



Hornsea Project Four: Environmental Statement (ES)

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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.
Contracts for Difference (CfD)	The Contracts for Difference (CfD) scheme is the government's main mechanism for supporting low-carbon electricity generation. CfD incentivise investment in renewable energy by providing developers of projects with high upfront costs and long lifetimes with direct protection from volatile wholesale prices, and they protect consumers from paying increased support costs when electricity prices are high.
Commitment	<p>A term used interchangeably with mitigation and enhancement measures. The purpose of Commitments is to reduce and/or eliminate Likely Significant Effects (LSEs), in EIA terms.</p> <p>Primary (Design) or Tertiary (Inherent) are both embedded within the assessment at the relevant point in the EIA (e.g. at Scoping, Preliminary Environmental Information Report (PEIR) or Environmental Statement).</p> <p>Secondary commitments are incorporated to reduce LSE to environmentally acceptable levels following initial assessment i.e. so that residual effects are acceptable.</p>
Cumulative effects	<p>The combined effect of Hornsea Project Four in combination with the effects from a number of different projects, on the same single receptor/resource.</p> <p>Cumulative impacts are those that result from changes caused by other past, present or reasonably foreseeable actions together with Hornsea Project Four.</p>
Design Envelope	<p>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.</p> <p>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.</p>
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
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.
EIA Directive	European Union Directive 85/337/EEC, as amended by Directives 97/11/EC, 2003/35/EC and 2009/31/EC and then codified by Directive 2011/92/EU of 13 December 2011 (as amended in 2014 by Directive 2014/52/EU).
EIA Regulations	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.
Energy balancing infrastructure (EBI)	The onshore substation includes energy balancing Infrastructure. These provide valuable services to the electrical grid, such as storing energy to meet periods of peak demand and improving overall reliability.

Term	Definition
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Directive and EIA Regulations, including the publication of an Environmental Statement (ES).
Environmental Statement (ES)	A document reporting the findings of the EIA and produced in accordance with the EIA Directive as transposed into UK law by the EIA Regulations.
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.
Heavy Goods Vehicle (HGV)	HGV is the term for a commercial vehicle with a gross weight over 3.5 tonnes. This assessment also uses the term HGV as a proxy for HGVs, buses and coaches recognising the similar size and environmental characteristics of the respective vehicle types.
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. Where the offshore cables come ashore east of Fraisthorpe.
Light Vehicles	The term 'Light Vehicles' is used to describe a range of vehicles (such as cars, vans, pickups, minibuses, etc.) that do not constitute a HGV (i.e. all vehicles with a gross weight less than 3.5 tonnes). These vehicles would be predominantly associated with the movement of employees and incidental deliveries for Hornsea Four.
Link	A highway section made up of roads with similar highway characteristics.
Maximum Design Scenario (MDS)	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, PEIR or ES).
National Grid Electricity Transmission (NGET) substation	The grid connection location for Hornsea Four at Creyke Beck.
Onshore substation (OnSS)	Comprises a compound containing the electrical components for transforming the power supplied from Hornsea Project Four to 400 kV and to adjust the power quality and power factor, as required to meet the UK Grid Code for supply to the National

Term	Definition
	Grid. If a HVDC system is used the OnSS will also house equipment to convert the power from HVDC to HVAC.
Order Limits	The limits within which Hornsea Project Four (the 'authorised project') may be carried out.
Orsted Hornsea Project Four Ltd.	The Applicant for the proposed Hornsea Project Four Offshore Wind Farm Development Consent Order (DCO).
Traffic and Transport Study Area	Area within which environmental impacts on traffic and transport receptors may occur.
Planning Inspectorate (PINS)	The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects (NSIPs).
Trenchless Techniques	Also referred to as trenchless crossing techniques or trenchless methods. These techniques include Horizontal Directional Drilling (HDD), thrust boring, auger boring, and pipe ramming, which allow ducts to be installed under an obstruction without breaking open the ground and digging a trench.
Two-way movement	A movement is the process of transporting goods from a source location to a predefined destination. A two-way movement represents the inbound (laden trip from source) and the outbound unladen trip (back to source). For example, 20 two-way movements comprise 10 laden trips from source and 10 outbound unladen trips back to source.

