigation for the project is set out in relation to commitments already made (see Table 4.11), and further mitigation has been identified where appropriate in the assessment in Section 4.11. The design vision and design mitigation aspirations for Hornsea Four are also set out in Volume 4, Annex 4.6: Outline Design Vision Statement, which will be developed further submitted as a part of the DCO.
Depending on the surrounding topography and nearby receptors, it may be appropriate to provide landscape mitigation off site (NPS EN-1, paragraph 5.9.23).	The proposed mitigation (i.e. embedded commitments) for Hornsea Four is detailed in Table 4.11. Paragraph 4.11.2.14 sets out further mitigation that has been identified as a result of the assessment at the onshore substation (OnSS), in the form of woodland and hedge planting to help screen or filter views and integrate the OnSS in to the landscape. Low-level earth mounding is also identified to assist with reducing impacts further. Following the incorporation of these, no off-site mitigation has been identified that would further reduce residual effects at any location resulting in a lower level of significance.

4.3.1.3 The National Policy Statement for Renewable Energy Infrastructure (NPS EN-3; DECC, 2011b) and National Policy Statement for Electricity Networks Infrastructure (NPS EN-5; DECC, 2011b) are also relevant and the high-level principles of these documents have been referred to in so far as they relate to landscape and visual effects. These are summarised in Table 4.2.

Table 4.2: Summary of NPS EN-3 and EN-5 provisions relevant to LVIA.

Summary of NPS EN-3 and EN-5 provisions	How and where considered in the PEIR
Where the Applicant has identified a precise route for the cable from the wind farm to a precise location for the onshore substation and connection to the transmission network, the EIA should assess the effects of the cable. (NPS EN-3, paragraph 2.6.37).	The landscape and visual effects of the onshore export cable corridor (ECC) are assessed at **Section 4.11**.
New substations, sealing end compounds and other above ground installations that form connection, switching and voltage transformation points on the electricity networks can also give rise to landscape and visual impacts. (NPS EN-5, paragraph 2.8.2).	The landscape and visual effects of the OnSS are assessed at **Section 4.11**.

4.3.1.4 The National Planning Policy Framework (NPPF, Ministry of Housing, Communities and Local Government, 2019) states that "*Planning policies and decisions should contribute to and enhance the natural and local environment*" by, amongst other things, "*protecting and enhancing valued landscapes [...] (in a manner commensurate with their statutory status or identified quality in the development plan*". Landscape value is discussed in **Section 4.10**. The provisions of the development plan in relation to landscape are discussed below.

4.3.1.5 The East Riding of Yorkshire Local Plan 2012-2029: Strategy Document (ERYC, 2016) sets out the overall strategic direction for the Local Plan and provides strategic policies to guide decisions on planning applications.

4.3.1.6 The policy relevant to this chapter is *Policy ENV2: Promoting a high quality landscape* which is summarised in **Table 4.3**.

Table 4.3: Summary of East Riding of Yorkshire Local Plan Strategy Document relevant to LVIA.

Summary of Policy ENV2 provisions	How and where considered in the PEIR
Development proposals should be sensitively integrated into the existing landscape, demonstrate an understanding of the intrinsic qualities of the landscape setting and, where possible, seek to make the most of the opportunities to protect and enhance landscape characteristics and features. To achieve this, development should [inter alia]: • *protect and enhance views across valued landscape features including flood meadows, chalk grassland, lowland heath, mudflats and salt marsh, sand dunes and chalk cliffs.* • *protect and enhance the undeveloped coast* *Proposals should protect and enhance existing landscape character in the East Riding Landscape Character Assessment, in particular, within the following Important Landscape Areas:* *I. The Yorkshire Wolds.* *II. The Heritage Coast designations at Flamborough and Spurn Head.* *III. The Lower Derwent Valley.* *V. iv. The Thorne, Crowle and Goole Moors.*	The existing character of the local landscape is discussed in **Section 4.7**. The value and capacity of the local landscape to accommodate change is considered in **Section 4.10**. Effects on landscape character are assessed in **Section 4.11** with reference to the susceptibility of the landscape to the change proposed, and the value placed on the landscape, in accordance with good practice guidance (Landscape Institute and Institute of Environmental Management and Assessment, 2013).

4.4 Consultation

4.4.1.1 Consultation is a key part of the Development Consent Order (DCO) application process. Consultation regarding LVIA has been conducted through the Scoping Report (Ørsted, 2018), and the Landscape and Visual Impact Assessment Position Paper (Ørsted, 2019). An overview of the project consultation process are presented within **Chapter 6: Consultation**.

4.4.1.2 A summary of the key issues raised to date during consultation specific to LVIA is outlined below in **Table 4.4**, together with how these issues have been considered in the production of this PEIR.

Table 4.4: Consultation Responses.

Consultee	Date, Document, Forum	Comment	Where addressed in the PEIR
Planning Inspectorate (PINS)	November 2018 Scoping Opinion, 4.16.1 (PINS, 2018)	*No parameters have been presented in the Scoping Report for the booster substation location and design. This reduces confidence that significant effects will be avoided.*	The parameters of the booster substation (offshore HVAC) are presented in **Volume 1, Chapter 4: Project Description**. Effects of the booster station are considered in **Volume 2, Chapter 11: Seascape and Visual Resources**.
PINS	November 2018 Scoping Opinion 4.16.2 (PINS, 2018)	*In the absence of information on the extent and nature of landscape features affected by construction of the Proposed Development, and the uncertainty regarding the mitigation measures, the Inspectorate considers that significant long-term effects could arise as a result of operation of the landfall and ECC.*	Refer to **Section 0** for further justification in relation to scoping out these effects.
PINS	November 2018 Scoping Opinion 4.16.4 (PINS, 2018)	*It is not clear from the information in the Scoping Report how decommissioning works will avoid significant effects. A definition of 'short duration' is not provided.*	Refer to **Section 0** for further justification in relation to scoping out these effects.
PINS	November 2018 Scoping Opinion 4.16.5 (PINS, 2018)	Appropriate cross-reference to the Seascape and Visual assessment should be made in order for a full assessment of effects on the Flamborough Headland Heritage Coast to be made.	Effects of the offshore infrastructure on the Heritage Coast are considered in **Volume 2, Chapter 11: Seascape and Visual Resources**.
East Riding of Yorkshire Council (ERYC)	January 2019 Scoping Response	*Effects of the construction of the (fully below ground) cable route and landfall can be scoped out as being temporary.*	These effects are scoped in and the reasons for this are set out in **Section 4.8**.
ERYC	January 2019 Scoping Response	*The local landscape designation most affected would be the Yorkshire Wolds. The Flamborough Head Heritage Coast is an important consideration in terms of views offshore and to scope out the potential impact should be demonstrated by suitable visualisations.*	The Yorkshire Wolds Important Landscape Area is discussed at **Section 4.7.2** and considered in the assessment. Effects of the offshore infrastructure on the Heritage Coast are considered in **Volume 2,**

Consultee	Date, Document, Forum	Comment	Where addressed in the PEIR
			Chapter 11: Seascape and Visual Resources.
ERYC	January 2019 Scoping Response	Viewpoints should be agreed in advance with the Council once the location of the substation area is known.	Proposed viewpoints were set out in the Landscape and Visual Position Paper (Ørsted, 2019), which was sent to ERYC for comment. Responses are outlined below in this table.
ERYC	January 2019 Scoping Response	*Public right of ways cross the area which increases the visual impact. Drivers and user of the railway should also be considered. In terms of heritage assets, views of the Grade I Listed Beverley Minster and between St Mary's Church in Cottingham are very important.*	These features are discussed in the baseline (Section 4.7) and considered in the impact assessment (Section 4.11). The Minster tower and St Mary's Church are included as representative viewpoints (see Table 4.9).
Hull City Council	11 April 2019, email response to Landscape and Visual Position Paper	Do not consider there will be any issues regarding landscape and visual impact.	Noted
ERYC	12 April 2019, email response to Landscape and Visual Position Paper	The decision to separate the SLVIA and LVIA appears to make sense, and the rationale for doing so is reasonable.	Noted
ERYC	12 April 2019, email response to Landscape and Visual Position Paper	Approves of use of GLVIA3 and updated East Riding of Yorkshire Landscape Character Assessment.	Noted
ERYC	12 April 2019, email response to Landscape and Visual Position Paper	The study areas proposed for both the cable corridor (2km) and the substation (5km) appear to be suitable.	Noted
ERYC	12 April 2019, email response to Landscape and	Proposed viewpoint locations appear to be from a suitable geographic spread, and from a broad range of aspects and distances.	Noted

Consultee	Date, Document, Forum	Comment	Where addressed in the PEIR
	Visual Position Paper	They also, based on the outline descriptions provided, appear to cover locations that are representative, specific and illustrative, as recommended in GLVIA3.	
Natural England	29 April 2019, email response to Landscape and Visual Position Paper	Natural England does not have any comments on the landscape effects of the scheme.	Noted

4.4.1 Desktop Study

4.4.1.1 As identified in **Volume 1, Chapter 3: Site Selection and Consideration of Alternatives** and **Volume 1, Chapter 4: Project Description**, the Hornsea Four design envelope has been refined significantly and is anticipated to be further refined for the DCO submission. This process is reliant upon stakeholder consultation feedback.

4.4.1.2 Design amendments of relevance to Landscape and Visual Resources comprise:

- OnSS Operation and Maintenance Access - Hornsea Four are currently investigating the possibility of making the temporary construction access off the A1079 a permanent operational access.

- OnSS Design: The design of the Hornsea Four OnSS mitigation (inclusive of measures set out in **Volume 4, Annex 4.6: Outline Design Vision Statement** and **Figure 4.8**) will be further evolved based on the results of the PEIR assessments, in addition to any stakeholder feedback and suggestions received.

4.5 Hornsea Four Landscape and Visual study area

4.5.1.1 The Hornsea Four onshore export cable corridor (ECC) lies wholly within the East Riding of Yorkshire and runs between the landfall area on the Holderness coast, to the proposed OnSS, to be located between Cottingham and Beverley.

4.5.1.2 The Hornsea Four landscape and visual study area for the LVIA is shown on **Figure 4.1** and is defined as follows:

- A 5 km radius around the refined OnSS; and
- A 2 km buffer either side of the onshore ECC, all temporary logistics compounds and temporary access tracks, landfall area and 400kV ECC area.

4.5.1.3 The Hornsea Four landscape and visual study area has been informed by a field survey which was undertaken on the 19th July 2018 by a Chartered Landscape Architect. Observations

were made from roads and public rights of way (PRoW) to inform the appraisal of the likely landscape and visual effects. To confirm that the Hornsea Four landscape and visual study area is appropriate, more distant areas shown on an indicative Zone of Theoretical Visibility (ZTV) of the OnSS, (**Figure 4.2**) were also visited. Beyond 5 km it is considered that, due to distance and intervening landscape elements, there would be limited visibility of the Hornsea Four OnSS during construction, operation and maintenance, and decommissioning, and therefore significant landscape and visual effects would be unlikely beyond this point.

4.5.1.4 The Hornsea Four landscape and visual study area for the cumulative effects assessment (CEA) was defined as a 5 km radius from the OnSS. It was judged that, due to the flat and settled nature of the landscape, any developments beyond this distance would not visually interact with the OnSS to such an extent that significant landscape or visual effects would arise. No CEA was undertaken for the onshore ECC or landfall, as these are short term temporary works. The CEA considers the cumulative effects of other planned projects within 5 km of the OnSS, during operation.

4.5.1.5 For the purposes of the assessment, the Hornsea Four landscape and visual study area has been divided into five subareas (**Figure 4.1**), based on underlying landscape character, as follows:

- Subarea 1: Landfall area – focusing on the landscape between the coastal edge and the A165. This area east of the A165is defined by a strong coastal influence;
- Subarea 2: A165 to Rotsea Lane – the flat open farmland plain between the coastal landscape and the more sloping farmland to the west;
- Subarea 3: Rotsea Lane to Leconfield – across the slightly more undulating farmland that rises up towards the Yorkshire Wolds;
- Subarea 4: Leconfield to the OnSS and the 400 kV onshore ECC – including the section of the onshore ECC that passes through the fringes of the Wolds landscape up to the OnSS, and the 400 kV onshore ECC to the east of the OnSS to the National Grid Creyke Beck substation; and
- Subarea 5: OnSS – focusing on the proposed OnSS site between Cottingham and the A1079, as well as the 5 km buffer around the OnSS, which makes up part of the Hornsea Four landscape and visual study area.

4.5.1.6 Subareas 1-4 area based on the 2 km radius around the landfall and onshore ECC, while subarea 5 is comprised of the 5 km radius around the OnSS. For this reason subareas 4 and 5 overlap. The subareas are indicated on **Figure 4.1** and are further described in **Section 4.7.3**.

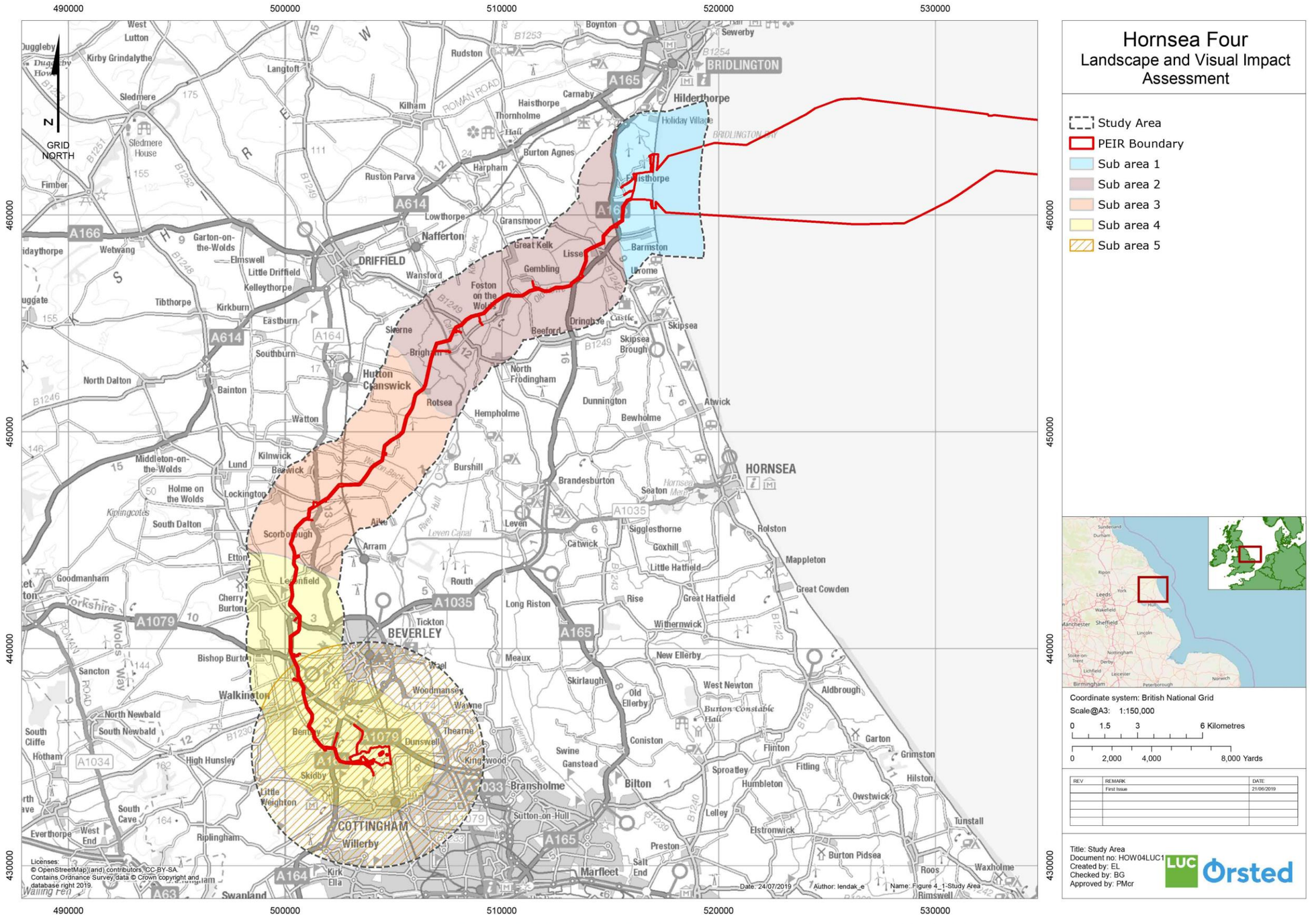


Figure 4.1: LVIA Hornsea Four landscape and visual study area (Not to Scale).

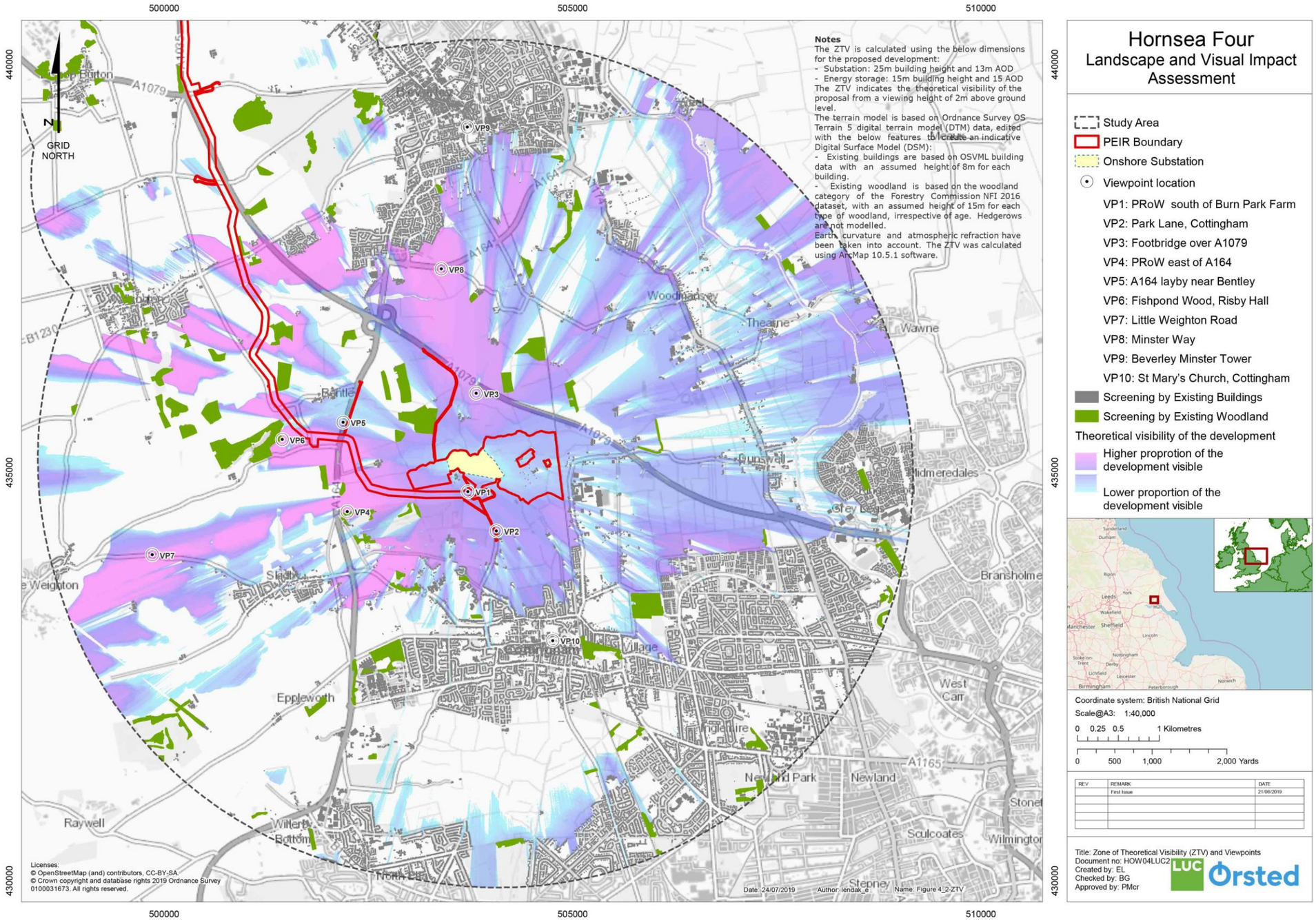


Figure 4.2: Onshore Substation Zone of Theoretical Visibility and Viewpoints (Not to Scale).

4.6 Methodology to inform baseline

4.6.1.1 This section describes the stages that have been followed during the preparation of the baseline. This is in accordance with the approach as set out in the Scoping Report (Ørsted, 2018).

4.6.2 Desktop Study

4.6.2.1 A desk study was undertaken to obtain information on landscape and visual interest. Data were acquired within the Hornsea Four landscape and visual study area through a detailed desktop review of existing studies and datasets, as set out in Table 4.5.

Table 4.5: Key Sources of Landscape and Visual Data.

Source	Summary	Coverage of Hornsea Four development area
Ordnance Survey	Ordnance Survey mapping, indicating distinct patterns of landscape elements or features. Also informed the locations of potential visual receptors including settlements, residential properties, national trails, PRoWs and tourist and recreational sites.	2 km radius from the onshore ECC and 5 km from the OnSS.
Aerial photography	Aerial photography indicating distinct patterns of landscape elements or features. Also informed the locations of potential visual receptors including settlements and residential properties.	2 km radius from the onshore ECC and 5 km from the OnSS.
Natural England	National Landscape Character Area profiles (Natural England, 2012 and 2013). National level landscape designations designated by Natural England (National Parks and Areas of Outstanding Natural Beauty) neither of which are present in the study area.	2 km radius from the onshore ECC and 5 km from the OnSS.
East Riding of Yorkshire Council (ERYC)	East Riding of Yorkshire Landscape Character Assessment 2018 (Aecom, 2018) which classifies and describes the landscape. East Riding Local Plan 2012-2029: Policy ENV2 and the local level landscape designations, including Important Landscape Area (ILA). Public Rights of Way was also obtained from ERYC records	2 km radius from the onshore ECC and 5 km from the OnSS.
Dogger Bank Creyke Beck Environmental Statement (Forewind, 2013)	Reference was made to the Dogger Bank Creyke Beck Environmental Statement (Forewind, 2013), in particular the LVIA chapter, since the study area for the converter station within that project was similar to the Hornsea Four OnSS study area. This allowed a cross-check of landscape and visual receptors which had previously been examined as part of a consented scheme.	Approximately 5 km from the OnSS.

4.6.2.2 Computer generated indicative Zone of Theoretical Visibility (ZTV) maps were generated for the OnSS, assuming a maximum height of 25 m above ground level for the OnSS and 15 m for the EBI. Buildings and woodland have been added indicatively to the digital terrain

model to give an impression of the likely screening of views, though not all screening is identified, and the ZTV does not consider smaller structures, individual trees or hedges. The ZTV was used to identify potential receptors within the study area, and is shown in **Figure 4.2**.

4.6.3 Site Specific Surveys

4.6.3.1 To inform the EIA, site-specific surveys were undertaken in both winter (December 2018) and spring (May 2019). This included visits to the viewpoints that have been agreed with relevant stakeholders as detailed in **Table 4.4**. Winter represents the maximum design scenario with minimal screening by vegetation and deciduous trees. No other site-specific surveys are currently planned to inform the ES. A summary of surveys is outlined in **Table 4.6**.

Table 4.6: Summary of site-specific survey data.

Title, year and reference	Summary	Coverage of Hornsea Four development area
Hornsea Four Viewpoint Photography, 2019 **Volume 6, Annex 4.1: Landscape and Visual Resources: Photography and Photomontages**	Verified photography from ten viewpoint locations were taken in accordance with Landscape Institute's Advice Note 01/11 (Landscape Institute, 2011) on photography and photomontages in landscape and visual impact assessments as well as the consultation draft Technical Guidance Note 06/18 of the same name (Landscape Institute, 2018).	10 locations within 5 km study area around the OnSS.

4.6.4 Recording and Evaluating the Existing Environment

4.6.4.1 In this chapter, the landscape assessment has been distinguished from the visual assessment. Landscape resources and character are considered to be of importance in their own right and are valued for their intrinsic qualities regardless of whether they are seen by people. Effects on views and visual amenity as perceived by people are clearly distinguished from, although closely linked to and are a consequence of, effects on landscape. The landscape and visual assessments are therefore separate but have linked processes.

4.6.4.2 The baseline description is therefore set out using the following structure.

Landscape

4.6.4.3 The Guidelines for Landscape and Visual Impact Assessment (GLVIA3; Landscape Institute and Institute of Environmental Management and Assessment, 2013) advise that in order to reach an understanding of the effects of development, it is necessary to consider different aspects of the landscape i.e. the individual elements or features that make up the landscape, as well as its wider character, and the characteristics which contribute to this. This assessment therefore considers effects upon:

- Designated landscapes – areas designated for their landscape quality or value at the national, regional or local level, e.g. National Parks, Areas of Outstanding Natural Beauty (AONBs), Heritage Coasts and areas of local landscape value (which may have varying names); and
- Landscape character – the distinct and recognisable pattern of elements (for example associations of field patterns) that occur consistently in a particular type of landscape and create a particular sense of place.

Visual

4.6.4.4 The visual baseline is described in terms of views from representative viewpoints as well as views available to other sensitive visual receptors within the Hornsea Four landscape and visual study area. A viewpoint will typically represent an area over which a broadly similar perspective of the development site is obtained. The sensitivity of the viewers at a particular viewpoint depends upon the activity of the viewers and the extent to which they are affected by changes in their view.

4.6.4.5 Representative viewpoints form the basis of the assessment of effects on views, in line with GLVIA3. Viewpoints within the Hornsea Four landscape and visual study area were selected through desk study, field work and agreed in consultation with stakeholders (see **Section 4.6.3.1**). The viewpoints were selected because they:

- Are publicly accessible;
- Represent views likely to be experienced by the highest-sensitivity receptors with the clearest views towards the site;
- Provide a representative range of viewing distances, from local views within 1 km of the OnSS, out to longer distance views from closer to the edge of the 5 km study area;
- Represent a range of viewing experience (i.e. static views, from residential properties and points from sequential views, for example from roads and footpaths); and
- Have a reasonably high potential number of viewers or are in an area of particular importance to the viewers affected.