Acronyms

Acronym	Definition
AAWT	Annual Average Weekday Traffic
AILs	Abnormal Indivisible Loads
ATC	Automated Traffic Count
CEA	Cumulative Effect Assessment
CfD	Contract for Difference
CIA	Cumulative Impact Assessment
CoCP	Code of Construction Practice
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
DfT	Department for Transport
EBI	Energy Balancing Infrastructure
EEA	European Economic Area
EIA	Environmental Impact Assessment
ERYC	East Riding of Yorkshire Council
ESDAL	Electronic Service Delivery for Abnormal Loads
ES	Environmental Statement
GEART	Guidelines for the Environmental Assessment of Road Traffic
HCC	Hull City Council
HDD	Horizontal Directional Drilling

Acronym	Definition
HGV	Heavy Goods Vehicle
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IDB	Internal Drainage Board
LSE	Likely Significant Effect
MDS	Maximum Design Scenario
MHWS	Mean High Water Spring
MLWS	Mean Low Water Spring
NH	National Highways
NCR	National Cycle Route
NMU	Non-Mortised User
NPS	National Policy Statement
NPPF	National Planning Policy Framework
NSIP	Nationally Significant Infrastructure Project
oCTMP	Outline Construction Traffic Management Plan
OnSS	Onshore Substation
PEIR	Preliminary Environmental Information Report
PIC	Personal Injury Collision
PINS	Planning Inspectorate
PPG	Planning Practice Guidance
TA	Transport Assessment
TEMPro	Trip End Model Presentation Model

Units

Unit	Definition
km	Kilometres
kV	Kilovolt
mph	Miles per hour

7.1 Introduction

- 7.1.1.1 Orsted Hornsea Project Four Limited (the 'Applicant') is proposing to develop the Hornsea Four offshore windfarm (hereafter 'Hornsea Four'). Hornsea Four will be located approximately 69 km offshore the East Riding of Yorkshire in the Southern North Sea and will be the fourth project to be developed in the former Hornsea Zone. Hornsea Four will include both offshore and onshore infrastructure including an offshore generating station (wind farm), export cables to landfall, and on to an onshore substation (OnSS) with energy balancing infrastructure (EBI), and connection to the electricity transmission network.
- 7.1.1.2 This chapter of the Environmental Statement (ES) presents the results of the Environmental Impact Assessment (EIA) for the potential impacts of Hornsea Four on traffic and transport. Specifically, this chapter considers the potential impact of Hornsea Four landward of Mean High Water Springs (MHWS) during its construction, operation and maintenance, and decommissioning phases.
- 7.1.1.3 This chapter includes a summary of the information contained within a technical report, which is included at [Volume A6, Annex 7.1: Traffic and Transport Technical Report](#). This chapter is also supported by [Volume A6, Annex 7.2: Abnormal Load Report](#).

7.2 Purpose

- 7.2.1.1 The primary purpose of the ES is to support the Development Consent Order (DCO) application for Hornsea Four under the Planning Act 2008 (the 2008 Act). This ES constitutes the environmental information for Hornsea Four and sets out the findings of the EIA.
- 7.2.1.2 The ES has been finalised with due consideration of pre-application consultation to date (see [Volume B1, Chapter 1: Consultation Report](#) and [Table 7.4](#)) and accompanies the application to the Planning Inspectorate (PINS) for Development Consent.
- 7.2.1.3 This ES chapter:
- Presents the existing environmental baseline established from desk studies and consultation;
 - Presents the potential environmental effects on traffic and transport arising from Hornsea Four, based on the information gathered and the analysis and assessments undertaken;
 - 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.

7.3 Planning and Policy Context

7.3.1.1 Planning policy on offshore renewable energy Nationally Significant Infrastructure Projects (NSIPs), specifically in relation to traffic and transport, is contained in the Overarching National Policy Statement (NPS) for Energy (EN-1; DECC 2011a) and the NPS for Renewable Energy Infrastructure (EN-3, DECC 2011b).

Specific to traffic and transport, NPS for Renewable Energy Infrastructure (NPS EN-3) identifies that significant negative effects could be experienced. Accordingly, NPS EN-1 provides the guidance on what matters are to be considered in the traffic and transport assessment. This is summarised in [Table 7.1](#):

Table 7.1: Summary of NPS EN-1 and EN3 provisions relevance to traffic and transport.

Summary of NPS EN-1 provisions	How and where considered in the ES
<p><i>"The transport of materials, goods and personnel to and from a development during all project phases can have a variety of impacts on the surrounding transport infrastructure and potentially on connecting transport networks, for example through increased congestion. Impacts may include economic, social and environmental effects. Environmental impacts may result particularly from increases in noise and emissions from road transport. Disturbance caused by traffic and abnormal indivisible loads generated during the construction phase will depend on the scale and type of the proposal"</i> (EN-1, paragraph 5.13.1).</p>	<p>The consideration and mitigation of transport impacts is intrinsic throughout the ES Traffic and Transport chapter. A proportionate approach has been adopted for the EIA, fundamental to which is the adoption of commitments which embed mitigation to define the scope of assessment. The scale of assessment, geographical study area and effects to be assessed have been agreed with stakeholders through the development of Volume A4, Annex 5.1: Impacts Register. Consultation undertaken to-date is summarised in Table 7.4.</p>
<p><i>"The consideration and mitigation of transport impacts is an essential part of Government's wider policy objectives for sustainable development as set out in section 2.2 of NPS EN-1"</i> (EN-1, paragraph 5.13.2).</p>	<p>The chapter has been produced in accordance with current transport guidance (referenced later within Section 7.3) and this is evidenced throughout this document.</p> <p>Consultation undertaken to-date is summarised in Table 7.4.</p>
<p><i>"If a project is likely to have significant transport implications, the applicant's ES should include a Transport Assessment, using the NATA/ WebTAG methodology stipulated in Department for Transport (DfT) guidance, or any successor to such methodology. Applicants should consult the Highways Agency [now National Highways] and Highways Authorities as appropriate on the assessment and mitigation"</i> (EN-1, paragraph 5.13.3).</p>	<p>Section 7.8.2 outlines the indicative embedded demand management mitigation measures for construction, such as Heavy Good Vehicle (HGV) controls. An outline Construction Traffic Management Plan (oCTMP) has been submitted with this DCO application (as Appendix F of the outline Code of Construction Practice</p>
<p><i>"Where appropriate, the applicant should prepare a Travel Plan including demand management measures to mitigate transport impacts. The applicant should also provide details of proposed measures to improve access by public transport, walking and cycling, to reduce the need for car parking associated with the proposal and to mitigate transport impacts".</i> (EN-1, paragraph 5.13.4).</p>	

Summary of NPS EN-1 provisions	How and where considered in the ES
	<p>(oCoCP) (Volume F2, Chapter 2: Outline Code of Construction Practice). The oCTMP includes outline travel plan measures, which will be developed further in consultation with East Riding of Yorkshire Council (ERYC), Hull City Council (HCC) and National Highways (NH) prior to the commencement of the relevant part of the connection works.</p> <p>Section 7.8 details the agreement that operational impacts can be scoped out of the assessment and therefore an operational travel plan will not be prepared during the pre-application process.</p>
<p><i>"If additional transport infrastructure is proposed, applicants should discuss with network providers the possibility of co-funding by Government for any third-party benefits. Guidance has been issued in England which explains the circumstances where this may be possible, although the Government cannot guarantee in advance that funding will be available for any given uncommitted scheme at any specified time"</i> (EN-1, paragraph 5.13.5).</p>	<p>Table 7.29 presents a summary of the significant impacts assessed within this ES, mitigation and the residual effects.</p> <p>Hornsea Four has considered traffic and transport during the route planning and site selection process, as detailed in Volume A4, Annex 3.3: Selection and Refinement of Onshore Infrastructure.</p>
<p><i>"A new energy NSIP may give rise to substantial impacts on the surrounding transport infrastructure and the IPC [hereafter the Secretary of State (SoS)] should therefore ensure that the applicant has sought to mitigate these impacts, including during the construction phase of the development. Where the proposed mitigation measures are insufficient to reduce the impact on the transport infrastructure to acceptable levels, the SoS should consider requirements to mitigate adverse impacts on transport networks arising from the development, as set out below. Applicants may also be willing to enter into planning obligations for funding infrastructure and otherwise mitigating adverse impacts".</i> (EN-1, paragraph 5.13.6)</p>	<p>An oCTMP, has been submitted with this DCO application (as Appendix F of Volume F2, Chapter 2: Outline Code of Construction Practice). The oCTMP includes travel plan measures, these measures will be developed further in consultation with ERYC, HCC and NH prior to the commencement of the relevant works.</p>
<p><i>"Provided that the applicant is willing to enter into planning obligations or requirements can be imposed to mitigate transport impacts identified in the NATA/WebTAG transport assessment, with attribution of costs calculated in accordance with the Department for Transport's guidance, then development consent should not be withheld, and appropriately limited weight should be applied to residual effects on the surrounding transport infrastructure"</i> (EN-1, paragraph 5.13.7)</p>	
<p><i>"Where mitigation is needed, possible demand management measures must be considered and if feasible and operationally reasonable, required, before considering requirements for the provision of new inland</i></p>	