4.7 Baseline environment

4.7.1 Existing baseline

4.7.1.1 The existing baseline environment of the Hornsea Four landscape and visual study area is described in terms of:

- Designated areas;
- Landscape character; and
- Visual receptors.

4.7.2 Designated areas

4.7.2.1 Nationally valued landscapes are recognised by designation, which may have a formal statutory basis that varies in different parts of the UK. In England, National Parks and AONBs have the highest status of protection to landscape and scenic beauty. There are no National Parks or AONBs within the Hornsea Four landscape and visual study area. The Flamborough Headland Heritage Coast lies approximately 6 km to the north of the landfall zone. This lies outside the Hornsea Four landscape and visual study area and has been scoped out of the onshore LVIA, as agreed with stakeholders. However, see **Volume 2, Chapter 11: Seascape and Visual Resources** for consideration of effects of offshore infrastructure on the Heritage Coast.

4.7.2.2 Local authorities also identify locally valued landscapes and recognise them through local designations of various types. As with national designations, the criteria that underpin them vary and so it is important to consider the relevant reasons for the designation.

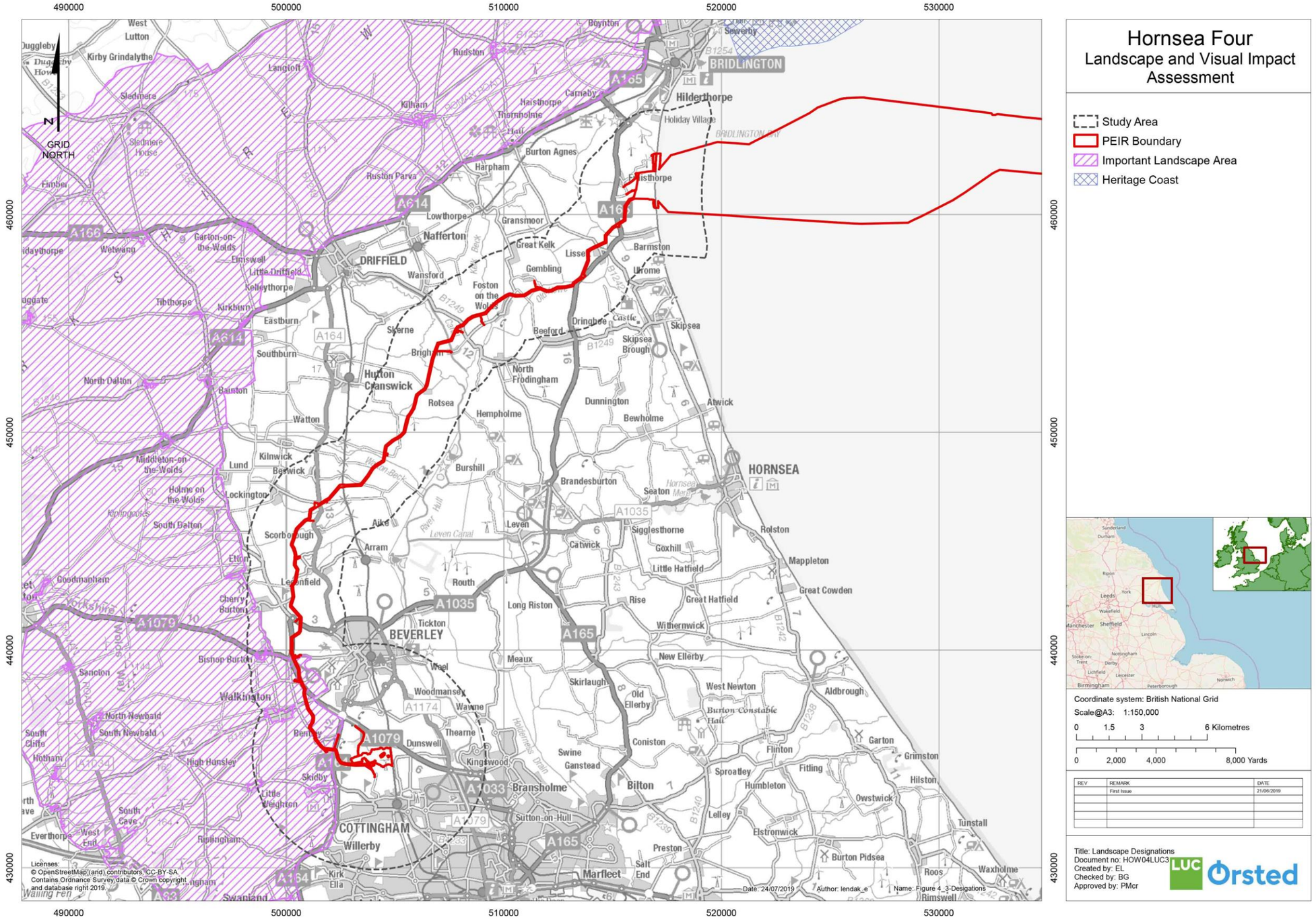
4.7.2.3 The south-western extent of the Hornsea Four landscape and visual study area includes a small part of the Yorkshire Wolds Important Landscape Area (ILA) (see **Figure 4.3**) as defined by Policy ENV2 of the East Riding Local Plan 2012-2029 ('the Local Plan'; ERYC, 2016). Policy ENV2 of the Local Plan states that development within this local designation is required to not have a detrimental effect on the character, appearance or conservation value of the landscape (ERYC, 2016).

4.7.2.4 The extent of each ILA is based on the East Riding of Yorkshire Landscape Character Assessment (Aecom, 2018), and their boundaries generally coincide with the respective character areas, subject to a detailed boundary review that was undertaken in 2013 (Golder Associates, 2013).

4.7.2.5 The Local Plan notes that within the Yorkshire Wolds ILA the landscape illustrates "*varying degrees of quality*" (ERYC, 2016), with the areas "*on the western scarp slope and around Sledmere*" (ERYC, 2016) (over 10km from the Hornsea Four landscape and visual study area) being of the highest quality. The Local Plan states that development "*should seek to retain the varied landform including but not limited to*:

- *The contrasting and varying levels of enclosure and exposure, isolation, and tranquillity;*
- *Diversity of the landscape;*
- *Distinctive features and views;*
- *Field patterns;*
- *Villages and their distinctive character and setting;*
- *The historic importance of the Great Wolds Valley; and*
- *Signs of past human activity*" (ERYC, 2016).

4.7.2.6 Landscape designations are illustrated on **Figure 4.3**.



Hornsea Four
Landscape and Visual Impact Assessment

- Study Area
- PEIR Boundary
- Important Landscape Area
- Heritage Coast

Coordinate system: British National Grid
Scale@A3: 1:150,000

0 1.5 3 6 Kilometres
0 2,000 4,000 8,000 Yards

REV	REMARK	DATE
	First Issue	21/06/2019

Title: Landscape Designations
Document no: HOW04LUC3
Created by: EL
Checked by: BG
Approved by: PMcr

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Figure 4.3: Landscape Designations (Not to Scale).

4.7.3 Landscape character

4.7.3.1 This section provides a description of the landscape character across the Hornsea Four landscape and visual study area, drawing on published studies at the national and local level. National and local landscape classifications are presented on **Figure 4.4**.

National character

4.7.3.2 At a national level, the landscapes of England are divided into National Character Areas (NCAs), identified by Natural England. Each NCA is a distinct natural area, defined by a unique combination of landscape, biodiversity, geodiversity, history, and cultural and economic activity. The majority of the Hornsea Four landscape and visual study area lies within NCA 40: Holderness (Natural England, 2013). According to the published NCA Profile (Natural England, 2013), this area comprises a broad, low-lying plain with little relief, bounded by the curving chalk escarpment of the Yorkshire Wolds and Flamborough Head to the west and north respectively. The ridge of the Wolds provides some elevation in contrast to the flat boulder clay plain. To the east, the North Sea erodes the soft boulder clay cliffs at a significant rate. The River Hull flows southwards through Holderness, along a wide, shallow valley, reaching the sea via the Humber Estuary.

4.7.3.3 The NCA Profile also states that the fertile floodplain of the River Hull is important for agriculture, exhibiting large scale field patterns and linear drainage channels. Both arable and livestock farming occur as dominant industries, with farmland interspersed by occasional tree cover in the form of shelter belts and hedgerows. Settlements are generally dispersed, traditional style villages linked by a mesh of minor roads. Larger settlements noted in the NCA Profile include the seaside resort of Bridlington at the northern extent of the NCA and the market town of Beverley in the southwest. An overriding feature of this landscape is the panoramic views offered as a result of the gentle topography, with visible landmarks often being man made features such as church spires (Natural England, 2013).

4.7.3.4 A small portion of the Hornsea Four landscape and visual study area to the west of Beverley lies within NCA27: Yorkshire Wolds (Natural England, 2012). This character area results from a change in geology, moving from clay to more resistant chalk. Gently rolling hills are cut with steep, wooded dales and there are very few surface watercourses. Agriculture still dominates despite thin calcareous soils and exposed slopes. The area is very rural with evidence of historic settlement (Natural England, 2012).

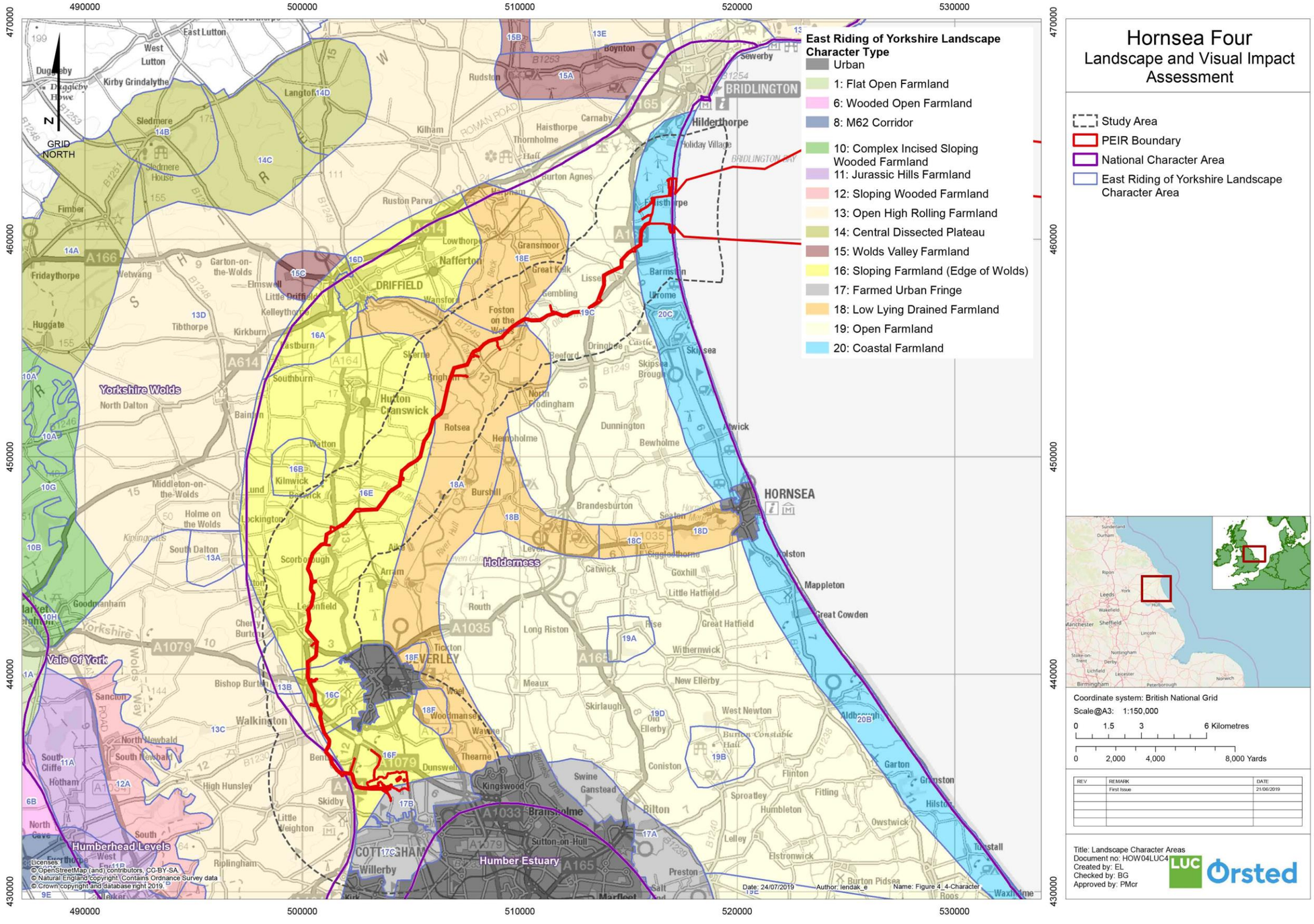


Figure 4.4: Landscape Character (Not to Scale).

Local character

4.7.3.5 The recently updated East Riding of Yorkshire Landscape Character Assessment (Aecom, 2018) has been consulted as the principal source of information at the local level. The Hornsea Four landscape and visual study area includes 13 Landscape Character Areas (LCAs) within six Landscape Character Types (LCTs) as listed in **Table 4.7** and illustrated on **Figure 4.4**.

Table 4.7: Landscape Character Types and Areas (see Figure 4.4) within the Hornsea Four landscape and visual study area.

Landscape Character Type	Landscape Character Areas
13 Open High Rolling Farmland	13B Bishop Burton Estate Farmland 13C South Wolds Rolling Farmland
16 Sloping Farmland	16B Kilnwick Percy Wooded Farmland 16C Beverley Westwood 16E Lund Sloping Farmland 16F Beverley Parks Farmland
17 Farmed Urban Fringe	17B North Cottingham Farmland 17C South Cottingham Farmland
18 Low Lying Drained Farmland	18A River Hull Corridor 18E Kelk Beck Farmland 18F Figham and Swine Moor Common
19 Open Farmland	19C North Holderness Open Farmland
20 Coastal Farmland	20C Bridlington to Hornsea Coast

4.7.3.6 The key characteristics of the LCTs within the Hornsea Four landscape and visual study area are presented in **Table 4.8**. These are summarised from the East Riding of Yorkshire Landscape Character Assessment (Aecom, 2018).

Table 4.8: Summary of Landscape Character Types .

Landscape Character Type	Key characteristics
13 – Open High Rolling Farmland	• Elevated rolling landform of the Yorkshire Wolds dip slope falling east. • Large scale open landscape with long distance views and dominated by the sky. • Sparsely populated area with scattered villages and farmsteads. • Large and very large rectilinear regular arable fields. • Fragmented hedgerows that are severely clipped. • Very few trees resulting in an open landscape. • Shelterbelts around farmsteads on the hill tops are a prominent feature. • Pockets of parkland and estate land to the east on the lower slopes provide diversity. • Enclosure roads that conform to the enclosure field pattern alongside older routes are well spaced. • Numerous PRoWs.

Landscape Character Type	Key characteristics
	• South Dalton Church spire is a prominent landmark in the relatively featureless landscape.
16 – Sloping Farmland	• Gently rolling landform sloping gradually down to the east. • Intermittent scattered woodland blocks throughout. • Intensively farmed rectilinear arable fields of large to medium size, interspersed with less regular early enclosure fields particularly around villages. • Free draining land with dispersed streams arising in the Wolds and flowing east to the River Hull. • Horticultural development between Beverley and Hull. • Views across the open landscape and views of Beverley Minster. • Hedgerow trees in places. • Scattered villages and farmsteads. • Parkland characteristics at Beverley Westwood, Risby Park and Kilnwick Percy. • A number of turbine developments within the landscape with others visible beyond.
17 – Farmed Urban Fringe	• Gently undulating to flat landform generally below 20m AOD. • Strong urban influences encroaching into rural areas. • Community land use e.g. sports pitches, allotments, cemeteries. • Hedgerow boundaries around medium to large sized fields. • Mixed land use combining agriculture, horticulture and recreation. • Lighting along major roads and in settlements. • Neglected appearance of some fields and hedgerows. • Presence of recreation activities both formal and informal. • Enclosed character with many areas surrounded by urban development on three sides.
18 – Low Lying Drained Farmland	• Flat, low lying flood plain generally below 10m AOD. • Sparse settlement in the floodplain. Farmsteads and villages concentrated on the edge of the flood plain. • Few crossing points on the River Hull contributing to low density of development between North Frodingham and Tickton. • Pockets of fens and reed swamps indicating a former landscape. • Sparse tree and woodland cover. • Rectilinear field systems with hedgerow and drainage ditch boundaries. • A history of sand and gravel extraction. • River Hull and Beverley Barmston Drain are major watercourses with embankments. • Numerous water bodies particularly associated with gravel extraction. • Recreation associated with water bodies and the River Hull.. • Several medieval scheduled monuments.
19 – Open Farmland	• Gently undulating topography, hummocky in places. • Very open landscape with few trees overall. • Irregular field pattern of pre-parliamentary enclosure. • Dispersed villages linked by winding roads. • Red brick buildings with pantile roofs sometimes painted white. • Churches are often prominent features on the skyline. • Irregular drainage pattern overall. • Hedgerow field boundaries with few trees. • Intensive farmed arable landscape.

Landscape Character Type	Key characteristics
	• Large number of wide developments visible across the landscape both within LCT 19 and adjoining LCTs.
20 – Coastal Farmland	• Flat to gently undulating topography sloping gently eastwards. • Boulder clay cliffs eroding into the sea. • Seaside resorts of Bridlington, Hornsea and Withernsea. • Coastal static caravan parks are prominent. • Limited tree cover due to exposed windswept coastal landscape. • Smaller villages and farmsteads and minor roads threatened by erosion. • Fragments of historic field pattern around villages and hamlets. • Tourism development along the coast. • Large scale turbine development visible within the landscape, both within this LCT and within adjoining LCTs.

Site-specific character

4.7.3.7 This section sets out the specific character of the Hornsea Four landscape and visual study area and is set out by individual subarea (**Figure 4.1**), as defined in **Section 4.5.1.5**. The key landscape elements or features within each subarea that contribute to the distinctiveness of the area are identified.

Subarea 1: Landfall area

4.7.3.8 The landfall subarea lies within the 20C Bridlington to Hornsea Coast LCA (Coastal Farmland LCT) (see **Figure 4.4**).

4.7.3.9 The beaches of Fraisthorpe Sands and nearby Barmston Sands comprise narrow shingle beaches backed by mud cliffs that rise up to 6m. These beaches are used for recreation with access and parking provided by the holiday parks at Barmston and at Auburn. Both holiday parks are visible features along this coast, as are the church spires within Barmston and Ulrome, which form prominent landmarks on the skyline. The beaches are locally distinctive resources, although they do not form an integral part of the local landscape character, being largely obscured away from the immediate coastal edge. Inland, this area encompasses agricultural land comprising open, exposed farmland with large fields, bounded by fragmented hedgerows with occasional small trees.

Subarea 2: A165 to Rotsea Lane

4.7.3.10 This subarea around the onshore ECC crosses three LCAs: 18A River Hull Corridor and 18E Kelk Beck Farmland (Low Lying Drained Farmland LCT); and 19C North Holderness Open Farmland (Open Farmland LCT) (see **Figure 4.4**). The onshore ECC crosses a number of arable fields in the east where it partly runs parallel to Sheepdike Lane, Cowslam Lane and Cruckley Lane in a westerly direction before it heads south.

4.7.3.11 The majority of the landscape within this subarea is characterised by open and largely flat arable farmland, set within a low floodplain with little tree cover present. Farmland is large scale, with rectilinear fields, bounded by deep drainage ditches and hedgerows which are

often gappy, with occasional hedgerow trees in some places. Clusters of buildings situated around farms form prominent features within an open landscape that is relatively devoid of any vertical elements, given the flatness of the landform, although with the exception of a few small woodland copses / plantations. The area does also contain key water courses; namely the River Hull and Foston Beck (extending from Kelk Beck), (which both form part of the River Hull Headwaters SSSI), as well as the Driffield Canal running north-south, which along with the drainage ditches and the vegetation cover (albeit limited) in the landscape, are more sensitive features. A few PRoWs cross fields and follow some of the water courses. The area also contains the Lissett Wind Farm, a prominent feature within the largely flat and horizontal landscape.

Subarea 3: Rotsea Lane to Leconfield

4.7.3.12 This subarea around the onshore ECC crosses 16E Lund Sloping Farmland LCA (Sloping Farmland LCT) (see **Figure 4.4**).

4.7.3.13 The onshore ECC runs in a south-westerly direction before heading directly south where it meets the western edge of Leconfield. This subarea comprises intensively farmed rectilinear arable fields of medium scale, bounded by drains and hedgerows, with streams dispersed across the area. The landform is predominantly flat, although with gentle undulation along the northern and southern edges, resulting in long distant views being afforded, including towards the Wolds in the west. There are occasional blocks of woodland although these are small and are not considered to be prominent in a relatively open landscape.

4.7.3.14 Wetlands occur within the subarea, with the Bryan Mills Field SSSI being located in the southern part of this section, comprising a spring-fed tall fen surrounded by planted trees. The area is crossed by the Hull to Scarborough Railway Line and is in proximity to the Leconfield Airfield, resulting in locally lower levels of tranquillity. Pylons cross the landscape in the north forming visual detractors on the skyline. The subarea also contains scattered farmsteads and extends past the southern edge of Beswick, which is designated as a Conservation Area. PRoWs cross through this landscape, including the Minster Way Long Distance Walking Route (LDWR).

Subarea 4: Leconfield to the OnSS and the 400kV onshore ECC area

4.7.3.15 This subarea around the onshore ECC extends across five LCAs: 16C Beverley Westwood, 16E Lund Sloping Farmland and 16F Beverley Parks Farmland (Sloping Farmland LCT); and 13B Bishop Burton Estate Farmland and 13C South Wolds Rolling Farmland (Open High Rolling Farmland LCT) (see **Figure 4.4**).

4.7.3.16 From Leconfield the onshore ECC runs directly to the south towards the OnSS, offset from but parallel to the western edge of Beverley – a historic market town. The landform is gently undulating and rises up above the flat plain to the east. In this section the onshore ECC partly follows roads including the A1079, as well as crossing arable farmland consisting of rectilinear medium scale fields that are typically defined by hedgerows with occasional hedgerow trees. Drains occur in the landscape, although at a much lower frequency

compared to the areas to the north. Vegetation cover continues to be limited with only a few woodland blocks present, including a small area of ancient woodland at Burton Bushes SSSI located within the Westwood. This historic area to the west of Beverley also contains a number of Scheduled Monuments dating from the Neolithic to Roman periods.

4.7.3.17 A few scattered farmsteads exist within this subarea, typically enclosed by mature trees, and there are larger villages at Cherry Burton, Bishop Burton and Walkington. Recreation is of high value as not only is the Westwood popular with visitors but also a number of routes that form part of the Yorkshire Wolds Way National Trail cross the landscape. The onshore ECC route abuts the eastern edge of Risby Hall; a Grade II Registered Park and Garden. Pylons in the south form visual detractors on the skyline in an overall flat and horizontal landscape where long distant views are afforded.

Subarea 5: OnSS

4.7.3.18 The OnSS site is located within LCA 16F Beverley Parks Farmland (Sloping Farmland LCT) (see **Figure 4.4**). Other LCAs within the 5 km OnSS Hornsea Four landscape and visual study area are: 13C South Wolds Rolling Farmland (Open High Rolling Farmland LCT); 16C Beverley Westwood (Sloping Farmland LCT); 17B North Cottingham Farmland and 17C South Cottingham Farmland (Farmed Urban Fringe LCT); and 18A River Hull Corridor and 18F Figham and Swine Moor Common (Low Lying Drained Farmland LCT) (see **Figure 4.4**).

4.7.3.19 The OnSS site is framed by transport corridors: the A1079 to the north; the Hull to Scarborough railway line to the east; and the A164 to the west. The area between comprises a number of medium to large scale agricultural fields that have been intensively managed. These are irregular in pattern and bounded by a mixture of hedgerows in various states of repair, as well as drainage ditches and post and wire fencing, with some hedgerow trees. The area is crossed frequently by PRoWs that typically follow field boundaries, including the Beverley 20 LDWR which forms part of the wider Yorkshire Wolds Way National Trail. A few blocks of woodland are found to the north-west while to the east is the Creyke Beck substation. The tall lattice structures and numerous large-scale overhead power lines mounted on pylons that converge here together form a large and prominent feature, which strongly influences the character of the open landscape at a local scale. The movement of vehicles on the A1079, the movement of trains on the Hull to Scarborough railway line and the large number of tall structures within the area contribute to the general perception of a modified landscape that is busy and complex in nature.

4.7.3.20 The wider 5 km Hornsea Four landscape and visual study area is well settled, taking in parts of Hull and Beverley, and the settlements of Cottingham, Skidby and Walkington. Transport and infrastructure continue to be a feature, though less so in the west which is on the fringe of the Wolds and is more rural in character. The tower of Beverley Minster is a key landmark in the wider area and is highly visible across the flat landscape. Other landmarks include church towers and Skidby Windmill.

4.7.4 Key visual receptors

4.7.4.1 This section sets out the people (visual receptors) that have the potential to be affected by the landfall, onshore ECC and OnSS. These are set out by the subareas defined in **paragraph 4.5.1.5**. The locations of PRoWs noted are shown in **Figure 4.5** and **Figure 4.6**, and should be cross-referenced with the Onshore Crossing Schedule where PRoWs crossed by the Project are identified (**Volume 6, Annex 4.2**) .

4.7.4.2 Given the nature of the landscape it is assumed that all receptors within the Hornsea Four landscape and visual study area will have potential visibility of the onshore ECC and landfall area construction works.

Subarea 1: Landfall area

4.7.4.3 Residential and community receptors include:

- Farms close to the landfall site, including Auburn Farm, Manor Farm, Lodge Farm and Hamilton hill Farm;
- The villages of Barmston to the south and Fraisthorpe to the west; and
- Farms and houses along A165 Bridlington Road to the west.