Summary of NPS EN-1 provisions	How and where considered in the ES
<p><i>transport infrastructure to deal with remaining transport impacts"</i> (EN-1, paragraph 5.13.8).</p>	
<p><i>"The SoS should have regard to the cost-effectiveness of demand management measures compared to new transport infrastructure, as well as the aim to secure more sustainable patterns of transport development when considering mitigation measures"</i> (EN-1, paragraph 5.13.9).</p>	
<p><i>"The SoS may attach requirements to a consent where there is likely to be substantial HGV traffic that:</i></p> <ul style="list-style-type: none"> • <i>Control numbers of HGV movements to and from the site in a specified period during its construction and possibly on the routing of such movements;</i> • <i>Make sufficient provision for HGV parking, either on the site or at dedicated facilities elsewhere, to avoid 'overspill' parking on public roads, prolonged queuing on approach roads and uncontrolled on-street HGV parking in normal operating conditions; and</i> • <i>Ensure satisfactory arrangements for reasonably foreseeable abnormal disruption, in consultation with network providers and the responsible police force"</i> (EN-1, paragraph 5.13.11). 	
<p><i>"If an applicant suggests that the costs of meeting any obligations or requirements would make the proposal economically unviable this should not in itself justify the relaxation by the SoS of any obligations or requirements needed to secure the mitigation"</i> (EN-1, paragraph 5.13.12).</p>	

7.3.1.2 NPS EN-1 also highlights several factors relating to the determination of an application and in relation to mitigation. These are summarised in [Table 7.2](#).

Table 7.2: Summary of NPS EN-1 policy on decision making relevant to Traffic and Transport.

Summary of NPS EN-1 provisions	How and where considered in the ES
<p><i>Traffic and Transport</i></p> <p><i>"A new energy NSIP may give rise to substantial impacts on the surrounding transport infrastructure and the SoS should therefore ensure that the applicant has sought to mitigate these impacts, including during the construction phase of the development. Where the proposed mitigation measures are insufficient to reduce the impact on the transport infrastructure to acceptable levels, the SoS should consider requirements to mitigate adverse impacts on transport networks arising from the development, as set out. Applicants may also be willing to enter into planning obligations for funding infrastructure and otherwise mitigating adverse impacts"</i> (EN-1, paragraph 5.13.6).</p>	<p>Commitments (see Table 7.12) serve to reduce the overall impact and narrow the assessment to where significant impacts are more likely to occur. Section 7.11 provides a summary of the residual traffic and transport impacts of Hornsea Four and proposed further mitigation measures.</p>

7.3.2 National Planning Policy Framework

- 7.3.2.1 The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, updated 2019) is the primary source of national planning guidance in England. Whilst the NPPF is not directly applicable to NSIPs, as Government policy it may be considered relevant and important.
- 7.3.2.2 The NPPF contains the Government's strategies for economic, social and environmental planning policies in England and it is designed to be a single, tightly focused document.
- 7.3.2.3 Paragraph 109 of the NPPF states that *"development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."* [Table 7.29](#) presents a summary of the significant impacts assessed within this ES, any mitigation and the residual effects.
- 7.3.2.4 Paragraph 111 of the NPPF states that *"all developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed."* An oCTMP has been submitted with this DCO application and includes travel plan measures (Appendix F of [Volume F2, Chapter 2: Outline Code of Construction Practice](#)).