4.7.4.4 Recreational receptors include:

- Users of local PRoWs close to the landfall site;
- Visitors to Barmston Sands and Fraisthorpe Sands;
- Visitors to South Cliff Holiday Park and Royal Yorkshire Yacht Club to the north; and
- Visitors to Barmston Beach Holiday Park to the south.

4.7.4.5 Transport receptors include those using:

- The A165 to the west;
- The A1038 to the west; and
- The wider local road network beyond these routes.

Subarea 2: A165 to Rotsea Lane

4.7.4.6 Residential and community receptors include:

- The villages of Lissett, Foston on the Wolds and Brigham to the south;
- The villages of Great Kelk and the hamlet of Gembling to the north;
- The northern edge of North Frodingham;
- The southern edge of Wansford; and
- Farms and houses along A165 Bridlington Road, Gransmoor Road, B1249 and Rotsea Lane.

4.7.4.7 Recreational receptors include:

- Those using local PRoWs close to the onshore ECC and connecting nearby settlements.

4.7.4.8 Transport receptors include those using:

- The A165;
- Gransmoor Road;
- The B1242 Allison Lane;
- Old How Lane and Foston Lane;
- The B1249;
- Rotsea Lane; and
- The wider local road network beyond these routes.

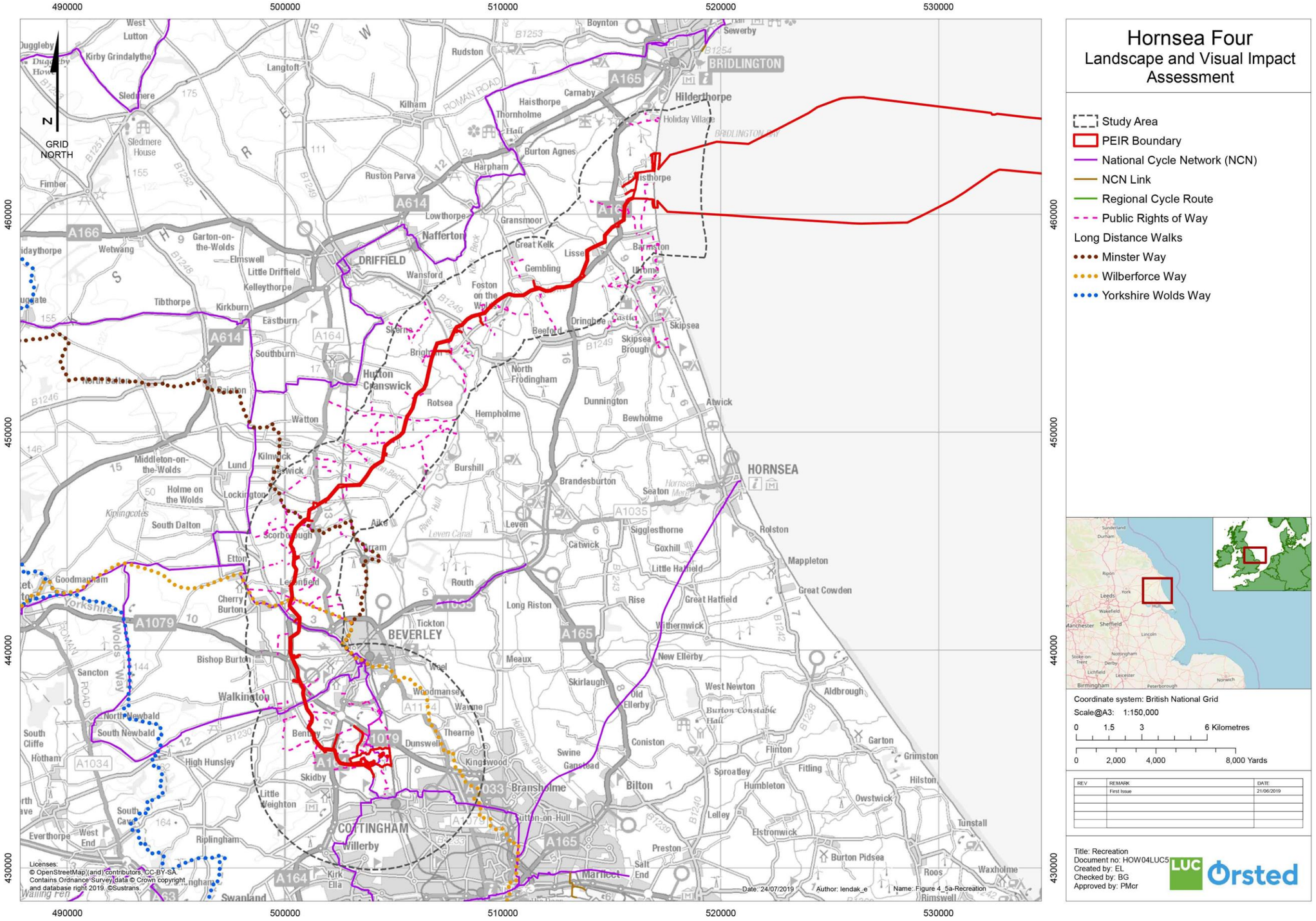
Subarea 3: Rotsea Lane to Leconfield

4.7.4.9 Residential and community receptors include:

- The villages of Scorborough, Leconfield, Lockington and Beswick; and
- Farms and houses along Carr Lane, Wilfholme Road, Beswick Road and Station Road.

4.7.4.10 Recreational receptors include:

- Those using local PRoWs close to the onshore ECC and connecting nearby settlements; and
- Users of the Minster Way LDWR.



Hornsea Four
Landscape and Visual Impact Assessment

- Study Area
- PEIR Boundary
- National Cycle Network (NCN)
- NCN Link
- Regional Cycle Route
- Public Rights of Way

Long Distance Walks

- Minster Way
- Wilberforce Way
- Yorkshire Wolds Way

Coordinate system: British National Grid
Scale@A3: 1:150,000

0 1.5 3 6 Kilometres

0 2,000 4,000 8,000 Yards

REV	REMARK	DATE
	First Issue	21/06/2019

Title: Recreation
Document no: HOW04LUC5
Created by: EL
Checked by: BG
Approved by: PMcr

LUC Ørsted

Figure 4.5: Recreational Routes (Not to Scale).

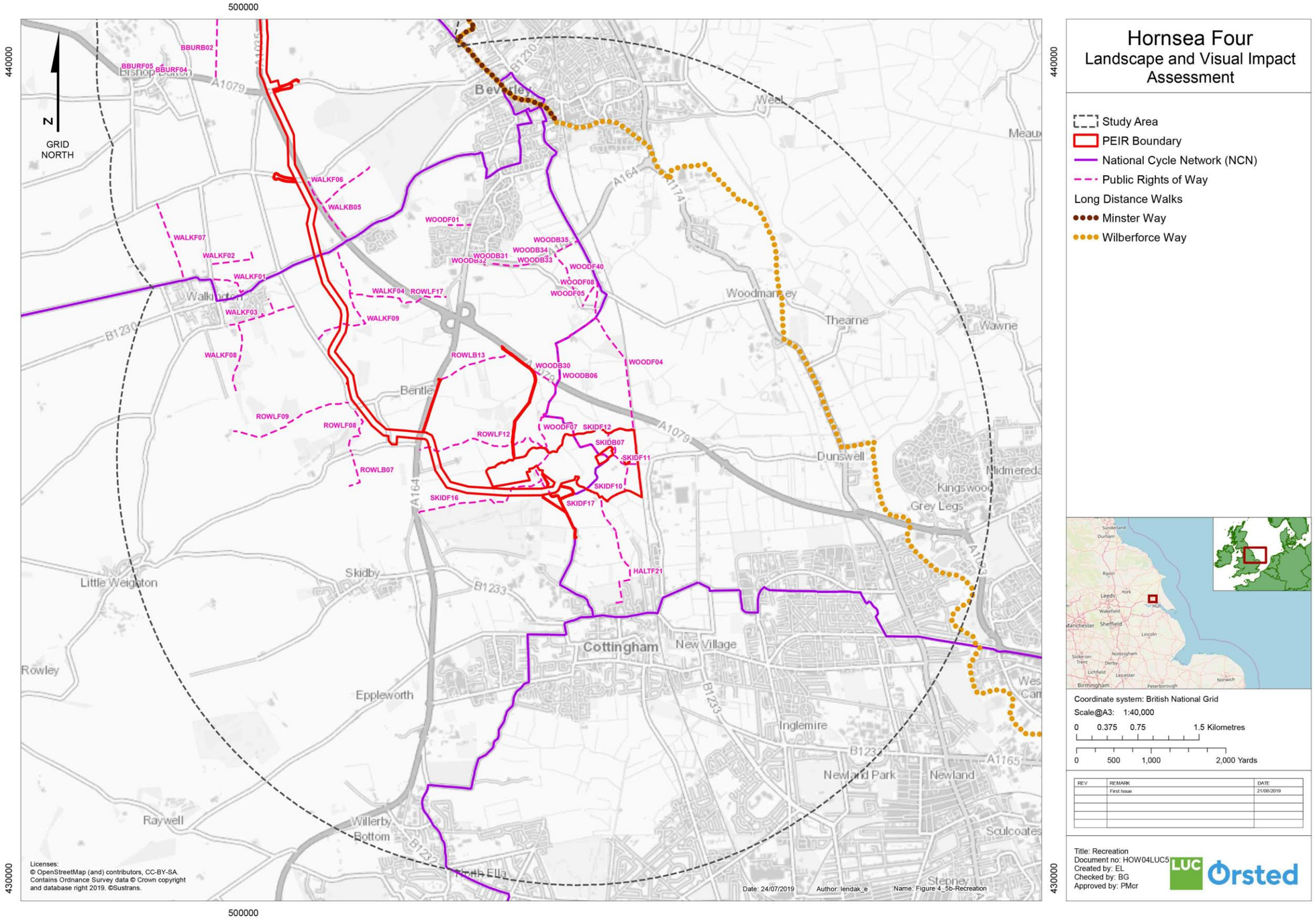


Figure 4.6: Recreational Routes within 5 km OnSS study area (Not to Scale).

4.7.4.11 Transport receptors include those using:

- Rotsea Lane, Carr Lane, Wilfholme Road, Beswick Road and Station Road;
- The A164;
- Miles Lane;
- The B1248;
- The Yorkshire Coast railway line; and
- The wider local road network beyond these routes.

Subarea 4: Leconfield to the OnSS and the 400kV onshore ECC area

4.7.4.12 Residential and community receptors include:

- The settlements of Leconfield, Cherry Burton, Bishop Burton, Walkington, Little Weighton and Skidby;
- The western edge of Beverley; and
- Farms and houses along the A1035 and Dunflat Road.

4.7.4.13 Recreational receptors include:

- Those using local PRoWs close to the onshore ECC;
- Users of the Hudson Way, Beverley 20, High Hunsley Circuit and Wilberforce Way LDWRs;
- Users of the NCN 1 and NCN 164;
- Visitors to Beverley Westwood park;
- Visitors to Beverley Racecourse; and
- Visitors to Beverley and East Riding Golf Club and Cherry Burton Golf Club.

4.7.4.14 Transport receptors include those using:

- Miles Lane
- The B1248;
- The A164;
- The A1035;
- The A1079;
- The A1174
- The B1230;
- The Hull to Scarborough railway line to the east of the OnSS site; and
- The wider local road network beyond these routes.

Subarea 5: OnSS

4.7.4.15 For the purposes of the 5 km OnSS Hornsea Four landscape and visual study area, only receptors within the ZTV (**Figure 4.2**) are listed below.

4.7.4.16 Residential and community receptors include:

- Farms close to the OnSS site, including Burn Park Farm, Wanlass Farm, Poplar Farm and Platwoods Farm;
- The north edge of the settlement of Cottingham;
- The Orchard Park estate, on the north edge of the City of Hull;
- Farms and houses along Dunswell Road, and Dunswell village to the east;
- Farms north of the A1079 including Model Farm, White Hall and Beverley Parks Crossing;
- The village of Woodmansey on the A1174;
- The south edge of Beverley,
- The villages of Bentley and Walkington to the west; and
- The village of Skidby to the south-west.

4.7.4.17 Recreational receptors include:

- Those using PRoWs close to the OnSS site, including the Beverley 20 LDWR and the National Cycle Network (NCN) Route 1 (see **Figure 4.6**);
- In particular, users of PRoW Skidby 16, which would need to be diverted around the OnSS;
- Visitors to the hotel, golf courses and leisure club north of Cottingham;
- Visitors to Beverley Parks Local Nature Reserve, and users of PRoWs to the north of the A1079;
- People on the Beverley 20 and PRoWs around Risby, west of the A164;
- Visitors to Skidby Windmill to the south-west; and
- Visitors to Beverley Minster to the north.

4.7.4.18 Transport receptors include those using:

- The A1079 to the north of the OnSS site;
- The A164 to the west of the OnSS site;
- The Hull to Scarborough railway line to the east of the OnSS site; and
- The wider local road network beyond these routes.

4.7.5 Viewpoint selection

4.7.5.1 Representative viewpoints have been identified to inform the detailed assessment of the OnSS only. This section sets out the viewpoints selected to represent views from publicly accessible areas, for the receptors within subarea 5 (**Figure 4.1**). A total of ten viewpoints were selected and agreed with stakeholders as set out in **Table 4.4**. Details of the viewpoints are provided in **Table 4.9** and their locations are shown in **Figure 4.2**.

4.7.5.2 It was further agreed with stakeholders via the LVIA Position Paper, that only the four closest viewpoints would be illustrated with photomontage visualisations. All other viewpoints are illustrated with baseline photography (see **paragraph 4.10.10**).

Table 4.9: Representative Viewpoints and Baseline Description of Views.

Viewpoint Location	Grid reference	Description of view
VP1 PRoW south of Burn Park Farm	503721, 434766	Panoramic, long-distance views are afforded from this local PRoW (SKIDF17) across flat, arable farmland which is divided into large scale irregular fields. The Creyke Beck substation and associated pylons are prominent features in the mid-ground to the north and east. A small number of traditional isolated farmsteads are present, some with adjoining horse paddocks delineated by hedgerows and trees. Occasional single wind turbines introduce movement, although these are confined to the far distance. The viewpoint sits on a surfaced track serving Burn Park Farm, along which the PRoW (SKIDF17) runs. Walkers and other recreational users of the PRoW (SKIDF17) receive sustained views in all directions, with very little screening from vegetation or buildings. Similar views are likely to be experienced from other PRoWs in the vicinity of Burn Park Farm, and by community receptors from the farm itself.
VP2 Park Lane, Cottingham	504068, 434286	Wide, long-distance views of the flat, arable landscape are available to the north from this viewpoint on Park Lane, along which both the NCN Route 1 and the PRoW (SK1DF17) run. A line of mixed, mature trees immediately south of the viewpoint screens views to and from this direction. Isolated farmsteads, hedgerows and shelter belts illustrate the agricultural character of this area. Large scale fields are cut by a single-track road which provides access to Burn Park Farm. The mid-ground view is characterised by Creyke Beck substation and associated pylons to the northeast. In the distance, movement of traffic on the A1079 is visible. Beverley Minster is a distinctive feature on the distant, varied skyline. Motorists or walkers experiencing these views are likely to be local recreational or community receptors. Cyclists on the NCN Route 1 may be tourists or local visitors with an interest in the surrounding landscape.
VP3 Footbridge over A1079	503823, 435970	From this locally elevated viewpoint, situated on NCN Route 1 and on local footpaths (WOODB06) forming part of the 'Beverley 20' LDWR, views to the north are restricted by a dense hedge, beyond which the A1079 runs. This is raised up on an embankment to the east, providing some change in relief in an otherwise flat landscape. To the south there are wide ranging and distant views of large-scale arable fields delineated by ditches and occasional trees. Large, mature woodland blocks are visible to the southwest. A low, horizontal skyline is broken only by man-made features and occasional wooded blocks. Creyke Beck substation and overhead lines are noticeable. Road noise from the A1079 is obvious. The opportunity for elevated views at this viewpoint is very localised, due only to the footbridge over the road.
VP4 PRoW East of A164	502245, 434523	Topography is broadly sloping, with medium scale arable fields defined by mature hedgerows punctuated with occasional trees. A

Viewpoint Location	Grid reference	Description of view
		strong hedge line immediately to the south marks the boundary of the adjoining golf course. Wooded hills at the edge of Beverley are visible, with Beverley Minster rising from a wooded skyline. When looking east along the footpath (SKIDF16), Creyke Beck substation is visible in the distance. Distant turbines coupled with pylons immediately overhead impart an urbanising influence on the farmland. The viewpoint is in close proximity to the A164 and the Lazaat hotel building, which is out of keeping with the more traditional vernacular that is characteristic of the local area. Receptors include visitors to the hotel and local recreational users of the footpath (SKIDF16).
VP5 A164 Layby near Bentley	502192, 435617	Views to the east are screened by a well-developed hawthorn hedgerow approximately 3.5m in height, and directly adjacent to the road. Sporadic gaps in the hedge provide glimpses of smooth, flat, arable land beyond. Views to the east are similarly screened. A large tarmacked layby is marked by a small clump of trees. Traffic on the busy A164 introduces noise and movement. There is a noticeable overhead line to the south. Due to the continuous hedgerow along the east side of the road, this viewpoint is representative of views experienced for several hundred metres along the A164. Motorists are likely to gain only fleeting glimpses beyond the hedgerow, with their views primarily channelled north/south along the road.
VP6 Fishpond Wood, Risby Hall	501448, 435405	This viewpoint captures the view from a local PRoW (ROWLF08) forming part of the 'Beverley 20' LDWR, at the edge of Risby Hall Registered Park and Garden. Sloped, smooth arable fields are defined by hedgerows interspersed with trees. Extensive, distant views are available from the northeast to the southeast, although the gently sloping landform limits mid-ground views to the east. A minor road to the east is noticeable by noise and movement in an otherwise peaceful setting, glimpsed occasionally through gaps in its bounding hedgerow. There is a large farm building associated with an isolated farmstead, however there is little other development nearby. The distant yet distinctive tower of Beverley Minster is visible to the northeast. Distant views include medium sized blocks of woodland and a varied skyline broken by overhead lines. To the west, a woodland backdrop restricts views. Receptors are likely to be recreational users moving along the footpath (ROWLF08).
VP7 Little Weighton Road	499856, 433993	This viewpoint sits on top of a very broadly sloping hill, with large scale, regular, arable fields defined by hedgerows extending to the south. Elevated views are available from Little Weighton Road which crosses the slopes of the Yorkshire Wolds Important Landscape Area. Blocks of mature woodland stand amongst undulating farmland. Panoramic views are available from this

Viewpoint Location	Grid reference	Description of view
		relatively elevated point and long-distance views extend to the north and east. The landscape is largely rural, with isolated dwellings and farmsteads. The skyline is broken by occasional trees and a string of pylons extending across the view from south to east.
VP8 Minster Way	503395, 437494	The view from this point on the Beverley southern by-pass (which also serves as PRoW, WOODB34) consists of large, broadly undulating to flat fields with mature hedgerows and occasional trees. Shelter belts partially screen views to the south and wooded blocks are visible in the distance. A distant turbine is visible in the south. The varied skyline is punctuated by several power lines, converging on Creyke Beck substation. The substation and pylons break the skyline. The edge of a settlement can be seen to the northwest, where houses and facilities are noticeable. In views to the north, Beverley Minster forms a clear landmark, set above woodland. Road noise and movement is immediately obvious from the A164. Receptors experiencing comparable views to this include recreational users of Woodmansey Bridleway, which follows alongside the A164 in this vicinity, who are likely to be moving through the landscape. Motorists on the A164 itself are likely to experience similar, although short-lived, views in passing.
VP9 Beverley Minster tower	503714, 439232	Wide, extensive, panoramic views across a flat plain extend southwards across the Humber to a backdrop of the gently rising hills of the Lincolnshire Wolds. Low density settlement in the foreground gives way to smaller scale, irregular, flat, arable fields with scattered farms in the mid-ground. Further into the distance, large, regular fields with sparse hedgerows are cross cut by the noticeable A164. The transition from settlement to rural farmland is evident from this elevated, exposed viewpoint. Vast 360° views are available.
VP10 St Mary's Church tower, Cottingham	504759, 432945	Looking north, a small playing field in the foreground is enclosed by low density housing and tree-lined streets, behind which industrial structures recede into the far distance. Several turbines and pylons break the skyline. Creyke Beck substation is noticeable to the north, just below the horizon. The visual link with Beverley Minster tower is partially obscured by a pylon at the site of Creyke Beck. Elevated, long views towards Hull are possible to the south, with high rise buildings prominent. Receptors are likely to be members of the public, visiting the tower as part of a guided tour.

4.7.6 Predicted future baseline

4.7.6.1 In the absence of Hornsea Four, the landscape of the Hornsea Four landscape and visual study area is likely to continue to be used primarily for farming, and the appearance of the farmed landscape is likely to be relatively constant. Existing trees will mature, while others may die or be felled. Some may succumb to plant diseases that may become more

prevalent, affecting particular species. Based on the current condition of defunct hedges, it is unlikely that these will be replanted and therefore over time would appear to have an increasing area of gaps. Alternately they may become absent altogether. In the longer term, climate change may lead to longer growing seasons, affecting the types of crop that are grown, and the management regimes that they are grown under. Coastal erosion is a feature of the Holderness coast, and over the longer term this process may accelerate if predicted sea-level changes occur by mid-century.

4.7.6.2 Built development is likely to continue. The converter station for the Dogger Bank Creyke Beck project, which has been consented and is therefore likely to be built, is proposed for a site to the north of the A1079, around 1 km north of the OnSS. This comprises two large converter halls, compounds, access and landscape treatment. Pressure for residential and commercial development is likely to continue in the areas closer to Beverley and Hull. Away from these major settlements, more limited changes in the built environment are to be expected in the smaller villages and hamlets. Further changes to electricity infrastructure and transport corridors (road and rail) may also influence the character of the landscape.

4.7.7 Data Limitations

4.7.7.1 Generally, the baseline landscape and visual state of the Hornsea Four landscape and visual study area is well understood from site visits and available publications and data. No substantive limitations have been identified.

4.7.7.2 Photography and primary site visits were undertaken at a time when trees and other vegetation were in partial leaf, which does not represent the maximum design scenario (which would be during winter when trees provide minimal screening). However, preliminary site visits were undertaken in winter (December 2018), allowing a full assessment of effects to be carried out.

4.8 Project basis for assessment

4.8.1 Impact register and impacts "scoped out"

4.8.1.1 Based on the baseline environment, the project description outlined in **Volume 1, Chapter 4: Project Description**, and the Commitments in **Volume 4, Annex 5.2: Commitments Register**, a number of impacts are proposed to be "scoped out" of the PEIR assessment for the Landscape and Visual Impact Assessment. These impacts are outlined, together with a justification for scoping them out, below in **Table 4.10**. Further detail is provided in the Impacts Register in **Volume 4, Annex 5.1: Impacts Register**.

4.8.1.2 Please note that the term "scoped out" relates to the Likely Significant Effect (LSE) in EIA terms and not "scoped out" of the EIA process per se. All impacts "scoped out" of LSE are assessed for magnitude, sensitivity of the receiving receptor and conclude an EIA significance in the Impacts Register (see **Volume 4, Annex 5.1**). This approach is aligned with the Hornsea Four Proportionate approach to EIA (see **Volume 1, Chapter 5: EIA Methodology**).

Table 4.10: Impacts scoped out of the LVIA.

Project activity and impact	Likely significance of effect	Approach to assessment	Justification
Permanent/long-term effects resulting from construction activities: operational phase Permanent impact of the landfall and onshore ECC may affect designated and non-designated landscape receptors (including landscape features such as woodlands and hedgerows) (LV-O-2)	No likely significant effects	Scoped Out	Post-construction, all landscape features will be restored or replaced, and no above-ground structures will be present (Co25, Co28, Co49, Co68). Proposed to be scoped out by Hornsea Four, but requested to be scoped in by PINS, on the basis of: • absence of information on extent of features affected; and • uncertainty regarding mitigation measures. (Scoping Opinion 4.16.2) To address this, further detail is presented below (**Section 0**) on "*what mitigation has been incorporated into the assessment and how it is to be secured*" (Scoping Opinion 4.16.2).
Permanent/long-term effects resulting from construction activities: operational phase Permanent impacts of the landfall, and onshore ECC may affect visual receptors in settlements and at individual properties, along key routes (national trails and tourist routes), along other roads and public rights of way, and in accessible and recreational landscapes. (LV-O-3)	No likely significant effects	Scoped Out	Post-construction, all landscape features will be restored or replaced, and no above-ground structures will be present (Co25, Co28, Co49, Co68). Agreed in Scoping Opinion (4.16.3)
Temporary impacts on landscape and viewers: decommissioning phase Decommissioning of all works could affect the landscape. (LV-D-6)	No likely significant effects	Scoped Out	Decommissioning works will be of short duration and impacts will be similar but not greater than those arising from construction works (see **Volume 1, Chapter 4: Project Description**). Proposed to be scoped out by the project, but requested to be scoped in by the Inspectorate, on the basis of: • unclear how significant effects will be avoided; and • no definition of 'short duration'.

Project activity and impact	Likely significance of effect	Approach to assessment	Justification
			To address this, further detail is presented below (paragraph 4.8.2.11) on commitments around decommissioning, including timescales.

Notes:
Grey – Potential impact is scoped out and both PINS and Hornsea Four agree.
Red – Potential impact is scoped out with no consensus between PINS and Hornsea Four at EIA Scoping.

4.8.2 Further justification for scoping out impacts

Permanent/long-term effects resulting from construction activities: operational phase

4.8.2.2 The permanent/long-term effects on landscape and views arising from the operational phase of the landfall and ECC will be minimal because of the measures described below.

Landfall

4.8.2.3 The refined landfall location does not intersect with any sensitive landscape or visual features and is located at least 200 m from any residential receptors (Co2, Co134).

4.8.2.4 The cabling at the landfall will be installed using trenchless or open cut techniques. Above ground disturbance will be seen in the landscape and in views during construction, and only for a short period of time after the work has been completed. However, upon completion the site will be cleared and reinstated (Co10), typically this would be to arable land. As a result, there will be no permanent loss of any valued landscape features.