7.3.3 Local Planning Policy

- 7.3.3.1 EN-1 states that the SoS will also consider Development Plan Documents or other documents in the Local Development Framework to be relevant to their decision making. With the exception of the A63 which is managed by National Highways (NH), the traffic and transport network in the traffic and transport study area falls under the jurisdiction of the East Riding of Yorkshire County Council (ERYC) and Hull City Council (HCC)
- 7.3.3.2 EYRC have produced a Local Plan which contains a suite of planning documents that together provide a long-term development plan for the council. Within the suite of documents, the Strategy Document sets the overall direction for the Local Plan, providing strategic policies to guide decisions on planning applications. It was adopted by the council on 6 April 2016. ERYC is currently (July 2021) reviewing their Local Plan.
- 7.3.3.3 Similarly, HCC have also produced a Local Plan (adopted in November 2017) as part of the statutory development plan process which provides guidance on new developments in Hull. The Local Plan provides a vision and strategic priorities for Hull, and policies with supporting text based around key themes including transport.
- 7.3.3.4 [Table 7.3](#) provides details of the local planning policy documents and a summary of the policies contained within these which are pertinent to traffic and transport.

Table 7.3: Pertinent local planning policies.

Policy Reference	Policy / Guidance	How and where considered in the ES
<i>East Riding Local Plan 2012 – 2029 Strategy Document – Adopted April 2016</i>		
Policy EC4: Enhancing Sustainable Transport	<p><i>“In order to increase overall accessibility, minimise congestion and improve safety, new development will be supported where it is accessible, or can be made accessible, by sustainable modes of transport and addresses its likely transport impact. Development proposals should:</i></p> <ul style="list-style-type: none"> • <i>Produce and agree a transport assessment and travel plan, where a significant transport impact is likely;</i> • <i>Support and encourage sustainable travel options which may include public transport, electric and ultra-low emission vehicles, car sharing, cycling and walking; particularly in the Major Haltemprice Settlements, Principal Towns, and Towns; and</i> • <i>Bring forward other necessary transport infrastructure to accommodate expected movement to and from the development.”</i> 	<p>Section 7.11 contains an assessment of Hornsea Four’s impacts upon road safety, driver delay and associated proposed mitigation measures.</p>
<i>Hull Local Plan 2016 – 2032 – Adopted November 2017</i>		
Policy 25: Sustainable Travel	<p>In summary, Policy 25 sets out that developments should promote the use of sustainable transport and have minimal impact on the environment and public health.</p>	<p>An oCTMP, has been submitted with the DCO application (as Appendix F of Volume F2, Chapter 2: Outline Code of Construction Practice). The oCTMP includes travel plan measures, to promote the use of sustainable transport to be finalised in consultation with ERYC, HCC and NH prior to the commencement of the relevant part of the connection works.</p> <p>Section 7.11 contains an assessment of Hornsea Four’s impacts and associated proposed mitigation measures.</p> <p>Further consideration of the impact of</p>

Policy Reference	Policy / Guidance	How and where considered in the ES
		<p>construction traffic upon the environment and public health is presented in Chapter 9: Air Quality and Volume A4, Annex 5.8: Health Impact Assessment.</p>
<p>Policy 27: Transport Appraisals</p>	<p>In summary, Policy 27 sets out that development should demonstrate an understanding of the travel requirements and resultant impacts by providing a transport appraisal (e.g. Transport Statement (TS)/ Transport Assessment (TA)/ Travel Plan (TP)) and Construction Management Plan where applicable.</p>	<p>This chapter summarises information contained within a technical report, which is included at Volume A6, Annex 7.1: Traffic and Transport Technical Report. The technical report outlines baseline traffic flows, the methodology behind predicted construction traffic flows, and the resulting combined traffic flows across the study area.</p> <p>An oCTMP, has been submitted with the DCO application (as Appendix F of Volume F2, Chapter 2: Outline Code of Construction Practice). The oCTMP includes travel plan measures, these measures will be developed further in consultation with ERYC, HCC and NH prior to the commencement of the relevant part of the connection works.</p>

7.3.4 Further Policy and Guidance

The Strategic Road Network and the Delivery of Sustainable Development Guidance

7.3.4.1 The DfT Circular 02/2013 entitled 'The Strategic Road Network and the Delivery of Sustainable Development' sets out the ways in which the Highways Agency (now NH) will engage with communities and developers to deliver sustainable development and thus economic growth, whilst safeguarding the primary function and purpose of the Strategic Road Network.

7.3.4.2 Under the heading of 'Environmental Impact' Circular 02/2013 notes that:

"...developers must ensure all environmental implications associated with their proposals, are adequately assessed and reported so as to ensure that the mitigation of any impact is compliant with prevailing policies and standards. This requirement applies in respect of the environmental impacts arising from the temporary construction works and the permanent transport solution associated with the development, as well as the environmental impact of the existing trunk road upon the development itself".