4.8.2.5 Once operational, the cables at landfall will be buried underground (Co25, Co28, Co68). As such, significant effects are not anticipated to arise during the operational phase.

Onshore ECC

4.8.2.6 The proposed onshore ECC has been routed so that it avoids sensitive landscape and visual features including woodlands, wetlands, natural or semi-natural vegetation as far as possible (Co2).

4.8.2.7 Where it is necessary to remove short sections of hedgerow and occasional trees in order for the onshore ECC to pass through field boundaries, these will be reinstated and/or replaced where possible (Co10). Micrositing to avoid isolated mature trees will be undertaken where it is feasible (Co27). Species native and local to the area will be planted along or close to the line of the original hedgerow (Co26), typically using transplant stock which is three years old. Replacement trees will be planted within the Hornsea Four boundary, but not in locations where roots could damage the cables. Newly planted trees and sections of hedgerow will

be protected within rabbit proof fencing or plant shelters until they are well established, when this will be removed (typically after 3-5 years). New planting will be apparent as minor changes in the landscape and views until they have grown to fill the gaps between the plants, which will typically occur within 5 years. This can vary depending upon growth rates. Other field boundaries comprising fences, walls and ditches will be reinstated prior to the land being returned to the farmers (Co157).

4.8.2.8 Planting will be monitored to ensure it is successful and replacements provided where necessary during the defects and maintenance period (see **Volume C1, Chapter 1: Draft DCO including Draft DML**). This is typically 5 years for the landfall and onshore ECC planting, which should be sufficiently established after no more than five years. After this time, necessary maintenance of trees and hedgerows will become the responsibility of the landowner, as it is at present. (Note that for planting associated with the OnSS, monitoring and management would be permanent.)

4.8.2.9 Once operational, all aspects associated with the proposed onshore ECC will be buried underground (Co25). As such, significant effects are not anticipated to arise during the operational phase.

4.8.2.10 The mitigation will be secured through the requirements of the DCO (DCO Requirements 16, **Volume C1, Chapter 1**) through an Outline CoCP (**Volume F2, Chapter 2: Outline Code of Construction Practice**) (Co124) and/ or Outline Landscape Management Plan (Co30), with Conditions requiring details to be agreed prior to their discharge, before construction begins. The reinstatement of field boundaries including replanting of gaps in hedgerows is a standard requirement for cabling works of this nature and is secured in **Volume C1, Chapter 1**.

Temporary impacts on landscape and viewers: decommissioning phase

4.8.2.11 The effects on landscape and views arising from the decommissioning phase will be minimal because of the measures described below.

Landfall and onshore ECC

4.8.2.12 The onshore export cables will be left in place in the ground, therefore there will be no disturbance across the ECC or landfall area, other than removal of jointing pits if required. See **Volume 1, Chapter 4: Project Description** for further details.

OnSS

4.8.2.13 The temporary impacts on landscape and viewers of the OnSS: during the decommissioning phase will be similar but not greater than to those which will occur during construction, but the works will be of shorter duration, as detailed in **Volume 1, Chapter 4: Project Description**. The effects of decommissioning on landscape and visual receptors can be scoped out because of the considerations set out below:

4.8.2.14 All above ground structures will be removed, and all hard standing will be removed completely.

4.8.2.15 Once all buildings and structures have been removed, the land will be cultivated and reinstated to its former use. For arable land, reinstatement is likely to be complete within a year. For woodland reinstatement will start to take effect within five years, given the time taken for trees to grow. An Onshore Decommissioning Plan will be developed in line with the latest relevant guidance and will be agreed with the relevant stakeholders, as appropriate (Co127).

4.8.3 Commitments

4.8.3.1 Hornsea Four has made several commitments (primary design principles inherent as part of the project, installation techniques and engineering designs/modifications as part of their pre-application phase, to eliminate or reduce impacts as far as possible). Further commitments (adoption of best practice guidance) are embedded as an inherent aspect of the EIA process.

4.8.3.2 The commitments adopted by Hornsea Four in relation to Landscape and Visual Amenity are presented in **Table 4.11**. The complete Commitments Register is provided in **Volume 4, Annex 5.2: Commitments Register**.

Table 4.11: Relevant Landscape and Visual Commitments.

Commitment ID	Measure Proposed	How the measure will be secured
Co1	Primary: All main rivers, Internal Drainage Board (IDB) maintained drains, main roads and railways will be crossed by HDD or other trenchless technology as set out in the Onshore Crossing Schedule. Where HDD technologies are not practical, the crossing of ordinary watercourses may be undertaken by open cut methods. In such cases, temporary measures will be employed to maintain flow of water along the watercourse.	DCO Requirement 16 (CoCP)
Co2	Primary: The following sensitive sites will be avoided by the permanent project footprint: Listed Buildings (580 sites), Registered Parks and Gardens (Thwaite Hall and Risby Hall), Scheduled Monuments (30 sites), Conservation Areas (19 sites), non-designated built heritage assets (368 sites) and Ancient Woodland (10 sites and TPOs). Please refer to PEIR Volume 6, Annex 6.5.1 Appendix B Designated Assets Gazetteer for detailed lists of designated heritage assets that are avoided by Hornsea Four. With the exception of River Hull Headwaters SSSI, sensitive sites have been avoided. Please refer to PEIR Volume 6, Annex 3.1: Extended Phase 1 Habitat Survey Report for details. Where possible, unprotected areas of woodland, mature, and protected trees (e.g. veteran trees) shall also be avoided or micro sited around.	DCO Works Plan - Onshore

Commitment ID	Measure Proposed	How the measure will be secured
Co7	Primary: The temporary work area associated with onshore export cable corridor will be 80m working width to minimise the construction footprint, except the Network Rail Crossing near Beswick where the footprint is extended to 120m to facilitate HDD of the railway line. The permanent onshore export cable corridor width will be 60m except the Network Rail Crossing near Beswick where the footprint is extended to 120m to facilitate HDD of the railway line.	DCO Works Plan - Onshore
Co10	Tertiary: Post-construction, the working area will be reinstated to pre-existing condition as far as reasonably practical in line with DEFRA 2009 Construction Code of Practice for the Sustainable Use of Soils on Construction Sites PB13298 or latest relevant available guidance.	DCO Requirement 16 (CoCP) DCO Requirement 19 (Restoration of land used temporarily for construction)
Co25	Primary: The onshore export cable corridor will be completely buried underground for its entire length. No overhead pylons will be installed as part of the consented works for Hornsea Four.	DCO Schedule 1, Part 1 Authorised Development
Co26	Primary: Where hedgerows require removal, this will be undertaken prior to topsoil removal and the width of hedge removed will be limited where practical. Removed hedges and trees will be replaced with locally appropriate native species.	DCO Requirement 16 (CoCP); and; DCO Requirement 9 (Ecological Management Plan)
Co27	Primary: Trees identified to be retained as per the Onshore Crossing Schedule will be fenced off and worked around. Where works close to trees that will remain in situ are required, techniques will be used to safeguard the root protection zone.	DCO Requirement 16 (CoCP); and; DCO Requirement 9 (Ecological Management Plan)
Co28	Primary: Joint Bays will be completely buried, with the land above reinstated except where access will be required from ground level, e.g. via link box chambers and manholes.	DCO Requirement 16 (CoCP) DCO Requirement 19 (Restoration of land used temporarily for construction)
Co30	Secondary: A Landscape Management Plan will be developed in accordance with the outline Landscape Management Plan. The plan will include details of mitigation planting at the onshore substation site, including number, location and species. Details of management and	DCO Requirement 7 (Provision of landscaping)

Commitment ID	Measure Proposed	How the measure will be secured
	maintenance of planting will be provided. Where practical, landscape mitigation planting will be established as early as possible in the construction phase.	
Co43	Secondary: All temporary and permanent working areas of the onshore Export Cable Corridor (ECC), logistics compounds and the onshore substation site will be clearly marked and secured with appropriate fencing.	DCO Requirement 6 (Detailed design approval onshore)
Co49	Primary: There will be no permanent High Voltage infrastructure installed above surface within 50m of residential properties and sub surface within 25m of residential properties.	DCO Requirement 6 (Detailed design approval onshore)
Co64	Tertiary: Topsoil and subsoil will be stored in separate stockpiles in line with DEFRA 2009 Construction Code of Practice for the Sustainable Use of Soils on Construction Sites PB13298 or the latest relevant available guidance. Any suspected or confirmed contaminated soils will be appropriately separated, contained and tested before removal (if required). No material will be stockpiled within the floodplain of any watercourse.	CO Requirement 16 (CoCP) DCO Requirement 13 (Contaminated land and groundwater scheme)
Co68	Secondary: All logistics compounds will be removed and sites restored to their original condition when construction has been completed.	DCO Requirement 16 (CoCP) DCO Requirement 19 (Restoration of land used temporarily for construction
Co69	Secondary: Site lighting will only operate when required and will be directional to avoid unnecessary illumination.	DCO Requirement 16 (Code of construction practice)
Co78	Primary: Ponds will be avoided through micro-siting of the onshore export cable where practical.	DCO Requirement 9 (Ecological Management Plan)
Co79	Primary: Severance to PRoW will be temporary where possible, and appropriate temporary diversions, gated crossings and signage will be provided during construction. PRoW will be reinstated as soon as reasonably practical. Where permanent severance to PRoW is necessary, permanent diversions of such routes will be applied.	DCO Requirement 16 (CoCP)
Co124	Tertiary: A Code of Construction Practice (CoCP) will be developed in accordance with the outline CoCP. The outline CoCP will include measures to reduce temporary disturbance to residential properties, recreational users, and existing land users	DCO Requirement 16 (CoCP)
Co127	Tertiary: An Onshore Decommissioning Plan will be developed prior to decommissioning. The Onshore Decommissioning Plan will include provisions for the removal of all onshore above ground infrastructure and the decommissioning of below ground infrastructure and details relevant to pollution prevention and avoidance of ground disturbance. The	DCO Requirement 21 (onshore decommissioning)

Commitment ID	Measure Proposed	How the measure will be secured
	Onshore Decommissioning Plan will be in line with the latest relevant available guidance.	
Co133	Primary: The onshore export cable corridor (ECC) will be routed to avoid residential receptors by at least 50 m.	DCO Works Plan - Onshore
Co134	Primary: Cable installation works at the landfall area will be located at least 200 m from residential receptors.	DCO Works Plan - Onshore
Co135	Primary: Temporary construction highway access points along the onshore export cable corridor (ECC) will be located at least 150m from residential receptors, with the exception of two receptors; Bridge Farm Holiday Cottages, Brigham, Driffield, and a receptor off the A1035 Malton Road, Beverley.	DCO Requirement 17 (Construction traffic management plan)
Co145	Primary: Views of Beverley Minster from the A1079 will not be obstructed by the siting of the onshore substation.	DCO Requirement 6 (Detailed design approval onshore)
Co151	Primary: No above ground infrastructure associated with Hornsea Four will obstruct the view from St Mary's Church Cottingham to Beverley Minister through considered design of the OnSS and site selection.	DCO Requirement 6 (Detailed design approval onshore)
Co157	Secondary: Fences, walls, ditches and drainage outfalls will be retained along the onshore export cable corridor and landfall, where possible. Where it is not possible to retain them, any unavoidable damage will be repaired and reinstated as soon as reasonably practical.	DCO Requirement 16 (Code of construction practice
Co158	Secondary: Impacts on the English Coast Path national route will be minimised by avoiding impacts through site design and phasing within working constraints for the landfall construction. In addition, Co79 will be applied to the English Coast Path national route.	DCO Requirement 16 (CoCP)
Co165	Secondary: Where PRoWs are required to be closed during the construction of the onshore connection works, they will not be closed for any longer than three months at any one time, or for six months in total over the whole construction period. Where closures are required for longer period, East Riding of Yorkshire Council will be informed in writing.	DCO Requirement 16 (CoCP)

4.8.3.3 Alongside these commitments, an outline design vision (**Volume 4, Annex 4.6: Outline Design Vision Statement**) has been produced to detail the potential options used in construction of the landfall, the onshore ECC and OnSS. This details options for the building materials, colours and finishes of the OnSS infrastructure, to identify how it's final design can be such that any landscape and visual impacts (and potentially setting impacts) from the infrastructure will be reduced.

4.9 Maximum Design Scenario

4.9.1.1 This section describes the Maximum Design Scenario parameters on which the landscape and visual impact assessment has been based. These are the parameters which are judged to give rise to the maximum levels of effect on landscape and visual receptors as outlined in **Volume 1, Chapter 4: Project Description**. Should the project be constructed to more

reduced parameters within the design envelope, then the impacts would be the same or reduced, but they would not be any greater. The Maximum Design Scenario is presented **Table 4.12**.

Table 4.12: Maximum design scenario for impacts on Landscape and Visual Amenity.

Impact and Phase	Embedded Mitigation Measures	Maximum Design Scenario / Rochdale Envelope	Justification
Construction			
Temporary loss of landscape features and changes to landscape character in the landfall area and onshore ECC from construction activities. (LV-C-1) Temporary change to views in the landfall area and onshore ECC from construction activities. (LV-C-1)	Primary: Co1 Co2 Co7 Co25 Co26 Co27 Co28 Co49 Co79 Co133 Co134 Co135 Tertiary: Co10 Co124 Secondary: Co68 Co69 Co158 Co165	• All trees and hedgerows within the onshore ECC and landfall PEIR boundary will be removed. • Installation of temporary fencing (post and wire or similar) along the entire ECC and landfall boundary. • PRoW closure: not be closed for any longer than three months at any one time, or for six months in total over the whole construction period. Where closures are required for longer period, ERYC will be informed in writing. **Landfall Open Cut:** • Construction duration: 32 months • Landfall compound: Number: 1, Total Area: 40,000 m^2, Duration 32 months • Trench width per circuit: 15 m • All land within ECC red line will be disturbed, with the exception of sections where HDD is proposed. **Onshore Export Cable Corridor:** • Construction duration: 30 months, of which any one location experiences intermittent construction activity over the duration; • Logistics compounds: Number: 8, Size: 140x140 m, Duration: 36 months • ECC: Length: 40 km (approximate), Width: 80 m, Area: 3,200,000 m^2 • Haul Road: Number: 1, Width: 6 m (with 7 m passing places), Length: 40 km, Depth: 1 m	These parametres provide the maximum losses of /disturbance to landscape features and resulting visual intrusion.

Impact and Phase	Embedded Mitigation Measures	Maximum Design Scenario / Rochdale Envelope	Justification
		• Temporary access roads: Number: 24, Width: 6 m (with 7 m passing places), Total combined length (excluding existing paved sections): 10km, Depth: 1 m • Reinstatement: hedgerow can be planted over cables (60 m easement) but not trees.	
Temporary loss of landscape features and changes to landscape character in the OnSS area from construction activities. (LV-C-4) Temporary change to views in the OnSS area from construction activities. (LV-C-4)	Primary: Co2 Co26 Co27 Co49 Co78 Co79 Co128 Co145 Co151 Co165 Tertiary: Co7 Co10 Co124 Secondary: Co69 Co30	**Onshore Substation and Energy Balancing Infrastructure:** • Construction duration: 36 months • Permanent infrastructure area: 155,000 m^2 • Temporary works area: 130,000 m^2 • Temporary access road: Number: 1, Length: 1,600 m, Width: 15 m (8 m road, 7 m soil storage) • Fencing: To be erected around entirety of OnSS/EBI permanent and temporary works area, inclusive of access track.	These parametres provide the maximum losses of /disturbance to landscape features and resulting visual intrusion.

Impact and Phase	Embedded Mitigation Measures	Maximum Design Scenario / Rochdale Envelope	Justification
Operation			
Permanent loss of landscape features, and changes to landscape character from operation of the OnSS. (LV-O-5) Permanent change to views from operation of the OnSS. (LV-O-5)	Primary: Co2 Co27 Co79 Co145 Co151 Secondary: Co30	Onshore Operational life: 35 years **Onshore Substation (HVAC option):** • Permanent infrastructure area: 155,000 m^2 • Main Buildings: Number: 2, Length: 240m (if single building), Width: 80m (if single building), Height: 25m • Secondary Buildings: Number: 15, Total Combined Area: 7,000m^2, Height: 15m • Height of lightning protection for main building: 30 m **Energy Balancing Infrastructure:** • Main and Secondary Buildings: Total Area (within permanent infrastructure area): 17,300 m^2 • Main buildings: Height: 15 m • Secondary buildings: Height: 20 m (type one) • Height of fire walls: 25 m • Lightning protection: Height: 25 m Minimum landscape treatment as per **Volume 1, Chapter 4: Project Description**.	MDS covers the maximum parameters stated for both the HVDC and HVAC options, therefore whichever is constructed the MDS will not be exceeded. Open equipment considered likely to have greater effects/less potential to mitigate

4.10 Assessment methodology

4.10.1.1 The assessment methodology for the Landscape and Visual Impact Assessment is consistent with that presented in Annex C of the Scoping Report (Ørsted, 2018). The methodology is based on the principles set out in GLVIA3.

4.10.2 Impact assessment criteria

4.10.2.1 The criteria for determining the significance of effects is a two-stage process that involves defining the sensitivity of the receptors and the magnitude of the impacts. This section describes the criteria applied in this chapter to assign values to the sensitivity of receptors and the magnitude of potential impacts. The assessments of sensitivity and magnitude in turn rely on a number of subsidiary judgements, in line with the approach set out in GLVIA3. GLVIA3 also recommends that these are judged differently for landscape and visual receptors. The following sections set out all criteria used for judging the sensitivity of landscape and visual receptors, and the magnitude of landscape and visual impacts.

4.10.3 Sensitivity of landscape receptors

4.10.3.1 GLVIA3 states that the sensitivity of landscape receptors should be assessed in terms of the susceptibility of the receptor to the type of change proposed, and the value attached to the resource.

4.10.3.2 The susceptibility of a landscape receptor is a measure of its ability to accommodate the proposed development "*without undue consequences for the maintenance of the baseline situation*" (paragraph 5.40, GLVIA3). As recommended in GLVIA3 judgements on the susceptibility of landscape receptors are recorded as high, medium or low according to Table 4.13.

Table 4.13: Susceptibility of Landscape Receptors.

Susceptibility	Definition
High	The landscape receptor is less able to accommodate the type of development proposed without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape offer limited opportunities for accommodating the change without key characteristics being fundamentally altered, leading to a different landscape character.
Medium	The landscape receptor is partly able to accommodate the proposed development without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape offer some opportunities for accommodating the change without key characteristics being fundamentally altered.
Low	The landscape receptor is more able to accommodate the proposed development without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape are resilient to being changed by the type of development proposed.

4.10.3.3 Value of the landscape resource is determined in line with **Table 4.14** , with reference to:

- a review of designations and the level of policy importance that they signify (such as landscapes designated at international, national, or local level); and
- application of criteria that indicate value (such as landscape quality, scenic quality, rarity, representativeness, conservation interests, recreation value, perceptual aspects, associations e.g. with artists or writers).

Table 4.14: Definitions of landscape value.

Value	Definition
High	Areas or features designated at a national level e.g. National Parks or AONBs, or key features of these with national policy level protection AND/OR Landscapes with high scenic quality, and/or conservation interest, and/or recreational value, and/or cultural associations, which are valued at a national level (based on a review of nationally designated sites and features).
Medium	Areas or features designated at a county or local level e.g. local authority designated landscapes or key features of designated landscapes. AND/OR Landscapes with some scenic quality, and/or or some recreational value, or important cultural associations which are valued at a district level.
Low	Areas or features that are not formally designated but may be valued at a community level. AND/OR Landscape of lower aesthetic qualities than the landscapes described above e.g. character that is widespread.

4.10.3.4 The sensitivity of a landscape receptor to change is defined as high, medium or low and is based on weighing up professional judgements regarding susceptibility and value, as set out in **Table 4.15**.

Table 4.15: Sensitivity of landscape receptors.

Sensitivity	Definition
High	Landscapes which by nature of their character would be less able to accommodate development without change in character, due to their relatively higher susceptibility to the type of change proposed, and/or the higher value placed upon them by society.
Medium	Landscapes which by nature of their character would be able to accommodate development, subject to careful siting and design, due to their more moderate susceptibility to the type of change proposed, and/or relatively moderate value placed upon them by society.
Low	Landscapes which by nature of their character would be more able to accommodate development without substantive change in character, due to their relatively lower susceptibility to the type of change proposed, and/or lower value placed upon them by society.

4.10.4 Sensitivity of visual receptors

4.10.4.1 GLVIA3 states that the nature of visual receptors should be assessed in terms of the susceptibility of the receptor to change in views/visual amenity and the value attached to particular views.

4.10.4.2 The susceptibility of visual receptors to changes in views/visual amenity is a function of the occupation or activity of people experiencing the view, and the extent to which their attention is focussed on views (GLVIA3, paragraph 6.32). This is recorded as high, medium or low according to Table 4.16.

Table 4.16: Susceptibility of Visual Receptors.

Susceptibility	Definition
High	Communities where views contribute to the landscape setting enjoyed by residents; people engaged in outdoor recreation (including users of public rights of way whose interest is likely to be focussed on the landscape); visitors to heritage assets or other attractions where views of surroundings are an important contributor to experience.
Medium	Travellers on road, rail or other transport routes.
Low	People engaged in outdoor sport or recreation which does not involve or depend upon appreciation of views of the landscape; people at their place of work whose attention is not on their surroundings.

4.10.4.3 Recognition of the value of a view is determined in accordance with Table 4.17, with reference to:

- planning designations specific to views;
- whether it is recorded as important in relation to designated landscapes (such as views specifically mentioned in the special qualities of a National Park, AONB or National Scenic Area);
- whether it is recorded as important in relation to heritage assets (such as designed views recorded in citations of Registered Parks and Gardens, or views recorded as of importance in Conservation Area Appraisals); and/or
- the value attached to views by visitors, for example through appearances in guide books or on tourist maps, provision of facilities for their enjoyment and references to them in literature and art.

Table 4.17: Definitions of Value Attached to Views.

Value	Definition
High	Views recorded in World Heritage Site Management Plans or associated with nationally designated landscapes (perhaps identified in management plans), designed views recorded in citations for historic parks and gardens/scheduled monuments or a view regularly used in guide books for that part of the country.
Medium	Views associated with local authority designated landscapes or recorded as of importance in Conservation Area Appraisals or experienced by a visitor to an area as well as the local community.
Low	Views valued at a community level and likely to be experienced mostly by the local community.

4.10.4.4 The sensitivity of a visual receptor to change is defined as high, medium or low and is based on weighing up professional judgements regarding susceptibility and value, as set out in Table 4.18.

Table 4.18: Sensitivity of visual receptors.

Sensitivity	Definition
High	Larger numbers of viewers and/or those with proprietary interest and prolonged viewing opportunities such as residents and users of attractive and well-used recreational facilities. The quality of the existing view, as likely to be perceived by the viewer, is considered to be high.
Medium	Small numbers of residents or moderate numbers of recreational viewers, with an interest in their environment. Larger numbers of recreational road users. The quality of the existing view, as likely to be perceived by the viewer, is considered to be medium.
Low	Small numbers of recreational viewers with interest in their surroundings. Viewers with a passing interest not specifically focussed on the landscape e.g. workers, commuters. The quality of the existing view, as likely to be perceived by the viewer, is considered to be low.

4.10.5 Magnitude of Landscape Impact

4.10.5.1 The magnitude of the impact on each landscape receptor is reported in terms of its scale, geographical extent, duration and reversibility.

4.10.5.2 For landscape receptors, the scale of change depends on the degree to which the character of the landscape is changed through removal of existing landscape components or addition of new ones. Of particular concern is how the changes affect the key characteristics of the landscape. In this assessment scale is described as being imperceptible, small, medium or large, with reference to the definitions set out in Table 4.19.

Table 4.19: Scale of Landscape Change.

Scale	Definition
Large	Extensive loss or modification of landscape elements or addition of new elements and features which alter the key characteristics and perceptual character of the landscape to a large extent.
Medium	Loss of landscape elements and features or addition of new ones which result in discernible and distinct changes to landscape characteristics and character.
Small	A perceptible but small change to landscape characteristics and character as a result of the loss of landscape elements and features or addition of new ones.
Imperceptible	A barely perceptible/ imperceptible change to landscape character and characteristics.

4.10.5.3 The geographical extent over which the landscape effect will be felt is described on a continuum between 'localised', i.e. restricted to the site and immediate surroundings, and 'widespread', across a whole landscape. This is set in the context of the study area, so that a 'widespread' effect would be one affecting all or most of the study area. The geographical extent is generally described by defining an area over which the effect will occur, with reference to identifiable landscape features.

4.10.5.4 GLVIA3 states that "*duration can usually be simply judged on a scale such as short term, medium term or long term.*" For the purposes of this assessment, duration has been determined in relation to the phases of the development, as follows:

- 'short-term' effects are those that occur during construction, and may extend into the early part of the operational phase, e.g. construction activities;
- 'medium-term' effects are those that occur during part of the operational phase, e.g. relating to mitigation planting, where effects may cease or reduce on maturation of planting; and
- 'long-term' effects are those which occur throughout the operational phase, e.g. presence of the OnSS, or are permanent effects which continue after the operational phase.

4.10.5.5 Reversibility is reported as reversible, partially reversible or not reversible (permanent), and is related to whether the change can be reversed (e.g. effects arising from presence of construction traffic will cease at the end of construction, whereas effects arising from presence of new built development will be not reversible).

4.10.5.6 The magnitude is derived by combining professional judgements on scale; geographical extent; duration and reversibility as set out in **Table 4.20**.

Table 4.20: Definition of terms relating to magnitude of landscape impact.

Magnitude	Definition
Large	A clearly evident and frequent/continuous change in landscape features and characteristic affecting an extensive area (relative to the study area), or the characteristics, and/or notable widespread alteration to the special or key qualities of designated areas.
Medium	A moderate change in landscape features and character, frequent or continuous, and over a wide area, or a clearly evident change either over a restricted area, and/or with some alteration to the special or key qualities of designated areas.
Small	A small change in landscape features and character over a wide area or a moderate change over a more restricted area, and/or barely altering the special of key qualities of designated areas.
Negligible	An imperceptible, barely or rarely perceptible change in landscape features and character, and/or not altering the special or key qualities of designated areas.

4.10.6 Magnitude of Visual Impact

4.10.6.1 The magnitude of the impact on visual receptors is reported in terms of its scale, geographical extent, duration and reversibility.

4.10.6.2 For visual receptors, the scale of change depends on:

- the scale of the change in view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the proposed development;

- the degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements and characteristics in terms of form, scale and mass, line, height, colour and texture;
- the nature of the view of the proposed development, in terms of whether views will be full, partial or glimpses.

4.10.6.3 The assessment assumes winter conditions, based on winter site visits to the area and professional interpretation of the baseline photography obtained in spring (see **paragraph 4.6.3.1**). Winter represents the maximum design scenario with minimal screening by vegetation and deciduous trees. In this assessment, scale is described as being imperceptible, small, medium or large, with reference to the definitions set out in **Table 4.21**.

Table 4.21: Scale of Visual Change.

Scale	Definition
Large	Large change in view, perhaps where the development is in close proximity in a direct line of vision, or affecting a substantial part of the view, or providing contrast with the existing view.
Medium	Clearly perceptible change in view, perhaps where the development is relatively close but at an oblique angle or further away in the direct line of vision, creating a distinct new element in the view.
Small	Small change in view, perhaps where the development is at a distance or oblique angle, or where the scale of the landscape absorbs the development well.
Imperceptible	Change in view which is barely perceptible.

4.10.6.4 The geographical extent records the area over which the changes would be visible e.g. whether there is only one point from where the development can be glimpsed, or whether similar views can be gained from large areas. It can also relate to the number of people affected with a larger geographical extent applying where larger numbers of people will be affected. The geographical extent is generally described in terms of a defined area.

4.10.6.5 For the purposes of this assessment, duration has been determined in relation to the phases of the Development, as outlined in **paragraph 4.10.5.4**.

4.10.6.6 Reversibility is reported as reversible, partially reversible or not reversible (permanent), and is related to whether the change can be reversed (e.g. effects arising from presence of construction traffic will cease at the end of construction, whereas effects arising from presence of new built development will be not reversible).

4.10.6.7 The magnitude is derived by combining professional judgements on scale; geographical extent; duration and reversibility as set out in **Table 4.22**.

Table 4.22: Definition of terms relating to magnitude of visual impact.

Magnitude	Definition
Large	Major changes in view at close distances, affecting a substantial part of the view, continuously visible over the long term (as defined in paragraph 4.10.5.4), or obstructing a substantial part or important elements of the view.
Medium	Clearly perceptible changes in views at intermediate distances, resulting in either a distinct new element in a significant part of the view, or a more wide-ranging, less concentrated change across a wider area.
Small	Minor changes in views, at long distances, or visible over the short term (as defined in paragraph 4.10.6.5), perhaps at an oblique angle, or which blends to an extent with the existing view.
Negligible	A change which is barely visible, perhaps at very long distances or at an oblique angle, and/or visible over the short term (as defined in paragraph 4.10.6.5), and which generally blends with the existing view.

4.10.7 Significance of Landscape and Visual Impacts

4.10.7.1 The significance of the impact upon landscape and visual receptors is determined by correlating the magnitude of the impact and the sensitivity of the receptor. This determination requires the application of professional judgement and experience to take on board the many different variables which need to be considered, and which are given different weight according to site-specific and location-specific considerations in every instance. Judgements are made on a case by case basis, guided by the principles set out in Figure 4.7.

4.10.7.2 For the purposes of this assessment, all effects with a significance level of moderate or greater are considered to be 'significant' in the context of the EIA Regulations. Any effects with a significance level of minor or less have been concluded to be 'not significant' in the context of the EIA Regulations.

4.10.8 Direction of effects

4.10.8.1 The direction of effect (positive/beneficial, negative/adverse, or neutral) is determined in relation to the degree to which the proposal fits with landscape character and the contribution to the landscape that the development makes. In this assessment, taking a precautionary stance, all effects are considered to be adverse unless specifically stated otherwise in the assessment.

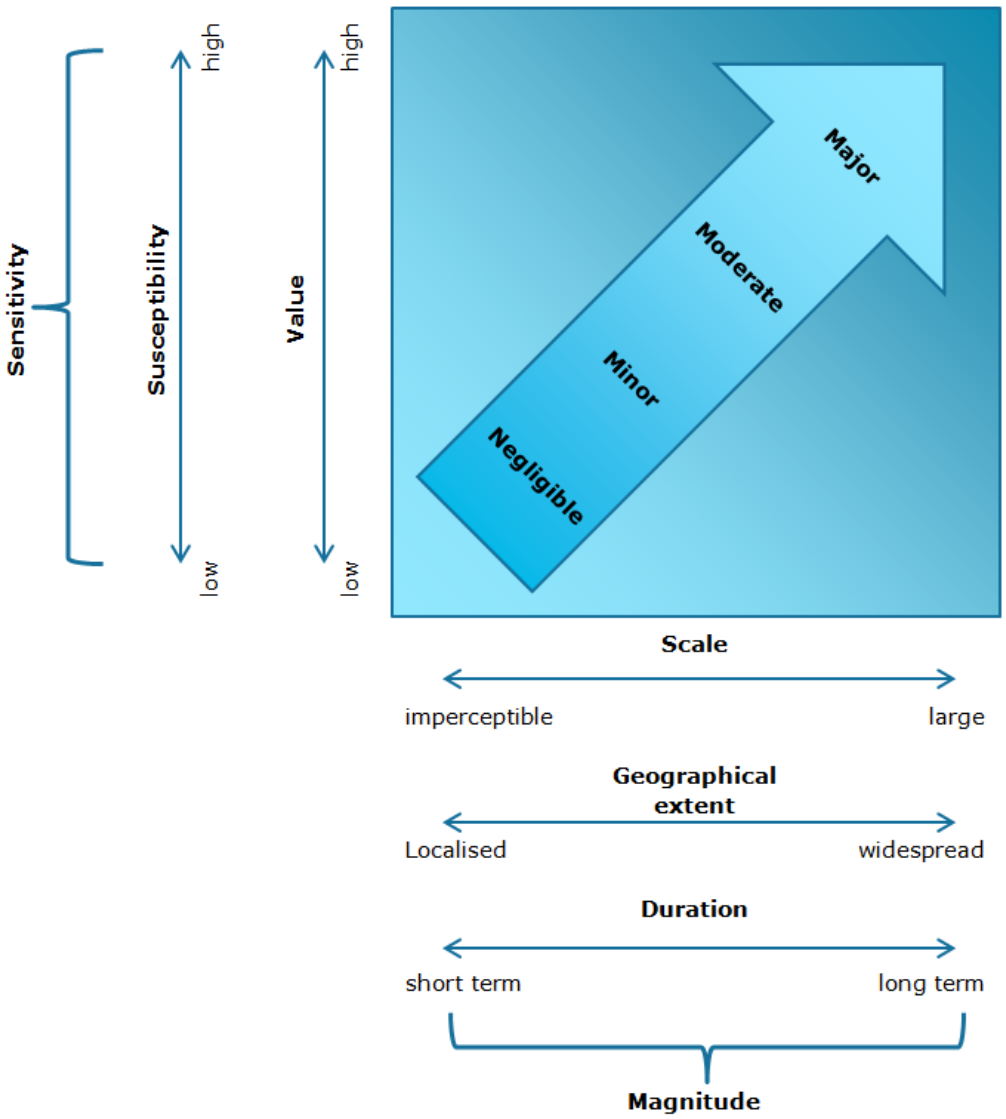


Figure 4.7: Matrix showing the methodology used for the assessment of the significance of the effect.

4.10.9 Simple and detailed assessment

4.10.9.1 Two approaches have been followed for the reporting of impacts: simple and detailed. The same approach set out above is applied in each case, but the difference is in the level of detail given in the reporting of effects.

4.10.9.2 Where a simple assessment is proposed:

- Receptors are grouped by their location, context and/or proximity to the scheme, and are considered together where professional judgement indicates that effects are likely to be similar;

- Assessments consider the groups as opposed to the individual receptors
- No ZTVs or photomontages are provided given as it is not considered necessary for temporary works, or elements which will be beneath the ground surface.

4.10.9.3 Where a detailed assessment is proposed:

- Receptors are considered individually, or as small groups where professional judgement indicates that receptors are likely to experience identical effects – these groups are likely to be limited to 3-4 properties;
- A ZTV for the OnSS is provided (**Figure 4.2**); and
- Representative viewpoints were identified and agreed with the relevant stakeholders (see **Table 4.4**) – these are introduced in **Section 4.7.5** and listed in **Table 4.9**, and views are illustrated in **Volume 6, Annex 4.1** using photography and photomontages, as set out in **Section 4.10.10**.

4.10.10 Approach to visualisations

4.10.10.1 No photography or photomontages are provided for the landfall and cable works, given the works within these areas will be temporary and all works will be below ground.

4.10.10.2 Baseline photography was taken for all ten viewpoints listed in **Table 4.9**, and is presented in **Volume 6, Annex 4.1: Landscape and Visual Resources: Photography and Photomontages**, to illustrate the existing view and the landscape context in which the OnSS will be seen.

4.10.10.3 For the four closest representative viewpoints (VP1 to VP4 in **Table 4.9**), illustrations are presented as follows:

- Photomontages showing two alternative indicative designs of the OnSS (HVAC and HVDC options), based on indicative 3D models; and
- 3D model showing the Maximum Design Scenario, prepared by LUC, to include structures of the maximum size proposed (two large buildings 25m in height placed in the most sensitive part of the landscape, and a range of smaller buildings of 15m height, as set out in **Table 4.12**).

4.10.10.4 Photomontages are not presented for the other viewpoints, as the increased distance and intervening vegetation means that they would be of limited utility.

4.10.10.5 All photography and photomontages have been generated in accordance with the Landscape Institute's Advice Note 01/11 (Landscape Institute, 2011) on photography and photomontage in landscape and visual impact assessment, as well as the consultation draft technical guidance note 06/18 of the same name (Landscape Institute, 2018).

4.10.10.6 Photomontages have been produced to illustrate the scale and massing of the HVAC and HVDC options but do not show details of finishes or colours as these are yet to be determined. Similarly, the photomontages do not show landscape planting. As such, the

photomontages can be considered to indicate 'Year 1' effects, prior to any mitigation planting becoming effective.

4.10.10.7 Landscape planting proposals are illustrated indicatively on **Figure 4.8**, and these have informed the Year 15 and Year 30 effects. Professional judgement has been used, based on an understanding of how the proposed landscape planting is likely to develop, to make judgements in relation to the Year 15 and Year 30 effects.

4.10.10.8 All photography and photomontages are included in **Volume 6, Annex 4.1**.

4.11 Impact assessment

4.11.1 Construction

4.11.1.1 The likely impacts of the onshore construction of Hornsea Four have been assessed on the landscape and on visual amenity. The environmental impacts arising from the construction of Hornsea Four on landscape and visual receptors are listed in **Table 4.12** along with the maximum design scenario against which each construction phase impact has been assessed.

4.11.1.2 A description of the potential effect on landscape and visual receptors caused by each identified impact is given below. All construction phase effects are presented as a simple assessment, as defined at **Section 4.10.9**, and are set out in relation to the subareas described at **Section 4.4.1**.

Temporary effects: Construction phase.
Temporary loss of landscape features and changes to landscape character in the landfall area and onshore ECC from construction activities. (LV-C-1)

Subarea 1 Landfall area

Sensitivity of the receptor

4.11.1.3 The landscape of the landfall area is open and exposed, with little tree cover. Boulder clay cliffs are a distinctive feature of this coast and are more susceptible to change than the farmland inland, though they will not be directly affected. Other than low hedges and a small number of boundary trees, there are no physical features of this landscape that are susceptible to the construction of the landfall and the onshore ECC. The Holderness coast is a recreational resource, with access to the beach and holiday parks nearby, but is not designated for its landscape value.

4.11.1.4 The landscape of subarea 1 is deemed to be of **low** susceptibility and **medium** value. The sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of impact

4.11.1.5 Construction of the landfall will lead to disturbance and activity across the area within the PEIR boundary, including excavation, compounds, fencing, storage bunds and temporary access. There will be an increase in activity, noise and vehicle movements, leading to a reduction in tranquillity. There will be a large change in character from open farmland to a construction site. This will affect the local landscape across the area between Auburn Farm, Fraisthorpe and Hamilton Hill Farm, but effects beyond these points will be reduced, due to the decreasing presence of the works with distance. Seaward, works may be visible within the intertidal zone. Works may extend into hours of darkness, when construction lighting may be visible and uncharacteristic. The overall duration of the landfall and onshore ECC works will be 32 and 36 months respectively, though work at any one location will not continuous, therefore the duration is considered to be short term at any one location. On completion, the landfall area will be fully reinstated to its previous condition where possible (Co10).

4.11.1.6 The impact of the landfall works is predicted to be of **large** scale, of **local** geographical extent, and **short term** and reversible. The magnitude is therefore considered to be **small**.

Significance of the effect

4.11.1.7 Overall, it is assessed that the sensitivity of the receptor in subarea 2 is **medium** and the magnitude is **small**. The impact is of **minor adverse** significance, which is not significant in EIA terms.

Subarea 2 A165 to Rotsea Lane

Sensitivity of the receptor

4.11.1.8 The landscape of subarea 2 comprises open farmland largely absent of tree cover. A key feature is the presence of watercourses including the River Hull and Foston Beck extending from Kelk Beck which together with the Driffield Canal form part of the River Hull Headwaters SSSI. Drainage ditches within field boundaries are also characteristic and it is these hydrological features that are most susceptible to the construction of the onshore ECC. Lissett Wind Farm is a key feature in the east of this subarea, with a local influence on character. The low-lying farmland contributes to the landscape setting of remote hamlets and farmsteads, however is not designated for its landscape value.

4.11.1.9 The landscape of subarea 2 is deemed to be of **medium** susceptibility and **low** value. The sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of impact

4.11.1.10 Construction of the onshore ECC between the A165 and Rotsea Lane will lead to disturbance and activity across the area within the PEIR boundary, including excavation, fencing, storage bunds, three logistics compounds, and a number of temporary access

tracks. Vegetation clearance will be limited as the onshore ECC has been routed to avoid trees and woodland as far as possible (Co2). Some sections of hedge will be removed, and a small number of trees may be lost south of Gembling. Trenchless techniques will be used for crossing main rivers and IDB maintained drains (Co1). There will be an increase in activity, noise and vehicle movements, leading to a reduction in tranquillity. Works may extend into hours of darkness, when construction lighting may be visible and uncharacteristic. There will be a change in character from open farmland to a construction site along the narrow, linear onshore ECC.

4.11.1.11 This will affect the local landscape along the onshore ECC. Given the flat landscape and the low height of the works, the geographical extent will be quite narrow, up to a maximum of 500 m from the PEIR boundary, but often much less where containment is provided by shelterbelts, buildings and hedges. The overall duration of the onshore ECC works will be 36 months (30 months ECC construction, 36 months logistics compounds), though active construction is expected to be intermittent in any one location over this period. Therefore the duration is considered to be short term. On completion, the onshore ECC will be fully reinstated to its previous condition where possible (Co10).

4.11.1.12 The impact of the construction works in subarea 2 is predicted to be of **medium** scale, of **local** geographical extent, and **short term** and reversible. The magnitude is therefore considered to be **small**.

Significance of the effect

4.11.1.13 Overall, it is assessed that the sensitivity of the landscape receptor in subarea 2 is **medium** and the magnitude is **small**. The impact is of **minor adverse** significance, which is not significant in EIA terms.

Subarea 3 Rotsea Lane to Leconfield

Sensitivity of the receptor

4.11.1.14 The landscape of subarea 3 is formed predominantly of flat and open farmland with small, infrequent blocks of woodland providing some visual variety. A network of streams and becks flows through the area feeding areas of wetland including Bryan Mills Field SSSI, a tall fen enclosed by trees. These features are all susceptible to disturbance arising from change of the type proposed. The presence of pylons and other urbanising features on the edge of Leconfield indicates a lower susceptibility of the landscape in this area. The agricultural landscape contributes to the countryside setting of nearby settlements and to recreational routes including the Minster Way LDWR on the approach to the Yorkshire Wolds, further west. The subarea is not covered by any landscape designations although Beswick is designated as a Conservation Area.

4.11.1.15 The landscape of subarea 3 is deemed to be of **low** susceptibility and **medium** value. The sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of impact

4.11.1.16 As with subarea 2, construction of the onshore ECC between Rotsea Lane and Leconfield will lead to disturbance and activity across the area within the PEIR boundary, including excavation, fencing, storage bunds, three logistics compounds, and a short sections of temporary access tracks. Vegetation clearance will be limited as the onshore ECC has been routed to avoid trees and woodland where possible (Co2), though some sections of hedge will be removed. Trenchless techniques will be used for crossing main rivers and IDB maintained drains (Co1). There will be an increase in activity, noise and vehicle movements, leading to a reduction in tranquillity. Works may extend into hours of darkness, when construction lighting may be visible and uncharacteristic. There will be a change in character from open farmland to a construction site along the narrow, linear onshore ECC.

4.11.1.17 This will affect the local landscape along the corridor. Given the flat landscape and the low level of the works, the geographical extent will be quite narrow, up to a maximum of 500 m from the PEIR boundary, but often much less where containment is provided by shelterbelts, buildings and hedges. The overall duration of the onshore ECC works will be 36 months (30 months ECC construction, 36 months logistics compounds), though active construction is expected to be intermittent in any one location over this period. Therefore the duration is considered to be short term. On completion, the onshore ECC will be fully reinstated to its previous condition where possible (Co10).

4.11.1.18 The impact of the construction works in subarea 3 is predicted to be of **medium** scale and **local** geographical extent and will be **short term** and reversible. The magnitude is therefore considered to be **small**.

Significance of the effect

4.11.1.19 Overall, it is assessed that the sensitivity of the landscape receptor in subarea 3 is **medium** and the magnitude is **small**. The impact is of **minor adverse** significance, which is not significant in EIA terms.

Subarea 4 Leconfield to the OnSS and the 400kV onshore ECC area

Sensitivity of the receptor

4.11.1.20 The landscape in subarea 4 is generally characterised by gently undulating farmland. Medium scale fields are defined by hedgerows with occasional hedgerow trees. Small woods intersperse the predominantly agricultural landscape, occurring more frequently south-west of Beverley. This includes a small area of ancient woodland at Burton Bushes SSSI within the parkland at Westwood. Between the A1035 at Killingwoldgraves and the A164, the onshore ECC runs through the locally designated Yorkshire Wolds ILA. Risby Hall, a Grade II Registered Park and Garden, abuts the PEIR boundary and is of high landscape value. The subarea is also of recreational value as a number of long-distance walking routes including the Yorkshire Wolds Way cross the landscape.

4.11.1.21 The landscape of subarea 4 is deemed to be of medium susceptibility and medium value. The sensitivity of the receptor is therefore considered to be medium.

Magnitude of impact

4.11.1.22 As with subareas 2 and 3, construction of the onshore ECC between Leconfield and the OnSS will lead to disturbance and activity across the area within the PEIR boundary, including excavation, fencing, storage bunds, two logistics compounds, and several sections of temporary access tracks. The 400kV onshore ECC will involve further excavation between the OnSS and Creyke Beck Substation. Vegetation clearance will be limited as the onshore ECC has been routed to avoid trees and woodland (Co2), though the route of the 400kV onshore ECC is not determined. Some sections of hedge will be removed, and occasional field trees may need to be removed to allow the cables to be installed. Trenchless techniques will be used for crossing main rivers and IDB maintained drains (Co1). There will be an increase in activity, noise and vehicle movements, leading to a reduction in tranquillity. Works may extend into hours of darkness, when construction lighting may be visible and uncharacteristic. There will be a large change in character from open farmland to a construction site along the narrow, linear onshore ECC.

4.11.1.23 This will affect the local landscape along the onshore ECC. Given the flat landscape and the low level of the works, the geographical extent will be quite narrow, up to a maximum of 500 m from the PEIR boundary, but often much less where containment is provided by shelterbelts, buildings and hedges. The overall duration of the onshore ECC works will be 36 months (30 months ECC construction, 36 months logistics compounds), though a typical total duration of approximately three months of active construction is expected in any one location over this period. Therefore, the duration is of **short term**. On completion, the onshore ECC will be fully reinstated to its previous condition where possible (Co10).

4.11.1.24 The impact of the construction works in subarea 4 is predicted to be of **large** scale and **local** geographical extent and will be **short term** and **reversible**. The magnitude is therefore considered to be **small**.

Significance of the effect

4.11.1.25 Overall, it is assessed that the sensitivity of the receptor in subarea 4 is **medium** and the magnitude is **small**. The effect is of **minor adverse** significance, which is not significant in EIA terms.

Temporary effects: Construction phase - Temporary change to views in the landfall area and onshore ECC from construction activities. (LV-C-1)

Subarea 1 Landfall area

Sensitivity of the receptor

4.11.1.26 Receptors in this area who are considered to be of high susceptibility include local residents in Fraisthorpe and nearby farms, and recreational users of the beach, the car park at Auburn, and users of the PRoWs around Hamilton Hill Farm south of the landfall. Other visual receptors include road users and agricultural workers, whose susceptibility is judged to be lower. There is little evidence that value is placed on views, although as a visitor destination, views across the beach are likely to be valued for their openness.

4.11.1.27 Recreational visual receptors in subarea 1 are deemed to be of **high** susceptibility and their views are of **medium** value. The sensitivity of these receptors is therefore considered to be **medium**.

Magnitude of impact

4.11.1.28 Construction of the landfall will lead to disturbance and activity across a wide area. Features including fencing, compounds, equipment, soil storage and vehicle movements, which are not characteristic of the area, will be prominent within the open landscape from close range views experienced by users of the PRoWs to the south and west of the landfall area, and from the beach and car park at Auburn. Closure of the beach will affect people using the beach area, who will experience close range views of open-cut works across the beach and foreshore, giving rise to visual obstruction of characteristic long views along the coastal edge. Several of the PRoWs are likely to be temporarily stopped up or diverted around the landfall compound areas, and these receptors may therefore have close range views of the works. Residential receptors at Fraisthorpe do not generally have open views towards the landfall area, while Hamilton Hill Farm is screened behind landform and a shelter belt, and these receptors will experience a smaller scale of impact. There will be an increased presence of construction traffic using the local road network. From more distant receptors, such as people at Barmston and Barmston Sands, the scale of the effect will be reduced. The geographical extent of the effect is therefore relatively localised and will be contained by the rising ground of Hamilton Hill. For views from the beach, the low cliffs will provide some screening of the landfall compounds and works. The overall duration of the landfall and onshore ECC works will be 32 months and 36 months (30 months ECC construction, 36 months logistics compounds) respectively, though work at any one location is likely to be less than this. Duration of landfall works will be four months for each HDD, if this approach is used, while open cut works will have a duration of one month per circuit. On completion, the landfall area will be fully reinstated to its previous condition where possible (Co10).

4.11.1.29 The impact of the landfall and onshore ECC works on views in subarea 1 is predicted to be of large scale and local geographical extent and will be short term and reversible. The magnitude is therefore considered to be medium.

Significance of the effect

4.11.1.30 Overall, it is assessed that the sensitivity of the receptor is **medium,** and the magnitude is **medium**. The effect is of **moderate adverse** significance, which is significant in EIA terms.

Further mitigation

4.11.1.31 The effect on visual receptors in this area is considered significant due to the effect of open-cut or HDD works across the beach on people using the beach for recreation, as well as the visibility of the compound and works on approach to the beach. The duration of any beach closure will be minimised to limit the effect on users and should be considered in the context of otherwise continued beach access to the wide recreational resource of the beaches in the area, and from nearby villages. As per Co165, where the beach or PRoWs are required to be closed during the construction, they will not be closed for any longer than three months at any one time, or for six months in total over the whole construction period. Where closures are required for longer, ERYC will be informed in writing. Furthermore, Co158 states that impacts on the English Coast Path national route will be minimised by avoiding impacts.

Subarea 2 A165 to Rotsea Lane

Sensitivity of the receptor

4.11.1.32 Receptors in this area that are considered to be of high susceptibility include residents in Barmston, Lissett, Foston on the Wolds, Gembling, Brigham and nearby farms, as well as users of the PRoWs around Foston on the Wolds. Other visual receptors include road users and agricultural workers, whose susceptibility is judged to be lower. There is little evidence that value is placed on views, although views across open farmland from the remote villages are likely to be valued by local residents.

4.11.1.33 Recreational visual receptors in subarea 2 are deemed to be of **high** susceptibility and their views are of **medium** value. The sensitivity of these receptors is therefore considered to be **medium**.

Magnitude of impact

4.11.1.34 Construction of the onshore ECC will lead to disturbance and activity across a wide area of views as seen from receptors. Features including fencing, compounds, equipment, soil storage and vehicle movements will be prominent within the open landscape from close range views such as the PRoWs and properties within 1 km of the PEIR boundary. A number of PRoWs will be temporarily diverted around the onshore ECC. There will be an increased presence of construction traffic using the local road network. From more distant receptors, such as residents in Great Kelk, North Frodingham and Wansford, the scale of the effect will

be reduced. The geographical extent of the effect is therefore relatively localised and will be contained by intervening vegetation and built development. The overall duration of the landfall and onshore ECC works will be 32 months and 36 months (30 months ECC construction, 36 months logistics compounds) respectively, though work at any one location is likely to be less than this, therefore the duration is considered to be short term. On completion, the landfall area will be fully reinstated to its previous condition where possible (Co10).

4.11.1.35 The impact of the onshore ECC works on views in subarea 2 is predicted to be of **medium** scale and **local** geographical extent and will be **short term** and reversible. The magnitude is therefore considered to be **small**.

Significance of the effect

4.11.1.36 Overall, it is assessed that the sensitivity of the receptor is **medium** and the magnitude is **small**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

Subarea 3 Rotsea Lane to Leconfield

Sensitivity of the receptor

4.11.1.37 Receptors in this area who are considered to be of high susceptibility include local residents in Beswick, Lockington, Scorborough, Leconfield, and nearby farms, as well as users of the PRoWs including the Minster Way LDWR between Leconfield and Lockington. Other visual receptors include road users and agricultural workers, whose susceptibility is judged to be lower. There is little evidence that value is placed on views, however, views across the plain from PRoWs are likely to be valued for their openness.