7.3.4.3 The Circular 02/2013 details access requirements specifically for wind turbines and states that:

"The promoter of a wind farm should prepare a report covering the construction, operation and de-commissioning stages of the development. From this, the acceptability of the proposal should be determined, and any mitigating measures should be identified

Access to the site for construction, maintenance and de-commissioning should be obtained via the local road network and, normally, there should be no direct connection to the strategic road network.

Swept path analyses should be provided by the developer for the abnormal load deliveries to the site."

7.3.4.4 Within the traffic and transport study area, the strategic road network (managed by NH) includes the A63 and A1033 to the south of Hull and the A63 west of Hull towards the M62. The requirements of Circular 02/2013 are therefore addressed within this ES.

Guidelines for the Environmental Assessment of Road Traffic

7.3.4.5 The Guidelines for the Environmental Assessment of Road Traffic (GEART) (Institute of Environmental Assessment 1993) relate to the assessment of the environmental impacts of road traffic associated with new developments.

7.3.4.6 The purpose of the guidelines is to provide the basis for systematic, consistent and comprehensive coverage for the appraisal of traffic impacts arising from development

projects. Impacts that may arise include pedestrian severance and pedestrian amenity, driver delay, accidents and safety and noise, vibration and air quality.

7.3.4.7 GEART has informed this assessment and [Section 7.10](#) of this report contains full details of how the guidance has been applied.

DfT Transport Assessment Guidance and Successors

7.3.4.8 The DfT Transport Assessment guidance referred to in NPS EN-1 was withdrawn in October 2014 and replaced with DCLG Planning Practice Guidance (PPG). For the purpose of assessing Hornsea Four's impacts the relevant PPG is 'Travel Plans, Transport Assessment and Statements' (henceforth referred to as the Transport PPG).

7.3.4.9 The Transport PPG sets out the key principles when developing a Transport Assessment, noting that it should be:

- proportionate to the size and scope of the proposed development to which they relate and build on existing information wherever possible;
- established at the earliest practicable possible stage of a development proposal;
- tailored to particular local circumstances (other locally-determined factors and information beyond those which are set out in this guidance may need to be considered in these studies provided there is robust evidence for doing so locally); and
- brought forward through collaborative ongoing working between the local planning authority/transport authority, transport operators, rail network operators, Highways Agency (now NH) where there may be implications for the strategic road network and other relevant bodies.

7.3.4.10 The Transport PPG key principles have shaped the development of the ES and can be seen throughout the document.

7.4 Consultation

7.4.1.1 Consultation is a key part of the DCO application process. Consultation regarding traffic and transport has been undertaken through Evidence Plan Technical Panel meetings, the EIA scoping process (Orsted 2018) and formal consultation on the Preliminary Environmental Information Report (PEIR) (Orsted 2019) under section 42 of the 2008 Act. An overview of the project consultation process is presented within [Volume A1, Chapter 6: Consultation](#). Agreements made with consultees within the Evidence Plan process are set out in the topic specific Evidence Plan Logs which are appendices to the Hornsea Four Evidence Plan ([Volume B1, Annex 1.1: Evidence Plan](#)), an annex of the Hornsea Four Consultation Report ([Volume B1, Chapter 1: Consultation Report](#)). All agreements within the Evidence Plan Logs have unique identifier codes which have been used throughout this document to signpost to the specific agreements made (e.g. ON-HUM-1.1).

7.4.1.2 A delayed submission of the Hornsea Four DCO to September 2021 has necessitated a review of the validity of all baseline data underpinning the ES. The proposed approach to

updating the baseline data was outlined in a position paper and provided to stakeholders. Agreement from ERYC was obtained in May 2021 (ON-HUM-1.17) that the information contained within the position paper was acceptable.

7.4.1.3 Based upon the outcome of the baseline data validity review, the traffic and transport baseline was updated with the latest (pre Covid-19) traffic flow and national average collision rate data. The same methodology has been applied in the updated traffic and transport assessment as that previously agreed with stakeholders, whilst using the most recent applicable data.

7.4.1.4 A summary of the key issues raised during consultation specific to traffic and transport is outlined below in **Table 7.4**, together with how these issues have been considered in the production of this ES.

Table 7.4: Consultation Responses.

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
PINS	23 November 2018 Scoping Opinion Section 4.19	"... The Inspectorate accepts that given the nature of the likely traffic generation and the impacts which could occur on highly trafficked roads, significant effects during operation are unlikely but this may not be the case for the construction period. The Inspectorate considers that severance impacts during construction should be assessed where significant effects could occur."	Section 7.11 provides a detailed assessment of the potential for severance impacts during construction.
		"Table 7.21 list roads identified in the baseline and the text refers to Figure 7.13 for information on cycle routes and PRow. Other key transport routes e.g. train lines are not discussed although it is noted that Paragraph 7.7.8.3 commits to an assessment of impacts on public transport. The ES should provide a detailed account of the baseline relevant to the assessment, including road, rail, and non-motorised routes. The Inspectorate would expect to see a draft Construction Traffic Management Plan presented in the ES and applied to the assessment of effects on rail and other non-road transport receptors."	Section 7.7 provides a detailed review of the baseline relevant to the traffic and transport assessment. With specific regards to rail, the only rail freight facilities within proximity of the traffic and transport study area is at the Port of Hull. The assessment considers a Maximum Design Scenario (MDS) of all HGV traffic travelling from the Port of Hull, assuming transfer to road from either rail or sea.
		"Impacts with regard to non-motorised routes are discussed in the Scoping Report	Section 7.10 considers route sensitivity in the context of all user groups/ modes of travel.

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
		<p><i>under 'Pedestrian delay and amenity'. The ES should make an assessment of the likely significant effects with regard to all non-motorised users."</i></p>	<p>An oCTMP, has been submitted with this DCO application (as Appendix F of Volume F2, Chapter 2: Outline Code of Construction Practice). The oCTMP includes outline travel plan measures, these measures will be developed further in consultation with ERYC, HCC and NH prior to the commencement of the relevant part of the connection works.</p>
		<p>With regards to impacts from traffic generation during construction the Inspectorate notes that: <i>"This matter is not listed in Table 7.23 as scoped in or scoped out. The Scoping Report sets out the anticipated increase in traffic movements during construction. For the avoidance of doubt, the Inspectorate considers that traffic generated during construction should be assessed where significant effects are likely to occur."</i></p>	<p>Section 7.11 provides a detailed review of the potential construction impacts.</p>
Public Heath England	14 November 2018 Scoping Consultation	<p><i>"The overall risk to non-motorised users (NMU) and impact on active travel should be considered on a case-by-case basis, taking into account, the number of users and the effect that any temporary traffic management will have on their journey and safety."</i></p> <p><i>"Any traffic counts and assessment should also, as far as reasonably practicable, identify informal routes used by NMU which may be affected. The final ES should identify the temporary traffic management design principles or standards that will be maintained."</i></p>	<p>Section 7.7 provides a detailed review of the baseline relevant to the traffic and transport assessment. Section 7.10 considers route sensitivity in the context of all user groups/ modes of travel.</p> <p>An oCTMP, has been submitted with this DCO application (as Appendix F of Volume F2, Chapter 2: Code of Construction Practice). The oCTMP includes outline travel plan measures, these measures will be developed further in consultation with ERYC, HCC and NH prior to the commencement of the relevant part of the connection works.</p>

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
ERYC	22 January 2019 ERYC comments on the Hornsea Four EIA Scoping Report Section Traffic and Transport	<p><i>"Abnormal load arrangements would be dealt with once a route is known via the Council's Abnormal Loads officer, however as the most likely route being from the Port of Hull and would include the A63/M62 Highways England [now known as National Highways] and Hull City Council should also be involved."</i></p> <p>With regards to cumulative projects, in their comments on the EIA Scoping report the ERYC identified that the 'Jocks Lodge' A164 / A1079 junction scheme and the improvement scheme to Castle Street should be considered within the CEA.</p>	<p>An abnormal load report has been undertaken (Volume A6, Annex 7.2) and a summary of the findings are is provided in Section 7.10.2.</p> <p>It was agreed with the ERYC at the Second Human Environment Technical Panel Meeting on the 1 May 2019 that the CEA for traffic and transport should consider the potential impacts with A164/A1079 Jocks Lodge improvements and A63 Castle Street improvement works at Hull. No other cumulative projects were identified as requiring further assessment (ON-HUM-4.3). It was subsequently agreed with NH (5 September 2019) and ERYC (2 October 2019) that given uncertainties regarding the potential temporal overlap of the respective projects that the potential for cumulative impacts would be better managed post DCO submission through the development of the CTMP for both projects (ON-HUM-4.3). Section 7.12 of the ES provides further details.</p>
ERYC	7 January 2019 Human Environment Technical Panel Meeting 1 – Post Scoping / Pre-PEIR	Discussions were held regarding the proposed effects that would be assessed within the PEIR and the approach to assessment. ERYC agreed with the effects presented and the proposed approach to assessment.	Section 7.10 provides details of the proposed effects to be assessed and the assessment methodology.