4.11.1.38 Recreational visual receptors in subarea 3 are deemed to be of **high** susceptibility and their views are of **medium** value. The sensitivity of these receptors is therefore considered to be **medium**.

Magnitude of impact

4.11.1.39 Construction of the onshore ECC will lead to disturbance and activity across a wide area of views as seen from receptors. Features including fencing, compounds, equipment, soil storage and vehicle movements will be prominent within the open landscape from close range views such as the PRoWs and properties within 1 km of the PEIR boundary. Several of the PRoWs including the Minster Way LDWR will be diverted around the onshore ECC. There will be an increased presence of construction traffic using the local road network. From more distant receptors, such as residents in remote farmsteads on the fringes of Watton and Cranswick, the scale of the effect will be reduced. The geographical extent of the effect is therefore relatively localised and will be contained by intervening vegetation and built development. The overall duration of the landfall and onshore ECC works will be 32 months and 36 months (30 months ECC construction, 36 months logistics compounds) respectively, though work at any one location will be less than this, therefore the duration is considered

to be short term. On completion, the landfall area will be fully reinstated to its previous condition where possible (Co10).

4.11.1.40 The impact of the onshore ECC works on views in subarea 3 is predicted to be of medium scale and local geographical extent and will be short term and reversible. The magnitude is therefore considered to be small.

Significance of the effect

4.11.1.41 Overall, it is assessed that the sensitivity of the receptor is **medium,** and the magnitude is **small**. The effect is of **minor adverse** significance, which is not significant in EIA terms.

Subarea 4 Leconfield to the OnSS

Sensitivity of the receptor

4.11.1.42 Receptors in this area that are considered to be of high susceptibility include local residents in Leconfield, Cherry Burton, Bishop Burton, Beverley, Walkington, Skidby as well as nearby farms. Recreational users of the Beverley Westwood, and users of the many long distance walking routes and local PRoWs around Beverley are also of high susceptibility. Other visual receptors include road users and agricultural workers, whose susceptibility is judged to be lower. There is little evidence that value is placed on views, however, views across the gently undulating farmland from PRoWs are likely to be valued for their openness. Tree-lined vistas within Beverley Westwood are also likely to be valued by the local community and recreational users.

4.11.1.43 Recreational visual receptors in subarea 4 are deemed to be of **high** susceptibility and their views are of **medium** value. The sensitivity of these receptors is therefore considered to be **medium**.

Magnitude of impact

4.11.1.44 Construction of the onshore ECC will lead to disturbance and activity across a wide area of views as seen from the above receptors. Features including fencing, compounds, equipment, soil storage and vehicle movements will be prominent within the open landscape from close range views such as the PRoWs and properties within 1 km of the PEIR boundary. Several of the PRoWs including the Long-Distance Walking Routes will be temporarily stopped up or diverted around the onshore ECC. There will be an increased presence of construction traffic using the local road network. From more distant receptors, such as residents at Little Weighton, the scale of the effect will be reduced. The geographical extent of the effect is therefore relatively localised and will be contained by the rising ground of Hamilton Hill. The overall duration of the landfall and onshore ECC works will be 32 months and 36 months (30 months ECC construction, 36 months logistics compounds) respectively, though work at any one location is likely to be less than this, therefore the duration is of short term. On

completion, the landfall area will be fully reinstated to its previous condition where possible (Co10).

4.11.1.45 The impact of the onshore ECC works on views in subarea 4 is predicted to be of **medium** scale and **local** geographical extent, and will be **short term** and reversible. The magnitude is therefore considered to be **small**.

Significance of the effect

4.11.1.46 Overall, it is assessed that the sensitivity of the receptor is **medium,** and the magnitude is **small**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

Temporary effects on landscape and viewers of the OnSS site: Construction phase. Temporary loss of landscape features and changes to landscape character. (LV-C-4)

4.11.1.47 This section considers the impacts of construction works on subarea 5 (the 5 km area around the OnSS) as shown on Figure 4.6. However, the focus is on the OnSS site, associated temporary work and access areas, and the 400 kV onshore ECC area, as these will be the main areas of disturbance.

Sensitivity of the receptor

4.11.1.48 The area between the A164, A1079, and the Hull to Scarborough railway is intensively farmed, and is generally open in aspect. It includes some sizeable areas of woodland, as well as small field boundary trees and occasional shelter belts that locally contain views. Mature trees can be seen to be associated with properties, as at Burn Park Farm. Trees are also clustered along meandering watercourses. These trees and woodlands are highly susceptible to disturbance by construction works, though the most significant areas lie outside the PEIR boundary and could serve to screen and accommodate the works in the landscape. Otherwise there are few landscape features that are susceptible to the construction works. The landscape character of this location is influenced by infrastructure, including the A1079 embankments and overhead power lines. This influence becomes stronger further east, due to the presence of the Creyke Beck substation and the nearby gas power plant, as well as large glasshouses. Across the western part of this area the landscape remains more rural. Overall the susceptibility of the landscape to construction activity is judged to be **low**.

4.11.1.49 The landscape that will be affected by the construction works is not designated for its landscape value. The outer edge of the Yorkshire Wolds ILA is 1 km to the west, beyond the A164. The landscape is not of high scenic quality and is not rare. However, it does have recreational value represented by a range of PRoWs, the Beverley 20 LDWR, and the NCN Route 1. Overall the value of this landscape is judged to be **medium**.

4.11.1.50 The landscape that will be affected by construction of the OnSS and associated works is deemed to be of low susceptibility to construction and **medium** value. The sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of impact

4.11.1.51 Construction of the OnSS will lead to disturbance and activity across the area within the PEIR boundary, including temporary access tracks across fields, an extensive temporary logistics compound area, and the OnSS construction site, with associated fencing, storage bunds, equipment, signage and other temporary features. Within the OnSS site, there will be excavations and construction activity as work progresses on the various buildings, earth bunds, and other infrastructure. Vegetation clearance at the project outset, other than arable land, will be minimal as most trees are outside the PEIR boundary and will be not be affected by the works. Approximately 215 m of hedgerow will be removed north of Burn Park Farm. The 400 kV onshore ECC route has not been fully defined at this PEIR stage but will be selected to avoid impacts on the few areas of trees that do occur in this area (Co2). Given the nature of the change, from rural or semi-rural farmland to an extensive construction site, the scale of change in the landscape is large. The geographical extent of the change in landscape character will extend across an area defined by: the railway line to the east; the A1079 to the north; Birkhill Wood and Jillywood Lane to the north-west; the A164 to the west; conifers along the edge of the golf course to the south-west; and glasshouses and trees at Pillwood Farm to the south-east (see **Figure 4.6**). The works for the OnSS are expected to last up to 36 months, though different elements will be carried on at different times within this. As such, effects will not be evenly spread over the above area for the whole period but will change with construction phasing. Some effects will continue beyond the 36-month period, as the construction effects are partly reversible, in that areas affected by the temporary compound, temporary access tracks and 400 kV onshore ECC will be reinstated to their former condition as agricultural land (Co10). The effects of permanent features are assessed separately below (**paragraphs 4.11.2.4** to **4.11.2.112**).

4.11.1.52 The impact of the construction works for the OnSS and 400 kV onshore ECC is predicted to be of **large** scale and **relatively localised** geographical extent. It will be **medium term** and partly reversible. The magnitude is therefore considered to be **medium**.

Significance of the effect

4.11.1.53 Overall, it is assessed that the sensitivity of the receptor is **medium** and the magnitude is **medium**. The impact is of **moderate adverse** significance, which is significant in EIA terms. Beyond the immediate geographical extent of the OnSS, the impact on the landscape will not be significant.

Further mitigation

4.11.1.54 Landscape mitigation planting should be established as early as possible in the construction phase, ideally before the stripping of soil and other vegetation from the site. Proposed landscape mitigation planting is illustrated indicatively in **Figure 4.8**, and the early

establishment of all or part of this scheme will help to integrate the works into the landscape, though it is likely that **significant** residual effects (of no more than **moderate adverse** significance) would remain for the duration of the works, due to the level and extent of disturbance.

Temporary effects on landscape and viewers of the OnSS: Construction phase. Temporary change to views from construction activities. (LV-C-4)

4.11.1.55 This section considers the impacts of construction works on views experienced by receptors (people) in proximity to the OnSS site and associated temporary works areas (refer to **Figure 4.6**).

Sensitivity of the receptor

4.11.1.56 Receptors in close proximity to the OnSS and temporary works areas include residential receptors at Burn Park Farm, Burn Park Cottages, Poplar Farm, Jillywood Farm and Platwoods Farm, all within 500 m of the Hornsea Four boundary. Other nearby residential receptors include those along Dunswell Road east of the railway, at Cottingham Parks to the south and, north of the A1079, and at Model Farm and Halfway House.

4.11.1.57 Recreational receptors include people walking on PRoWs, cyclists on NCN Route 1, and users of the golf course to the south. PRoWs include: Skidby Footpaths 7, 10, 11, 12, 16 and 17; Woodmansey Footpaths 4, 6, 7 and 30; and Rowley Footpath 12. Skidby Footpath 16 crosses the OnSS site and will be permanently diverted for the duration of the works (Co79). Other PRoWs cross the onshore ECC and 400 kV onshore ECC area and will be subject to temporary closure or temporary diversion (Co79, Co165). To the north, PRoWs form part of the Beverley 20 LDWR, which crosses the A1079 and then runs parallel to it, heading west. NCN Route 1 links Cottingham Parks with Beverley, via the Creyke Beck substation and the A1079 overbridge.

4.11.1.58 Other receptors include road users passing on the A1079 and railway passengers, as well as people working in the area, such as on farms, at the Creyke Beck substation, or at the nearby glasshouses. Views of construction works from other roads are likely to be limited.

4.11.1.59 Views in this area are not subject to any particular recognition. Views are likely to be valued by the local community, who will be the primary receptors at the locations noted above.

4.11.1.60 Residential receptors are of high susceptibility, and the value of the views they experience is low as defined in **Table 4.17**. The sensitivity of residential receptors to the construction works is judged to be high, due to their prolonged exposure to changes in view. Recreational receptors are also of high susceptibility, and the value of their views is low. The sensitivity of recreational receptors is judged to be medium, as their exposure to changes in views is temporary as they pass along routes or take part in recreational activity. Susceptibility of

other receptors in the area, e.g. transport and employment receptors, is judged to be low, and the value of their views is low. The sensitivity of these receptors is therefore low.

Magnitude of impact

4.11.1.61 Construction works will be apparent in views as a broad area of disturbance. There will be limited loss of visual features in the landscape, as trees will be protected, but the visual presence of ground clearance, site cabins, vehicle movements, fencing and lighting at night will be very apparent, particularly at close range, i.e. within 1 km of the works.

4.11.1.62 The scale of the change will be greatest at Burn Park Farm, which will experience construction activity to the north and north east from the OnSS site, and the temporary logistics compound to the west and north west. Burn Park Farm will also experience construction to the south and east from the onshore ECC, although this may not occur concurrently with construction of the OnSS. Other local residential receptors will also have clear views of the construction works, though these will only be in one direction: construction works will nevertheless occupy a wide angle of view from Burn Park Cottages and Poplar Farm. The scale of visual change at all the properties within 500 m of the PEIR boundary will be large. A similar scale of change is anticipated for views experienced by recreational users in the area, on the routes noted above.

4.11.1.63 At other locations noted in **paragraph 4.11.1.56**, with the exception of Burn Park Farm, Burn Park Cottages and Poplar Farm discussed in the preceding paragraph, receptors will experience more limited changes, as ground level disturbance and activity will be less clearly visible due to intervening trees, buildings and other landscape features, such as the A1079. Construction works will still be a visual presence in the view but will constitute a smaller element within it. The scale of the change from these receptors will be medium or low.

4.11.1.64 The geographical extent of the large-scale changes in view will be limited by: the A1079 to the north; Birkhill Wood to the north-west; coniferous trees around the golf course to the south-west; glasshouses and trees to the south-east; and the Creyke Beck substation to the east. Though there will be views of the construction works from beyond this area, the resulting changes will be of smaller scale as noted above.

4.11.1.65 The works are expected to last up to 36 months. Some effects will continue beyond this as the Construction effects are only partly reversible, in that areas affected by the temporary logistics compound, temporary access track and 400 kV onshore ECC will be reinstated to their former condition as agricultural land (Co10). The effects of permanent features are assessed separately below (**paragraph 4.11.2.4– 4.11.2.112)**.

4.11.1.66 The impact of the construction works for the OnSS and 400 kV onshore ECC, on nearby receptors, is predicted to be of large scale and relatively localised geographical extent. It will be medium term and partly reversible. The magnitude is judged to be **large** for receptors at Burn Park Farm, Burn Park Cottages, Poplar Farm and Platwoods Farm, and for users of

PRoWs and NCN Route 1 within 750 m of the works. For more distant receptors the scale of change will be medium or low, resulting in a **small** magnitude.

Significance of the effect

4.11.1.67 Overall, it is assessed that the sensitivity of residential receptors is **high** and that of recreational receptors is **medium**. The magnitude will be **large** at the receptors within 750 m noted above, though less for other more distant receptors. The impact of construction works on views experienced by nearby residential receptors is therefore of **major adverse** significance, while the impact on nearby recreational receptors is of **moderate adverse** significance, both of which are significant in EIA terms.

Further mitigation

4.11.1.68 Landscape mitigation planting should be established as early as possible in the construction phase, ideally before the stripping of soil and other vegetation from the site. Proposed landscape mitigation planting is illustrated indicatively in **Figure 4.8**, and the early establishment of all or part of this scheme will help to reduce the visibility of the works in close range views, though it is likely that significant (**moderate adverse** significance) residual effects would remain for the duration of the works, due to the level and extent of disturbance that will be apparent.

Future monitoring

4.11.1.69 No requirement for monitoring of landscape and visual impacts during construction has been identified.

Figure 4.8: Indicative Landscape Mitigation Plan (Not to Scale).

4.11.2 Operation and Maintenance

4.11.2.1 The landscape and visual impacts arising from the operation and maintenance of Hornsea Four are listed in **Table 4.12** along with the maximum design scenario against which each operation and maintenance phase impact has been assessed.

4.11.2.2 A description of the potential effect on landscape and visual receptors caused by each identified impact is given below. All operational phase effects are presented as a detailed assessment, as defined at **Section 4.10.9**. Reference is made to the ZTV (**Figure 4.2**) and the photomontages presented in **Volume 6, Annex 4.1**.

4.11.2.3 The following sections relate to subarea 5 only, being the Hornsea Four landscape and visual study area for the OnSS, as described at **paragraph 4.5.1.5**.

Permanent effects on landscape and viewers of the OnSS site: Operational phase. Permanent loss of landscape features and changes to landscape character from operation of the OnSS. (LV-O-5)

4.11.2.4 This section considers the direct effects of the OnSS on the local landscape character, as well as the indirect effects on the character of the wider landscape of the 5 km Hornsea Four landscape and visual study area. The latter are presented by the LCTs into which the OnSS falls, as set out in **Section 4.7.3** and shown in **Figure 4.4**.

4.11.2.5 Effects on the landscape are considered at Year 1 following completion of the OnSS. Where significant Year 1 effects are identified, additional mitigation is detailed, and a further assessment is made at Year 10, when mitigation planting will be maturing and starting to take full effect, and at Year 30 when planting will be fully matured. As such, Year 10 and Year 30 effects represent the residual effects following the implementation this secondary mitigation. **Figure 4.8** provides an indicative illustration of the mitigation planting.

Landscape of the OnSS site, within the Sloping Farmland (LCT 16)

Sensitivity of the receptor

4.11.2.6 The sensitivity of the landscape of the OnSS site and the area around it is described at **paragraph 4.11.1.48** in relation to construction works. It is judged that the sensitivity of this area to the operational OnSS is the same as for construction works: the landscape that will be affected by the operational phase of the OnSS is judged to be of **low** susceptibility and **medium** value. The sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of impact: Year 1

4.11.2.7 The OnSS site is currently divided into two large fields by a hedgerow, with a large hedgerow tree. It will be bounded to the south by the existing overhead power lines, to the east and west by field boundaries and to the north by existing vegetation along the stream. The only notable landscape elements which will be permanently lost will be c.215 m of hedgerow

and the mature hedgerow tree towards the south western end of this hedge. Other landscape features along the site boundary will be protected during construction works and retained.

4.11.2.8 The OnSS will include buildings, electrical infrastructure and overhead lines extending across a site some 500 m long from east to west and 250 m wide from north to south and will be similar in character to the existing substation to the east. It will be enclosed within security fencing, and signage will be provided. Night time security lighting will influence the character of the landscape and views during hours of darkness.

4.11.2.9 The presence of the OnSS will affect the existing landscape character within around a 750 m radius of the site. The extent of this effect will be contained to the east by the existing Creyke Beck Substation, to the north by the A1079 and the vegetation along its embankments. Birkhill Wood to the north west and tall hedgerows to the west will limit the geographical extent of effects to the west, as will the vegetation bordering Cottingham Parks Golf Course and the glasshouses fringing Cottingham to the south.

4.11.2.10 New woodland and hedgerow planting around the perimeter of the site will also be apparent as a new feature within this open landscape, but given it will take time to grow, it is unlikely to influence the character of the landscape for the first five to ten years. Beyond this the planting will gradually mature through the lifetime of the project.

4.11.2.11 The change in the landscape will extend over the lifetime of the project (35 years). The above ground visible elements of the OnSS can be removed at the end of its operational life and the land returned to agriculture or woodland. The new additional perimeter planting, which will have matured by the end of the operational life, is expected to remain as a permanent feature of the landscape.

4.11.2.12 The operational impact of the OnSS is predicted to be of **large** scale and **relatively localised** geographical extent. It will be **long term** and **partly reversible**. The magnitude is therefore considered to be **large**.

Significance of the effect: Year 1

4.11.2.13 Overall, it is assessed that the sensitivity of the landscape is **medium,** and the magnitude will be **large**, across the site and local to it (within about 750 m of the OnSS). The effect will be of **major adverse** significance, which is significant in EIA terms.

Further mitigation

4.11.2.14 Woodland and hedge planting will be incorporated around the perimeter of the OnSS, in so far as service and access and maintenance restrictions allow. This will help screen or filter views to lower elements of the OnSS and will help integrate it into the landscape, particularly in summer months when deciduous vegetation is in leaf. Some low-level earth mounding to the south west, planted with scrub, will also assist in integration of the new structures into the landscape. Early establishment of screen planting at the outset of construction works, including fast-growing species, will ensure mitigation is effective as quickly as possible. No off-site mitigation has been identified that would further reduce residual effects at any location resulting in a lower level of significance. An indicative landscape plan is included in **Figure 4.8**, showing how landscape treatment will be designed to reduce the impacts on the local landscape.

4.11.2.15 The use of lighting should be kept to a minimum through the implementation of movement-controlled lighting during the hours of darkness, as well as directional lighting to avoid light spill. Proposed aspirations for lighting, among other design approaches, at the OnSS are addressed in **Volume 4, Annex 4.6: Outline Design Vision Statement**.

Significance of the effect: Year 10

4.11.2.16 By Year 10, it is anticipated that maturing mitigation planting is likely to be effective in partly absorbing the OnSS into the landscape, reducing the effect on landscape character. Disturbance arising from construction works will have fully recovered. It is judged that the magnitude at Year 10 will have reduced to **medium**. The effect will be of **moderate adverse** significance, which is significant in EIA terms.

Significance of the effect: Year 30

4.11.2.17 By Year 30, it is anticipated that mature mitigation planting is likely to be more fully effective in absorbing the OnSS into the landscape, and the OnSS will be seen as an established feature of the local landscape character. It is judged that the magnitude at Year 30 will have reduced to **small**. The effect will be of **minor adverse** significance, which is not significant in EIA terms.

Farmed Urban Fringe (LCT 17)

4.11.2.18 The Farmed Urban Fringe LCT includes the area along the northern edge of the City of Hull and includes the settlement of Cottingham as well as the landscape immediately south of the OnSS (see **Figure 4.4**). The whole LCT is within the Hornsea Four landscape and visual study area, and it extends to within a few hundred metres of the OnSS. The part of this LCT in close proximity to the OnSS is considered along with the landscape of the OnSS site, at **paragraph 4.11.2.6**.

Sensitivity of the receptor

4.11.2.19 The landscape fringes the urban area of Cottingham and north Hull and is characterised by horticultural and recreational land uses including large glasshouses and golf courses with non-native tree belts. Roads, overhead power lines and settlement affect the remaining agricultural areas, which tend to be smaller in scale and more enclosed than the open Sloping Farmland to the north. The landscape is not designated, although the Yorkshire Wolds ILA is close to the western edge. The formal recreational facilities and numerous PRoWs are valued by local communities.

4.11.2.20 The landscape of the Farmed Urban Fringe is judged to be of **medium** susceptibility to permanent changes outside the LCT, and of **low** value. The sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of impact: Year 1

4.11.2.21 As shown by the ZTV (**Figure 4.2**), the OnSS will only be seen from the northern part of this LCT, with no visibility from within or south of Cottingham. The OnSS will frequently be screened or filtered by hedgerows, tree belts and by built structures such as the glasshouses. The Farmed Urban Fringe is at a similar elevation as the Sloping Farmland and, as such, does not allow elevated views across it. The OnSS will be occasionally be apparent in a similar way to the glimpses of the existing electrical infrastructure installations to the north. The scale of the change in landscape character will be small, and the geographical extent limited as experienced from this area. The effect will extend over the lifetime of the project (35 years) and will be partly reversible as noted above.

4.11.2.22 The operational impact of the OnSS on the Farmed Urban Fringe LCT is predicted to be of **small** scale and **localised** geographical extent and will be **long term** and **partly reversible**. The magnitude is therefore considered to be **small**.

Significance of the effect: Year 1

4.11.2.23 Overall, and considering the factors set out above it is predicted that the sensitivity of the landscape is **medium,** and the magnitude of change will be **small**. The effect will be of **minor adverse** significance, which is **not significant** in EIA terms.

Open High Rolling Farmland (LCT 13)

4.11.2.24 The Open High Rolling Farmland LCT covers the western part of subarea 5, including the villages of Walkington and Skidby. It lies around 1.2 km from the OnSS site and extends well beyond the Hornsea Four landscape and visual study area to the west (see **Figure 4.4**).

Sensitivity of the receptor

4.11.2.25 The landscape comprises large scale open fields, sloping very gently down to the east, with long distance views, few trees and low hedges. There is more woodland around Risby Park, west of the A146, which helps to screen views across to the flatter and lore low lying landscape of the Sloping Farmland to the east. The Open High Rolling Farmland is almost all within the locally designated Yorkshire Wolds ILA. The area is a focus for recreation, with several long-distance routes, and the Yorkshire Wolds have associations with art and artists.

4.11.2.26 The landscape of the Open High Rolling Farmland is judged to be of **medium** susceptibility to permanent changes outside the LCT, and of **medium** value. The sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of impact: Year 1

4.11.2.27 The OnSS will be apparent as a relatively small and distant feature from most of this LCT and will frequently be screened or filtered by woodland and hedgerows. The ZTV (**Figure 4.2**) indicates that visibility of the OnSS will be limited to the ridge east of Little Weighton and scattered areas to the north. It will be set within a lower landscape and one in which similar electrical infrastructure installations, as well as major roads, glasshouses, and a variety of other built development are commonplace, set within a framework of agricultural land. The size and scale of the effect will be small, and the geographical extent limited as shown by the ZTV. The effect will extend over the lifetime of the project (35 years). The above ground visible elements of the OnSS can be removed at the end of its operational life and the land returned to agriculture or woodland. The new additional perimeter planting, which will have matured by the end of the operational life, is expected to remain as a permanent feature of the landscape.

4.11.2.28 The operational impact of the OnSS on the Open High Rolling Farmland LCT is predicted to be of **small** scale and **relatively localised** geographical extent and will be **long term** and **partly reversible**. The magnitude is therefore considered to be **small**.

Significance of the effect: Year 1

4.11.2.29 Overall, and considering the factors set out above it is predicted that the sensitivity of the landscape is **medium,** and the magnitude of change will be **small**. The effect will be of **minor adverse** significance, which is **not significant** in EIA terms.

Low Lying Drained Farmland (LCT 18)

4.11.2.30 The Low-Lying Drained Farmland LCT occurs in the north-east of subarea 5 (see **Figure 4.4**). It is centred on the River Hull and includes the villages of Woodmansey and Thearne. It is 2.8 km from the OnSS at its closest point.

Sensitivity of the receptor

4.11.2.31 This low lying LCT extends up the flood plain of the River Hull. It is characterised by horticultural land uses including large glasshouses as well as industrial units set within a pattern of smaller fields, with some being used for pasture. Roads, overhead power lines and settlement fragment this area. The landscape is not designated, either nationally or locally. PRoWs follow the river and canal, including the Wilberforce Way LDWR and are valued by local communities.

4.11.2.32 The landscape of the Low-Lying Drained Farmland is judged to be of **medium** susceptibility to permanent changes outside the LCT, and of **low** value. The sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of impact: Year 1

4.11.2.33 The OnSS will be very occasionally apparent as a feature in the landscape as seen from the Low-Lying Drained Farmland LCT, as shown in the ZTV (**Figure 4.2**). It will be apparent as a relatively small and distant feature and will frequently be screened or filtered by hedgerows, tree belts and by built structures such as the glasshouses. The Low-Lying Drained Farmland is below or at a similar elevation as the Sloping Farmland and, as such, does not allow elevated views across it. The upper parts and structures of the OnSS will be occasionally be apparent in a similar way to the glimpses of the existing electrical infrastructure installations at Creyke Beck. The size and scale of the effect will be small, and the geographical extent limited as experienced from this area. The effect will extend over the lifetime of the project (35 years) and will be partly reversible as noted above.

4.11.2.34 The operational impact of the OnSS on the Low-Lying Drained Farmland LCT is predicted to be of **small** scale and **localised** geographical extent and will be **long term** and **partly reversible**. The magnitude is therefore considered to be **small**.

Significance of the effect: Year 1

4.11.2.35 Overall, and considering the factors set out above it is predicted that the sensitivity of the landscape is **medium,** and the magnitude of change will be **small**. The effect will be of **minor adverse** significance, which is **not significant** in EIA terms.

Permanent change to views from operation of the OnSS. (LV-O-5)

4.11.2.36 This section sets out the impacts of presence of the OnSS on views experienced by people within the 5 km Hornsea Four landscape and visual study area. The assessment is based on consideration of ten representative viewpoints that were selected to represent the range of views and viewers within the Hornsea Four landscape and visual study area. These viewpoints were the subject of consultation with ERYC as noted in **Section 4.4**. The locations of the viewpoints are shown in **Figure 4.2**, and baseline descriptions of the currently available view are provided in **Table 4.9**.

4.11.2.37 Photographs from each of the ten viewpoints are included in **Volume 6, Annex 4.1**. visualisations of the maximum design scenario (see **Table 4.12**) are presented for the closest viewpoints. In addition, photomontage visualisations have been prepared for four of the closest viewpoints, to illustrate the likely appearance of both the HVAC and HVDC options. Visualisations do not illustrate any proposed mitigation, such as colours, finishes or landscape planting.

4.11.2.38 Effects on views are considered at Year 1 following completion of the OnSS. Where significant Year 1 effects are identified, additional mitigation is detailed, and a further assessments are made at Year 10 when mitigation planting is maturing and taking effect, and at Year 30 when it will be fully matured. As such, Year 10 and Year 30 effects represent the residual effects following the implementation this secondary mitigation. The landscape planting shown indicatively in **Figure 4.8** has been given consideration in the assessment process (see **Section 4.10.10**).

Viewpoint 1 PRoW South of Burn Park Farm

4.11.2.39 Baseline photography and photomontages for this viewpoint of the HVAC and HVDC options are shown in **Volume 6, Annex 4.1**, Figures 1 and 2. A photomontage illustrating the maximum design scenario is shown in **Volume 6, Annex 4.1**, Figure 3.

Sensitivity of the receptor

4.11.2.40 A small number of residential receptors (Burn Park Farm and Burn Park Cottages) and a small to moderate number of recreational receptors (users of footpaths SKIDF16, SKIDF17, NCN Route 1) are likely to experience views of this nature. The landscape is not designated but is valued locally by residents and people who walk through it. The presence of existing energy infrastructure is apparent as an existing feature of the view.

4.11.2.41 Visual receptors at this location are judged to be of **high** susceptibility to changes in the view, and their views are of **medium** value. The sensitivity of the receptor is therefore considered to be **high**.

Magnitude of impact: Year 1

4.11.2.42 There will be large scale changes to the view, with new landscape features seen at close distances, affecting a substantial part of the view. The OnSS structures are likely to be frequently visible at both close and intermediate ranges in northward views from the dwellings and recreational routes noted above. The characteristic panoramic views of arable land associated with this viewpoint are likely to be significantly altered by the proposed development, albeit that the change will be seen in the context of the existing overhead power lines, and electrical infrastructure around Creyke Beck Substation. The OnSS will be visible to residents and users of PRoW SKIDF16 at very close range from Burn Park Farm, covering approximately 150° of the view to the north-east. Security lighting will

be apparent during hours of darkness. The change in view will last for 35 years and after this time the OnSS structures will be removed.

4.11.2.43 The operational impact of the OnSS on views from this location, at Year 1, is judged to be of **large** scale and **localised** geographical extent and will be **long term** and **partly reversible**. The magnitude is therefore considered to be **large**.

4.11.2.44 A residential visual amenity assessment has not been undertaken in terms of the process set out in published guidance (Landscape Institute, 2019). However, given the proximity of Burn Park Farm some consideration has been given to the potential for effects on residential visual amenity or 'living conditions' at this location. The dwelling house at Burn Park Farm is located to the south-east of a group of outbuildings. The principal aspect of the house faces south-east away from these buildings, across lawns and paddocks, and framed by mature trees. The rear (north-west) façade faces farm buildings, with a pylon beyond that is likely to be visible from the house. There are no windows on the north-east side of the house. It is likely that the OnSS will be visible from upper rear windows, partly filtered by trees around the house and in the context of the pylon to the north-west, and from the approach to the house. It is not considered likely that these views will be so extensive or inescapable that 'living conditions' at the property would be affected. On this basis no residential visual amenity assessment is considered necessary at this or any other property.

Significance of the effect: Year 1

4.11.2.45 Overall, it is judged that the sensitivity of the visual receptors at this location is **high** and the magnitude will be **large**. The effect will be of **major adverse** significance, which is significant in EIA terms.

Further mitigation

4.11.2.46 It is recommended that vegetation in the form of perimeter hedgerows/shelter belts is proposed as part of secondary mitigation measures, to help provide a framework and integrate the development into the landscape (see **Figure 4.8**). The use of directional or motion-controlled lighting at the OnSS will minimise the amount of light spill that may affect views. No requirement for off-site mitigation was identified. Aspirations for reducing effects through lighting and other aspects of the OnSS design are explored further in **Volume 4, Annex 4.6: Outline Design Vision Statement**.

Significance of the effect: Year 10

4.11.2.47 By Year 10, it is anticipated that screening and filtering of views from maturing mitigation planting is likely to be effective, reducing the effect that the OnSS has on visual amenity in the vicinity of this viewpoint. Growth of the mitigation planting is likely to obscure the lower level structures in the OnSS, though upper parts of buildings, gantries and masts will still be visible. Remaining effects of construction works will have been fully restored, and weathering of built features will It is judged that the magnitude at Year 15 will have reduced

to **medium**. The effect will be of **moderate adverse** significance, which is **significant** in EIA terms.

Significance of the effect: Year 30

4.11.2.48 By Year 30, mitigation planting will be fully mature, with additional understorey providing a dense visual barrier between the PRoW and the OnSS. It is anticipated that glimpsed views of the OnSS, particularly taller structures, will be available, but that these would form part of the established context of the views in this part of the countryside. It is judged that the magnitude at Year 30 will have reduced to **small**. The effect will be of **minor adverse** significance, which is not significant in EIA terms.

Viewpoint 2 Park Lane, Cottingham

4.11.2.49 Baseline photography for this viewpoint and photomontages of the HVAC and HVDC options are shown in **Volume 6, Annex 4.1**, Figures 4 and 5. A photomontage illustrating the maximum design scenario is shown in **Volume 6, Annex 4.1**, Figure 6.

Sensitivity of the receptor

4.11.2.50 Receptors are likely to be moving through the landscape, experiencing close range views of the site for a moderate duration. Residential receptors in the house immediately south of the viewpoint are unlikely to experience similar views, due to the line of trees obscuring views northwards from the house. This viewpoint is on NCN Route 1, which is signposted and promoted nationally, it is valued highly by recreational receptors. The view at this point is considered to be of modest quality, with some typical arable landscape features and some existing energy infrastructure.

4.11.2.51 Visual receptors at this location are judged to be of **high** susceptibility to changes in the view, and their views are of **medium** value. The sensitivity of the receptor is therefore considered to be **high**.

Magnitude of impact: Year 1

4.11.2.52 There will be a large-scale change to the view and new landscape features seen at close distances will affect a substantial part of the view. The OnSS is likely to be frequently visible at both close and intermediate ranges from all directions from nearby PRoWs. A substantial portion of the view from this point will be affected by the proposed development. Extensive, panoramic views will be interrupted by the OnSS, albeit that the change will be seen in the context of the existing electrical infrastructure around Creyke Beck Substation. Security lighting will be apparent during hours of darkness. The change in view will last for 35 years and after this time the OnSS structures will be removed.

4.11.2.53 The operational impact of the OnSS on views from this location, at Year 1, is judged to be of **large** scale and **localised** geographical extent and will be **long term** and **partly reversible**. The magnitude is therefore considered to be **large**.

Significance of the effect: Year 1

4.11.2.54 Overall, it is judged that the sensitivity of the visual receptors at this location is **high** and the magnitude will be **large**. The effect will be of **major adverse** significance, which is **significant** in EIA terms.

Further mitigation

4.11.2.55 It is recommended that vegetation in the form of perimeter hedgerows/shelter belts is proposed as part of secondary mitigation measures, to help provide a framework and integrate the development into the landscape (see **Figure 4.8**). No requirement for off-site mitigation was identified. The use of directional or motion-controlled lighting at the OnSS will minimise the amount of light spill that may affect views. Aspirations for reducing effects through lighting and other aspects of the OnSS design are explored further in **Volume 4, Annex 4.6: Outline Design Vision Statement**.

Significance of the effect: Year 10

4.11.2.56 By Year 10, it is anticipated that maturing mitigation planting will have become effective in absorbing the OnSS into the wider view, which is already characterised by large-scale infrastructure. While the OnSS is unlikely to be fully screened from view, it will appear less stark as construction disturbance will have been fully restored and recovered by Year 10. It is judged that the magnitude at Year 10 will have reduced to **small**. The effect will be of **minor adverse** significance, which is **not significant** in EIA terms.

Significance of the effect: Year 30

4.11.2.57 By Year 30, it is anticipated that mitigation planting will be fully mature, further reducing the effect that the OnSS has on visual amenity in the vicinity of this viewpoint. It is judged that the magnitude at Year 30 remain **small**. The effect will be of **minor adverse** significance, which is **not significant** in EIA terms.

Viewpoint 3 Footbridge over A1079

4.11.2.58 Baseline photography for this viewpoint and photomontages of the HVAC and HVDC options are shown in **Volume 6, Annex 4.1,** Figures 7 and 8. A photomontage illustrating the maximum design scenario is shown in **Volume 6, Annex 4.1**, Figure 9.

Sensitivity of the receptor

4.11.2.59 Receptors at this point may include recreational users of the bridle path, including cyclists, experiencing sustained views to the south if travelling in this direction. Motorists on the

A1079 may experience views that are similar in composition, although more fleeting due to screening by roadside vegetation. The presence of existing energy infrastructure is apparent as an existing feature, particularly in the form of pylons and overhead lines. This viewpoint is located on a PRoW which forms part of the NCN Route 1 and the Beverley 20 LDWR. The area is valued locally by residents and people who walk, cycle or ride through it.

4.11.2.60 Visual receptors at this location are judged to be of **high** susceptibility to changes in the view, and their views are of **medium** value. The sensitivity of the receptor is therefore considered to be **high**.

Magnitude of impact: Year 1

4.11.2.61 The proposed development is likely to result in a clearly perceptible change to the mid-ground composition of the view offered from this point. New elements are likely to break the skyline, as is the case with the existing energy infrastructure associated with Creyke Beck Substation. Views are expected to be similar from other nearby PRoWs to the south of the A1079, and at occasional, intermittent points whilst travelling along the A1079. Although viewed from a distance at this viewpoint, the OnSS is expected to break the skyline, becoming more noticeable. The proposed development will increase the presence of energy infrastructure in this valued landscape. Security lighting will be apparent during hours of darkness. The change in view will last for 35 years and after this time the OnSS structures will be removed.

4.11.2.62 The operational impact of the OnSS on views from this location, at Year 1, is judged to be of **medium** scale and **localised** geographical extent and will be **long term** and **partly reversible**. The magnitude is therefore considered to be **medium**.

Significance of the effect: Year 1

4.11.2.63 Overall, it is judged that the sensitivity of the visual receptors at this location is **high** and the magnitude will be **medium**. The effect will be of **moderate adverse** significance, which is **significant** in EIA terms.

Further mitigation

4.11.2.64 It is recommended that vegetation in the form of perimeter hedgerows/shelter belts is proposed as part of secondary mitigation measures, to help provide a framework and integrate the development into the landscape (see **Figure 4.8**). Woodland blocks, such as Birkhill Wood to the south-west, contribute to the visual amenity in this area. More substantial areas of planting would be in-keeping with the view from this location. No requirement for off-site mitigation was identified. The use of directional or motion-controlled lighting at the OnSS will minimise the amount of light spill that may affect views. Aspirations for reducing effects through lighting and other aspects of the OnSS design are explored further in **Volume 4, Annex 4.6: Outline Design Vision Statement**.

Significance of the effect: Year 10

4.11.2.65 By Year 10, it is anticipated that some screening and filtering of views from maturing mitigation planting is likely to be effective, reducing the effect that the OnSS has on visual amenity in the vicinity of this viewpoint. Although due to the elevated viewpoint more of the OnSS will be visible above maturing planting, this is only the case for a short section of this path on the bridge, and is therefore a passing view. It is judged that the magnitude at Year 10 will be **small**. The effect will be of **minor adverse** significance, which is **not significant** in EIA terms.

Significance of the effect: Year 30

4.11.2.66 By Year 30, it is anticipated that mature mitigation planting is likely to be fully effective, although the upper parts of the OnSS will still be visible from this slightly elevated viewpoint. It is judged that the magnitude at Year 30 will remain **small**. The effect will be of **minor adverse** significance, which is **not significant** in EIA terms.

Viewpoint 4 PRoW east of A164

4.11.2.67 Baseline photography for this viewpoint and photomontages of the HVAC and HVDC options are shown in **Volume 6, Annex 4.1**, Figures 10 and 11. A photomontage illustrating the maximum design scenario is shown in **Volume 6, Annex 4.1**, Figure 12.

Sensitivity of the receptor

4.11.2.68 Receptors at this point may include hotel guests, recreational users of the footpath, experiencing sustained views to the east if travelling in this direction, or those playing golf who are less likely to be observing the landscape. Motorists on the A164 may experience views that are similar in composition, although more fleeting due to speed of travel and screening from roadside vegetation. The presence of existing energy infrastructure is apparent as an existing feature, particularly in the form of pylons and power lines running immediately overhead. This viewpoint is located on a public footpath, and the view is valued locally by people who walk along it.

4.11.2.69 Visual receptors at this location are judged to be of **medium** susceptibility to changes in the view, and their views are of **low** value. The sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of impact: Year 1

4.11.2.70 The viewpoint is situated approximately 1km from the OnSS site. From this distance, accounting for topography and land cover, the OnSS is likely to generate a small change in the view. The development will occupy a restricted portion of the view. Changes in the view would be felt over a limited area, but geographical extent is considered medium due to a higher concentration of people, expected to be using facilities such as the hotel and golf

club. The change in view will last for 35 years and after this time the OnSS structures will be removed.

4.11.2.71 The operational impact of the OnSS on views from this location, at Year 1, is judged to be of **medium** scale and **relatively localised** geographical extent and will be **long term** and **partly reversible**. The magnitude is therefore considered to be **medium**.

Significance of the effect: Year 1

4.11.2.72 Overall, it is judged that the sensitivity of the visual receptors at this location is **medium** and the magnitude will be **medium**. The effect will be of **moderate adverse** significance, which is **significant** in EIA terms.

Further mitigation

4.11.2.73 It is recommended that vegetation in the form of perimeter hedgerows/shelter belts is proposed as part of secondary mitigation measures, to help provide a framework and integrate the development into the landscape (see **Figure 4.8**). No requirement for off-site mitigation was identified. Aspirations for reducing effects through lighting and other aspects of the OnSS design are explored further in **Volume 4, Annex 4.6: Outline Design Vision Statement**.

Significance of the effect: Year 10

4.11.2.74 By Year 10, it is anticipated that mitigation planting will be maturing, which will help to absorb the OnSS into the landscape from this viewpoint. Although due to elevation, planting will not fully screen views, by Year 10 the finishes of the structures will have weathered somewhat, reducing their visual prominence. It is judged that the magnitude at Year 30 will have reduced to **small**. The effect will be of **minor adverse** significance, which is **not significant** in EIA terms.

Significance of the effect: Year 30

4.11.2.75 By Year 30, mitigation planting will be fully mature, though is unlikely to obscure the OnSS from this elevated viewpoint. The visible parts of the OnSS will be seen as an established element of this view, with limited effect on visual amenity in the vicinity of this viewpoint. It is judged that the magnitude at Year 30 will remain **small**. The effect will be of **minor adverse** significance, which is **not significant** in EIA terms.

Viewpoint 5 A164 layby near Bentley

4.11.2.76 Baseline photography for this viewpoint is shown in **Volume 6, Annex 4.1**, Figure 13.

Sensitivity of the receptor

4.11.2.77 Receptors represented by this viewpoint are motorists travelling on the A164, and those motorists who may stop in the layby for a limited time. The viewpoint is on the boundary of the Yorkshire Wolds ILA, but is not representative of views from or to the designated landscape. The view is very restricted due to the roadside vegetation.

4.11.2.78 Visual receptors at this location are judged to be of **low** susceptibility to changes in the view, and their views are of **low** value. The sensitivity of the receptor is therefore considered to be **low**.

Magnitude of impact: Year 1

4.11.2.79 The OnSS will be barely perceptible from this viewpoint due to the presence of a well-developed hawthorn hedgerow, obscuring views to the east. Through occasional gaps in the hedge, distant fleeting views towards the site may be offered, although the change in view is likely to be barely evident. Motorists are likely to be focused on the view north/south along the road, gaining only occasional, very brief glimpses towards site. The change in view will last for 35 years and after this time the OnSS structures will be removed.

4.11.2.80 The operational impact of the OnSS on views from this location, at Year 1, is judged to be of **imperceptible** scale and **localised** geographical extent and will be **long term** and **partly reversible**. The magnitude is therefore considered to be **negligible**.

Significance of the effect: Year 1

4.11.2.81 Overall, it is judged that the sensitivity of the visual receptors at this location is **low** and the magnitude will be **negligible**. The effect will be of **negligible** significance, which is **not significant** in EIA terms.

Viewpoint 6 Fishpond Wood, Risby Hall

4.11.2.82 Baseline photography for this viewpoint is shown in **Volume 6, Annex 4.1**, Figure 13.

Sensitivity of the receptor

4.11.2.83 Receptors in this area are likely to be visitors engaged in recreational activities where landscape is a contributing factor to the overall experience. This viewpoint is representative of views experienced from the edge of Risby Hall Gardens, which is valued as a Grade II Registered Park and Garden. It is also within the Yorkshire Wolds ILA. The viewpoint is located on a PRoW which forms part of the Beverley 20 LDWR. The view is valued locally by residents and visitors who walk along the path.

4.11.2.84 Visual receptors at this location are judged to be of **high** susceptibility to changes in the view, and their views are of **medium** value. The sensitivity of the receptor is therefore considered to be **high**.

Magnitude of impact: Year 1

4.11.2.85 The presence of energy infrastructure in the view presents a contrast to the designed landscape of Risby Hall. The scale of change is, however, considered to be minimal due to the distance from site and screening offered by hedgerows and shelter belts. Due to the topography, obscuring views to the east, the geographical extent of effects is limited. The change in view will last for 35 years and after this time the OnSS structures will be removed.

4.11.2.86 The operational impact of the OnSS on views from this location, at Year 1, is judged to be of **imperceptible** scale and **relatively localised** geographical extent and will be **long term** and **partly reversible**. The magnitude is therefore considered to be **negligible**.

Significance of the effect: Year 1

4.11.2.87 Overall, it is judged that the sensitivity of the visual receptors at this location is **high** and the magnitude will be **negligible**. The effect will be of **negligible** significance, which is **not significant** in EIA terms.

Viewpoint 7 Little Weighton Road

4.11.2.88 Baseline photography for this viewpoint is shown in **Volume 6, Annex 4.1**, Figure 14.

Sensitivity of the receptor

4.11.2.89 Receptors are primarily motorists on the short section of road from Little Weighton to Skidby, experiencing transient views. This viewpoint is situated within the Yorkshire Wolds ILA, as designated by the local authority, and is representative of panoramic views that are available from the designated area.

4.11.2.90 Visual receptors at this location are judged to be of **medium** susceptibility to changes in the view, and their views are of **medium** value. The sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of impact: Year 1

4.11.2.91 The OnSS will be barely perceptible from this viewpoint, which provides panoramic views in all directions. Distant, fleeting views towards the site may be offered, although these are not likely to be conspicuous to receptors. The noticeable presence of an overhead line suggests that additional energy infrastructure will not present great contrast to the existing landscape. The change in view will last for 35 years and after this time the OnSS structures will be removed.

4.11.2.92 The operational impact of the OnSS on views from this location, at Year 1, is judged to be of **imperceptible** scale and **localised** geographical extent and will be **long term** and **partly reversible**. The magnitude is therefore considered to be **negligible**.

Significance of the effect: Year 1

4.11.2.93 Overall, it is judged that the sensitivity of the visual receptors at this location is **medium** and the magnitude will be **negligible**. The effect will be of **negligible** significance, which is **not significant** in EIA terms.

Viewpoint 8 Minster Way

4.11.2.94 Baseline photography for this viewpoint is shown in **Volume 6, Annex 4.1**, Figure 14.

Sensitivity of the receptor

4.11.2.95 Receptors at this point may include recreational users of the bridleway, including cyclists, experiencing open views to the south. Motorists on the A164 south of Beverley may experience views that are similar in composition. The presence of existing energy infrastructure is apparent as an existing feature. This viewpoint is situated on a recreational route which is valued locally by those who walk or ride through the landscape.

4.11.2.96 Visual receptors at this location are judged to be of **high** susceptibility to changes in the view, and their views are of **low** value. The sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of impact: Year 1

4.11.2.97 The proposed development is likely to be visible on the distant skyline from this point. It will occupy a small portion of the view, alongside Creyke Beck substation and other pylons which are noticeable features of this view. The change in view will last for 35 years and after this time the OnSS structures will be removed.

4.11.2.98 The operational impact of the OnSS on views from this location, at Year 1, is judged to be of **small** scale and **localised** geographical extent and will be **long term** and **partly reversible**. The magnitude is therefore considered to be **small**.

Significance of the effect: Year 1

4.11.2.99 Overall, it is judged that the sensitivity of the visual receptors at this location is **medium** and the magnitude will be **small**. The effect will be of **minor adverse** significance, which is **not significant** in EIA terms.

Viewpoint 9 Beverley Minster Tower

4.11.2.100 Baseline photography for this viewpoint is shown in **Volume 6, Annex 4.1**, Figure 15.

Sensitivity of the receptor

4.11.2.101 Receptors, primarily visitors attending a Minster tower guided tour, are likely to be overawed by the view as a whole, perhaps locating key landmarks such as the Humber Bridge, which is clearly identifiable in the distance. The view described is specific to this point, and similar effects would not be felt from ground level or nearby lower buildings (i.e. by residential receptors). Grade I Listed Beverley Minster is an important historic asset to the area, drawing many visitors. The extensive and impressive view from the tower forms part of the overall experience of a guided tour of the Minster. The visual link between Beverley Minster and Cottingham St Mary's has also been highlighted by consultees.

4.11.2.102 Visual receptors at this location are judged to be of **high** susceptibility to changes in the view, and their views are of **high** value. The sensitivity of the receptor is therefore considered to be **high**.

Magnitude of impact: Year 1

4.11.2.103 The OnSS will occupy a very small proportion of the rich and varied view experienced from the Minster tower. The changes to the view will be absorbed into the overall landscape as the OnSS will be seen from a distance in the context of other energy infrastructure, with taller buildings in the city of Hull being visible nearby. The presence of intermittent vegetation partly obscures views towards the OnSS site, and therefore OnSS will not significantly detract from the overall quality of the experience offered from the Minster tower. Additionally, similar views are not available from any other location, therefore the geographical extent is limited. The change in view will last for 35 years and after this time the OnSS structures will be removed.

4.11.2.104 The operational impact of the OnSS on views from this location, at Year 1, is judged to be of **imperceptible** scale and **very localised** geographical extent and will be **long term** and **partly reversible**. The magnitude is therefore considered to be **negligible**.

Significance of the effect: Year 1

4.11.2.105 Overall, it is judged that the sensitivity of the visual receptors at this location is **high** and the magnitude will be **negligible**. The effect will be of **negligible** significance, which is **not significant** in EIA terms.

Viewpoint 10 St Mary's Church Tower, Cottingham

4.11.2.106 Baseline photography for this viewpoint is shown in **Volume 6, Annex 4.1**, Figure 15.

Sensitivity of the receptor

4.11.2.107 Receptors, primarily visitors attending a guided tour of the church and tower, are likely to be overawed by the view from St Mary's Church Tower. The view is specific to this point (the tower), and similar effects would not be felt from ground level or nearby lower buildings (i.e. by residential receptors). Views described are from an important local landmark and historic asset, with a visual link to Beverley Minster. The view of Beverley Minster from this point is partially obscured by a pylon associated with Creyke Beck substation.

4.11.2.108 Visual receptors at this location are judged to be of **high** susceptibility to changes in the view, and their views are of **medium** value. The sensitivity of the receptor is therefore considered to be **high**.

Magnitude of impact: Year 1

4.11.2.109 The OnSS will occupy a very small proportion of the rich and varied view experienced from the tower. The OnSS will be seen from a distance in the context of other energy infrastructure. The presence of intermittent vegetation and buildings partly obscure views towards the OnSS site. The OnSS will be seen at closer range than from Beverley Minster tower but will not detract from the view available from the church tower. Similar views are not available from any other location, therefore the geographical extent is limited. The change in view will last for 35 years and after this time the OnSS structures will be removed.

4.11.2.110 The operational impact of the OnSS on views from this location, at Year 1, is judged to be of **small** scale and **very localised** geographical extent and will be **long term** and **partly reversible**. The magnitude is therefore considered to be **negligible**.

Significance of the effect: Year 1

4.11.2.111 Overall, it is judged that the sensitivity of the visual receptors at this location is **high** and the magnitude will be **small**. The effect will be of **minor** significance, which is **not significant** in EIA terms.

Future monitoring

4.11.2.112 No requirement for long-term monitoring of landscape and visual impacts during construction has been identified. In the short term, mitigation planting will be monitored for an agreed maintenance period (typically up to 5 years), to ensure the establishment of all plants. This will be detailed in a Landscape Management Plan which will be prepared in accordance with the Outline Landscape Management Plan (Co30).

4.11.3 Decommissioning

4.11.3.1 The impacts of the decommissioning of Hornsea Four have been scoped out of the LVIA, as set out in **Table 4.10**.

4.12 Cumulative effect assessment (CEA)

4.12.1.1 Cumulative effects can be defined as effects upon a single receptor from Hornsea Four when considered alongside other proposed and reasonably foreseeable projects and developments. This includes all projects that result in a comparative effect that is not intrinsically considered as part of the existing environment.

4.12.1.2 The overarching method followed in identifying and assessing potential cumulative effects in relation to the onshore environment is set out in **Volume 4, Annex 5.5: Onshore Cumulative Effects** and **Volume 4, Annex 5.6: Location of Onshore Cumulative Schemes**. The approach is based upon the PINS Advice Note 17: Cumulative Effects Assessment (PINS, 2017). The approach to the CEA is intended to be specific to Hornsea Four and takes account of the available knowledge of the environment and other activities around the PEIR boundary.

4.12.1.3 The CEA has followed a four-stage approach developed from Advice Note 17. Each of the four stages is identified in **Table 4.23** along with commentary specifically relating to Landscape and Visual.

Table 4.23: Stages and activities involved in the CEA process.

CEA stage	Activity
Stage 1 – Establish the project's zone of influence (ZoI) and establish a long-list of developments	Through consultation it has been identified that potential developments that need considering as part of the onshore CEA are restricted to those within the East Riding of Yorkshire Council (ERYC) area. To determine a 'long-list' of possible projects for inclusion in the CEA the following actions have been carried out: • Interrogation of the ERYC planning portal (latest review is May 2019); and • Discussion of potential projects for specific inclusion in the CEA at the Evidence Plan meetings. To date these processes have identified potential projects which form the 'long-list'. In order to attribute an element of certainty to the assessment each project has been assigned a Tier reflecting their current status within the planning and development process. The full list of projects and relevant tiers assigned can be found in Appendix A of **Volume 4, Annex 5.5: Onshore Cumulative Effects** and **Volume 4, Annex 5.6: Location of Onshore Cumulative Schemes**.
Stage 2 – Screening of long list: Identify a shortlist of other developments for the CEA	The Hornsea Four landscape and visual study area for the cumulative effects assessment (CEA) was defined as a 5 km radius from the OnSS. The CEA considers the cumulative effects of other planned projects within 5 km of the OnSS, during operation. All long-list projects more than 5 km from the OnSS were therefore excluded from the CEA. Other long-list projects within 5 km of the OnSS were also excluded where it was judged that there would be no landscape or visual interaction between the OnSS

CEA stage	Activity
	and the other project. These included housing development proposals, the redevelopment of a school, and a proposed section of access road. They are between 2 and 5 km from the OnSS and due to their modest height, they are unlikely to be seen in combination with the OnSS in such a way that significant cumulative effects on landscape and visual receptors would occur. No CEA was undertaken for the onshore ECC or landfall, as these involve short term temporary works. Although occurring across a large area, works in any one location will be of short duration. Significant cumulative effects would only occur if developments fall within the same area *and* the same temporal extent, and as such are judged to be unlikely.
Stage 3 – Information gathering	Where available, information on the other developments within the shortlist generated at Stage 2 has been collated to inform the CEA. At this stage (PEIR) information is of high level unless explicitly discussed with ERYC. The information collected on each project is presented in **Volume 4, Annex 5.5: Onshore Cumulative Effects** and **Volume 4, Annex 5.6: Location of Onshore Cumulative Schemes**.
Stage 4 - Assessment	The CEA has been undertaken in two stages: i) Each of the potential effects that are subject to assessment alone has been reviewed against the potential for cumulative effects to occur. ii) A CEA assessment of each of the other developments on the short-list has taken place for those effects where it is considered that potential cumulative impacts could occur. The assessment also includes, where relevant, consideration of any mitigation measures where adverse cumulative effects are identified and signposts to the relevant means of securing mitigation.

4.12.2 CEA Stage 2 Shortlist and Stage 3 Information Gathering

4.12.2.1 A short list of projects for CEA has been produced using the screening buffer/criteria set out in **Table 4.23**. Information regarding all projects is provided in **Volume 4, Annex 5.5: Onshore Cumulative Effects** and **Volume 4, Annex 5.6: Location of Onshore Cumulative Schemes**. Summary information on the short-list projects for landscape and visual impacts is provided below:

- **Lawns Park Farm Battery Storage**, a 49.5MW facility with 17 battery units, associated infrastructure and landscaping, located to the south-east of Creyke Beck substation, within the Hornsea Four boundary (undetermined planning application, ref. 19/01449/STPLF);
- **Jocks Lodge Highway Improvement Scheme**, involving a new grade-separated roundabout at the A1079/A162 junction, with new slip roads, and dualling of the A162

(in development, screening application ref. 18/01846/EIASCR). Located 700 m north-west of the Hornsea Four boundary;

- **Dogger Bank Creyke Beck A and B**, two converter stations for offshore wind farms, up to 20m high, to be co-located on the north side of the A1079 south of Model Farm, with associated access, earthworks and landscape planting (Development Consent Order issued February 2015); and
- **Low Farm, Dunswell Lane**, new and extended commercial glasshouses, with associated access, ancillary buildings, reservoirs and landscape planting, at Low Farm, to the north of the A1079 and east of the railway line (undetermined planning application, ref. 19/00908/STPLF). Located 1.1 km east of the Hornsea Four boundary.

4.12.3 CEA Stage 3 Assessment

4.12.3.1 As stated in Table 4.23 the assessment is undertaken in two stages:

- Table 4.24 sets out the potential impacts assessed in this chapter and identifies the potential for cumulative effects to arise, providing a rationale for such determinations; and
- Table 4.25 sets out the CEA for each of the projects/developments that have been identified on the short-list of projects screened.

4.12.3.2 It should be noted that stage 2 is only undertaken if stage 1 identifies that cumulative effects are possible. This summary assessment is set out in Table 4.24.

Table 4.24: Potential Cumulative Effects.

Impact		Potential for Cumulative Effect?	Rationale
Construction of the OnSS			
1	Impacts of construction on the landscape resulting from the addition of new types of change or from increasing or extending the effects of Hornsea Four.	Yes	Cumulative landscape effects could occur if other developments are constructed concurrently with the construction phase of Hornsea Four.
2	Impacts of construction on views and visual amenity resulting from the change in the content and character of views experienced in particular places due to introduction of new elements or removal of or damage to existing ones.	Yes	Cumulative visual effects could occur if other developments are constructed concurrently with the construction phase of Hornsea Four.
Operation of the OnSS			
1	Impacts of operation on the landscape resulting from the addition of new types of change or from increasing or extending the effects of Hornsea Four.	Yes	Any other projects that alter the landscape character within the Hornsea Four landscape study area may have cumulative landscape effects at operation.

Impact		Potential for Cumulative Effect?	Rationale
2	Impacts of operation on views and visual amenity resulting from the change in the content and character of views experienced in particular places due to introduction of new elements or removal of or damage to existing ones.	Yes	Any other projects that are visible within the Hornsea Four visual study area may have cumulative visual effects at operation.
Decommissioning			
The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan will be provided (Co127). As such, cumulative impacts during the decommissioning stage are assumed to be the same as those identified during the construction stage. Additionally PINS have stated in their Scoping Opinion that cumulative decommissioning effects are scoped out of the EIA.			

4.12.3.3 The second stage of the CEA is a project specific assessment of the potential for any significant cumulative effects to arise due to the construction and/or operation and maintenance of Hornsea Four. To identify whether this may occur each shortlisted project is discussed in **Table 4.25**.

Table 4.25: Project Screening for CEA Landscape and Visual.

Project	Description	Location Description (relative to Hornsea Four PEIR Boundary)	Discussion	Likelihood and Significance of Cumulative Effects
Lawns Farm Park Battery Storage	Construction of a 49.5MW Battery Storage Facility (17 battery units) with associated infrastructure and landscaping.	The project is located east of the Creyke Beck Substation within the Hornsea Four PEIR boundary.	The situation of the Lawns Farm Park Battery Storage project within the Hornsea Four PEIR boundary (400kV ECC area) and in close proximity (c.600m) to the OnSS means that there is the potential for cumulative effects of a direct nature on the landscape character of the Sloping Farmland (LCT 16) and on views experienced by people using the local PRoW north of Cottingham. The Lawns Farm Park Battery Storage project will be relatively enclosed by existing vegetation and built development, and will be of a similar character to the adjacent substation. As such it will not greatly alter the baseline landscape. Considering this project, there will be a small magnitude of cumulative change and a minor adverse (not significant) cumulative effect on landscape character. The absence of tall structures in the Lawns Farm Park Battery Storage project means that it is unlikely to be widely visible. There will be few locations where both the OnSS and the battery storage will be seen simultaneously. There may be sequential effects on people using local PRoWs, who would see the Lawns Farm Park Battery Storage project in the context of an abundance of existing electricity pylons, overhead lines and Creyke Beck Substation, and will also view the	No potential for significant cumulative effects

Project	Description	Location Description (relative to Hornsea Four PEIR Boundary)	Discussion	Likelihood and Significance of Cumulative Effects
			OnSS at relatively close range, but separately. It is assumed that landscape mitigation will be applied to both projects to reduce their visual impact. The presence of both projects will likely result in a small magnitude of change and minor adverse (not significant) cumulative visual effect.	
Jocks Lodge Highway Improvement Scheme	EIA Screening Opinion - A164 and Jocks Lodge Highway Improvement Scheme (including the provision of two lanes for vehicles entering the existing Lincoln Way roundabout of the A164; alterations to Victoria Road roundabout; widening of A164 between Lincoln Way roundabout and Jocks Lodge junction; construction of a new structure over the A1079; and provision of a pedestrian overbridge).	The A1079 crosses the ECC. The focus of the works will be concentrated further north and outside of the Hornsea Four PEIR boundary.	The location of the Jocks Lodge Highway Improvement Scheme within 2km of the OnSS means that there is the potential for cumulative effects of a direct nature on the landscape character of Sloping Farmland (LCT 16) and on views experienced by people using the Beverley Twenty Long Distance Walking Route as well as local PRoW north of Cottingham. *Construction* The construction phase of the Jocks Lodge Highway Improvement Scheme are planned to overlap with the construction of the OnSS. The Jocks Lodge Highway Improvement Scheme will be largely focussed on the existing roads and around the margins so the landscape effects are likely to be localised. However the extent of disturbance and construction activity across both projects will be greater than for the OnSS alone. This will likely result in a small magnitude of change and a minor adverse (not significant) cumulative landscape effect at construction. Intervening vegetation between the Jocks Lodge Highway Improvement Scheme and the OnSS will	Potential for significant cumulative effects on views during construction

Project	Description	Location Description (relative to Hornsea Four PEIR Boundary)	Discussion	Likelihood and Significance of Cumulative Effects
			restrict the opportunities to view the two developments at the same time. People travelling along the local PRoW network will perceive an increased level of construction activity across the area, and will see construction activity in several different directions from the PRoWs. This will likely result in a medium magnitude of cumulative change and a moderate adverse (significant) cumulative visual effect at construction. *Operation* It is assumed that the Jocks Lodge Highway Improvement Scheme will include new and replacement planting to integrate into the landscape, and following construction it is not expected to change the baseline environment in which the OnSS will be experienced. The presence of both projects will likely result in a small magnitude of change and a minor adverse (not significant) cumulative effect on local landscape character. The presence of major roads including the A164 in existing long distance views towards the OnSS means that the magnitude of change will be imperceptible. This will likely result in a negligible (not significant) cumulative visual effect.	
Dogger Bank – Creyke	The consent application submitted allows for up to 400 wind turbines in total,	The converter station would be north of the A1079 between Beverley	The Dogger Bank Creyke Beck Converter Stations are located close to the Hornsea Four PEIR boundary, around 700m north of the OnSS. This means that there	Potential for significant cumulative effects on

Project	Description	Location Description (relative to Hornsea Four PEIR Boundary)	Discussion	Likelihood and Significance of Cumulative Effects
Beck A and B	therefore currently being split across the two phases. Project Capacity 1000-1200MW.	and Cottingham in the East Riding of Yorkshire.	is the potential for cumulative effects of a direct nature on the landscape character of Sloping Farmland (LCT 16) and on views experienced by people using the local PRoW north of Cottingham and the A1079. The introduction of the Dogger Bank Creyke Beck Converter Stations adjacent to the A1079 will be noticeable in the landscape covering an area of approx. 11 hectares and including buildings up to 20m in height, though it is sited in the context of existing woodland, and further woodland screening is proposed. The presence of this large-scale project and the OnSS in close proximity will likely result in a medium magnitude of change and a **moderate adverse** (significant) cumulative effect on local landscape character. There will be few locations where both the OnSS and the Dogger Bank Creyke Beck Converter Stations will be seen simultaneously, though they may both be visible from the A1079 overbridge. There may be sequential effects on people using local PRoWs, who would see the Dogger Bank Creyke Beck Converter Stations and will subsequently also view the OnSS at relatively close range. It is assumed that landscape mitigation will be applied to both projects to reduce their visual impact. The presence of both projects will have additional effects on the views from the PRoW, and will likely result in a medium magnitude of change and moderate adverse (significant) cumulative visual effect. Views from the A1079 may include both	landscape and views during operation

Project	Description	Location Description (relative to Hornsea Four PEIR Boundary)	Discussion	Likelihood and Significance of Cumulative Effects
			schemes but cumulative effects are unlikely for these passing receptors.	
Low Farm Dunswell Lane Dunswell	Erection of glasshouses, automated bedding units and wind breaks to outdoor planting beds, external and internal alterations to redundant agricultural buildings to allow conversion to offices and stores, relocation of workers caravans, construction of reservoir with installation of drainage infrastructure across the site and creation of access to low farm, 5 passing places along Long Lane and junction.	1.1 km east of the Hornsea Four boundary	The Low Farm project, adjacent to the A1079, will be around 1.4km from the OnSS, and there is the potential for cumulative effects of a direct nature on the landscape character of Sloping Farmland (LCT 16) and on views experienced by people using the A1079 and local PRoW network. The Low Farm project will be relatively enclosed by existing vegetation and built development, and will be of a similar character to the adjacent greenhouses. This will likely result in a small magnitude of cumulative change and a minor adverse (not significant) cumulative effect on landscape character. The absence of tall structures in the Low Farm project means that it is unlikely to be widely visible. There will be few locations where both the OnSS and the Low Farm development will be seen simultaneously. There may be sequential effects on people using local PRoWs, although there are no direct PRoW links that pass both sites, and the A1079. People would see the Low Farm project in the context of existing glasshouse development, and will separately view the OnSS in a similar context. It is assumed that landscape mitigation will be applied to both projects to reduce their visual impact. The presence of both projects will not have additional effects on the views from the PRoW, and will	No potential for significant cumulative effects

Project	Description	Location Description (relative to Hornsea Four PEIR Boundary)	Discussion	Likelihood and Significance of Cumulative Effects
			likely result in a small magnitude of change and minor adverse (not significant) cumulative visual effect.	

4.12.3.4 The CEA has identified two projects which may, when considered as part of the assessment baseline, give rise to cumulative effects that may be significant:

- Construction of the Jocks Lodge Highway Improvement Scheme in proximity to construction of the OnSS may lead to significant cumulative effects on views, during the construction phase, if the two projects overlap temporally, due to the potential for widespread disturbance and activity; and
- The presence of the Dogger Bank Creyke Beck Converter Stations, 700m north of the OnSS, may lead to significant cumulative effects on landscape character and views, during the operational phase, due to the proximity of these two large-scale developments, and their proximity to local PRoWs.

4.12.3.5 The Jocks Lodge Highway Scheme is currently under development, and there is therefore limited certainty that it will be constructed in line with the projected timescale. In the case that the construction works do not overlap, no significant cumulative effect is predicted to occur.

4.12.3.6 Greater certainty is attached to the Dogger Bank Creyke Beck Converter Stations, as these have received development consent and are likely to be built as planned. The operational phases of both projects will overlap.

4.12.3.7 For the other projects examined, impacts are not considered to be of any greater significance than those identified in isolation and no cumulative effects of significance are forecast.

4.13 Transboundary effects

4.13.1.1 A screening of transboundary impacts has been carried out and is presented in Appendix K of the Environmental Impact Assessment: Scoping Report (Ørsted, 2018). This screening exercise identified that there was no potential for significant transboundary effects regarding landscape and visual effects from Hornsea Four upon the interests of other European Economic Area (EEA) States and this is not discussed further.

4.14 Inter-related effects

4.14.1.1 Inter-related effects consider impacts from the construction, operation or decommissioning of Hornsea Four on the same receptor (or group). The potential inter-related effects that could arise in relation to landscape and visual amenity are presented in **Table 4.26**. Such inter-related effects include both:

- Project lifetime effects: i.e. those arising throughout more than one phase of the project (construction, operation, and decommissioning) to interact to potentially create a more significant effect on a receptor than if just one phase were assessed in isolation; and
- Receptor led effects: Assessment of the scope for all effects to interact, spatially and temporally, to create inter-related effects on a receptor (or group). Receptor-led

effects might be short term, temporary or transient effects, or incorporate longer term effects.

4.14.1.2 A description of the process to identify and assess these effects is presented in Section 2 of **Volume 1, Chapter 5: EIA Methodology**. The basis for the identification of receptor led effects is the inter-related effects screening report supplied as Annex J to the Hornsea Four Scoping Report (Ørsted, 2018).

Table 4.26: Inter-related effects assessment for landscape and visual amenity.

Project phase(s)	Nature of inter-related effect	Assessment alone	Inter-related effects assessment
Project-lifetime effects			
Construction and Operation	Effects on landscape character and views arising from construction and operation of the OnSS	Impacts were assessed as being of up to major adverse significance in the construction phase, and up to major adverse significance (Year 1) and moderate adverse significance (Year 10) at operation.	The construction stage effects arise from disturbance and construction activity around the OnSS, including construction compounds, works to the ECC, and the emerging OnSS. Following construction, temporarily disturbed areas will be restored and landscape planting will be carried out. The operational effects arise from the presence of the completed OnSS in the landscape and views. It is not anticipated that there will be any inter-related effects of greater significance compared to the impacts considered alone.
Receptor-led effects			
Ecology and nature conservation: Introduction of new habitat elements in landscape planting		Landscape planting is provided for mitigation purposes, and has no intrinsic effect on landscape or visual receptors. Any benefits for ecology and nature conservation would be wholly separate to landscape and visual effects. Therefore there will be no inter-related effects that are of greater significance than the impacts considered alone.	
Historic environment: Changes in setting of historical assets		No historic assets have been identified which are also subject to significant effects on the visual amenity of views that are available from them. Therefore there will be no inter-related effects that are of greater significance than the impacts considered alone.	
Land use and agriculture: Negative effects on tourism and visitor perception		Other than a short section of a national cycle route, no tourist assets have been identified which are also subject to significant effects on the visual amenity of views that are available from them. Therefore there will be no inter-related effects that are of greater significance than the impacts considered alone.	
Socio-economic characteristics: Effects on tourism leading to negative economic effects		Other than a short section of a national cycle route, no tourist assets have been identified which are also subject to significant effects on the visual amenity of views that are available from them. Therefore there will be no inter-related effects that are of greater significance than the impacts considered alone.	

4.14.1.3 The assessment of inter-related effects has not identified any effects that would be of greater significance than those effects assessed in isolation.

4.15 Conclusion and summary

4.15.1.1 Table 4.27 presents a summary of the significant impacts assessed within this Chapter, any mitigation, and the residual effects.

4.15.1.2 No significant effects have been identified as a result of construction of the onshore ECC or landfall area, with the exception of localised moderate adverse effects of the landfall works on views experienced by community and recreational receptors.

4.15.1.3 Construction works at the OnSS are likely to have significant effects on the local landscape within the immediate vicinity of the site. The affected area will be bounded by Birkhill Wood, the A1079, the railway line, glasshouses to the south-east, and woodland alongside the golf course. Within this area, visual effects experienced by residential and recreational receptors will be significant during construction, particularly for people at Burn Park Farm and other nearby houses, and users of the closest PRoWs.

4.15.1.4 During the operational phase, significant effects of the OnSS on the landscape will be similarly localised to significant effects upon the area noted above. Beyond this area there will be no significant effects on landscape character, including that of the Yorkshire Wolds ILA. Significant effects on views are predicted for high sensitivity receptors with clear views of the site from within 2 km. Beyond this distance, or from locations where intervening vegetation filters views, effects will be not significant.

4.15.1.5 A landscape mitigation plan has been developed and is shown indicatively in Figure 4.8. The landscape plan 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 in EIA terms.

4.15.1.6 At the end of the 35-year life of the OnSS, all above and below ground structures will be removed and the site returned to agriculture. All effects of the OnSS will then cease.

Table 4.27: Summary of potential impacts assessed for landscape and visual receptors.

Impact and Phase	Receptor and value/sensitivity	Magnitude and significance	Mitigation	Residual impact (Year 10)
Construction				
Temporary loss of landscape features and changes to landscape character in the landfall area and onshore ECC from construction activities. (LV-C-1)	Subarea 1 Landfall Low susceptibility Medium value Medium sensitivity	Small magnitude **Minor adverse** significance	Primary: Co1 Co2 Co7 Co25 Co26 Co27 Co28 Co49 Co79 Co133 Co134 Co135 Tertiary: Co10 Co124 Secondary: Co68 Co69 Co158 Co165	N/A
	Subarea 2 A165 to Rotsea Lane Medium susceptibility Low value Medium sensitivity	Small magnitude **Minor adverse** significance		
	Subarea 3 Rotsea Lane to Leconfield Low susceptibility Medium value Medium sensitivity	Small magnitude **Minor adverse** significance		
	Subarea 4 Leconfield to OnSS Medium susceptibility Medium value Medium sensitivity	Small magnitude **Minor adverse** significance		
Temporary change to views in the landfall area and onshore ECC from construction activities. (LV-C-1)	Subarea 1 Landfall High susceptibility Medium value Medium sensitivity	Small magnitude **Minor adverse** significance		
	Subarea 2 A165 to Rotsea Lane High susceptibility Medium value Medium sensitivity	Small magnitude **Minor adverse** significance		
	Subarea 3 Rotsea Lane to Leconfield High susceptibility Medium value Medium sensitivity	Small magnitude **Minor adverse** significance		

Impact and Phase	Receptor and value/sensitivity	Magnitude and significance	Mitigation	Residual impact (Year 10)
	Subarea 4 Leconfield to OnSS High susceptibility Medium value Medium sensitivity	Small magnitude **Minor adverse** significance		
Temporary loss of landscape features and changes to landscape character in the OnSS area from construction activities. (LV-C-4)	Subarea 5 Low susceptibility Medium value Medium sensitivity	Medium magnitude **Moderate adverse** significance	Primary: Co2 Co26 Co27 Co49 Co78 Co79 Co128 Co145 Co151 Co165 Tertiary: Co7 Co10 Co124 Secondary: Co69 Co30 Further mitigation: Early establishment of landscape mitigation planting.	N/A
Temporary change to views in the OnSS area from construction activities. (LV-C-4)	Residential receptors High susceptibility Low value High sensitivity	Large magnitude **Major adverse** significance		
	Recreational receptors High susceptibility Low value Medium sensitivity	Large magnitude **Moderate adverse** significance		
	Other receptors Low susceptibility Low value Low sensitivity	Small magnitude **Negligible** significance		

Impact and Phase	Receptor and value/sensitivity	Magnitude and significance	Mitigation	Residual impact (Year 10)
Operation				
Permanent loss of landscape features, and changes to landscape character from operation of the OnSS	OnSS site / Sloping Farmland LCT Low susceptibility Medium value Medium sensitivity	Large magnitude **Major adverse** significance	Primary: Co2 Co27 Co79 Co145 Co151 Secondary: Co30 Refer to indicative landscape plan in **Figure 4.8** and **Volume 4, Annex 4.6: Outline Design Vision Statement**.	Medium magnitude **Moderate adverse** significance
	Open High Rolling Farmland LCT Medium susceptibility Medium value Medium sensitivity	Small magnitude **Minor adverse** significance	Primary: Co2 Co27 Co79 Co145 Co151 Secondary: Co30	N/A
	Farmed Urban Fringe LCT Medium susceptibility Low value Medium sensitivity	Small magnitude **Minor adverse** significance		N/A
	Low Lying Drained Farmland LCT Medium susceptibility Low value Medium sensitivity	Small magnitude **Minor adverse** significance		N/A
Permanent change to views from operation of the OnSS	VP1 PRoW South of Burn Park Farm High susceptibility	Large magnitude **Major adverse** significance	Primary: Co2	Medium magnitude

Impact and Phase	Receptor and value/sensitivity	Magnitude and significance	Mitigation	Residual impact (Year 10)
	Medium value High sensitivity		Co27 Co79 Co145 Co151 Secondary: Co30 Refer to indicative landscape plan in Figure 4.8 and Volume 4, Annex 4.6: Outline Design Vision Statement.	**Moderate adverse** significance
	VP2 Park Lane, Cottingham High susceptibility Medium value High sensitivity	Large magnitude **Major adverse** significance		Small magnitude **Minor adverse** significance
	VP3 Footbridge over A1079 High susceptibility Medium value High sensitivity	Medium magnitude **Moderate adverse** significance		Small magnitude **Minor adverse** significance
	VP4 PRoW East of A164 Medium susceptibility Low value Medium sensitivity	Medium magnitude **Moderate adverse** significance		Small magnitude **Minor adverse** significance
	VP5 A164 Layby near Bentley Low susceptibility Low value Low sensitivity	Negligible magnitude **Negligible** significance	Primary: Co2 Co27 Co79 Co145 Co151 Secondary: Co30	N/A
	VP6 Fishpond Wood, Risby Hall High susceptibility Medium value High sensitivity	Negligible magnitude **Negligible** significance		N/A
	VP7 Little Weighton Road Medium susceptibility Medium value Medium sensitivity	Negligible magnitude **Negligible** significance		N/A
	VP8 Minster Way High susceptibility Low value Medium sensitivity	Small magnitude **Minor adverse** significance		N/A
	VP9 Beverley Minster tower	Negligible magnitude		N/A

Impact and Phase	Receptor and value/sensitivity	Magnitude and significance	Mitigation	Residual impact (Year 10)
	High susceptibility High value High sensitivity	**Negligible** significance		
	VP10 St Mary's Church tower, Cottingham High susceptibility Medium value High sensitivity	Small magnitude **Minor adverse** significance		N/A

4.16 References

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