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
ERYC	1 May 2019 Human Environment Technical Panel Meeting 2 – Post Scoping / Pre-PEIR	An agreed approach to data gathering and to factoring baseline traffic flows to future years.	Volume A6, Annex 7.1: Traffic and Transport Technical Report includes details of the baseline data collection that has been undertaken for Hornsea Four and agreed with ERYC (ON-HUM-1.8).
		An agreed approach to distributing all construction employee traffic using assumptions from socio economics and assigning all HGV traffic via the A164 towards and the M62.	Volume A6, Annex 7.1: Traffic and Transport Technical Report includes details of methodology for assigning employee and HGV traffic to the traffic and transport study area.
		A proportional approach to assessing road safety impacts by focussing on collision rates. The ERYC agreed that the approach presented was acceptable.	Section 7.11 contains an assessment of Hornsea Four's impacts upon road safety.
		Junctions that the ERYC requested should be included within the driver delay assessment. It was agreed that the assessment presented at PEIR would present traffic flows through these junctions to inform the requirement for any further assessment (such as detailed junction modelling) within the DCO submission.	Section 7.11 contains an assessment of Hornsea Four's impacts upon driver delay.
		An agreed approach to providing standard access concepts at PEIR that would be refined for the DCO submission.	Preliminary access concept drawings are provided within Volume A6, Annex 7.1: Traffic and Transport Technical Report .
Public Health England	23 September 2019 Section 42, Response to PEIR	<i>"The traffic and transport section (Para 7.11.1.41) identifies that HGV movements will avoid school opening and closing times as a mitigation measure. The final times need to be agreed with the individual schools and account for pre and after school activities"</i>	Section 7.10 proposes mitigation to restrict HGV movements during school start and finish times through the village of Beeford only. This measure is proposed to address potential impacts upon pedestrian amenity. It is proposed to only restrict movements during school start and finish times as pedestrian activity is greatest at these periods. An oCTMP, has been submitted with this DCO application (as Appendix F of Volume F2, Chapter 2). The oCTMP includes details of measures

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
			to restrict deliveries during school start and finish times. These measures will be developed further in consultation with ERYC prior to the commencement of the relevant part of the connection works.
NH	5 September 2019, Meeting with NH - Post-PEIR	The proposed approach to assessment of impacts was shared and agreed with NH. NH advised that their main concern related to the potential for peak hour traffic driver delay (capacity) impacts at the junction of the A63, A15 and A164. NH requested that a commitment be made by Hornsea Four to avoiding peak hours.	It was agreed with NH that if the appointed Contractor wished to undertake movements during peak hours, they would be required to agree these with NH through the development of the CTMP post DCO submission (ON-HUM-3.4).
		Discussions regarding the potential for cumulative impacts between Hornsea Four and the A63 Castle Street Improvements Scheme.	It was agreed with NH that given uncertainties regarding the timings of the respective projects that the potential for cumulative impacts could be dealt with post DCO submission through the development of the CTMP for both projects. (ON-HUM-4.2).
		NH raised potential concerns that Abnormal Loads from Hornsea Four may be unable to traverse along the A63 during the construction of the A63 Castle Street Improvements Scheme.	Regarding abnormal loads, it is detailed within meeting minutes (issued on the 13 September 2019) that an alternative route has been identified that would avoid Castle Street (ON-HUM-2.1). Further details are provided in Section 7.10.2 and Volume A6, Annex 7.2 .
ERYC	2 October 2019, Meeting with ERYC - Post-PEIR	The PEIR assessment findings and proposed mitigation measures were shared and discussed with ERYC. It was explained that outline mitigation measures were included in the PEIR and that final measures would be refined post DCO as part of the development of the CTMP.	ERYC raised no concerns with the assessment methodology or findings and agreed that mitigation measures could be developed post consented through the CTMP (ON-HUM-3.5).
		Proposed amendments to access and road crossing locations between PEIR and ES were discussed with ERYC.	ERYC confirmed that they had no concerns with the proposed access and crossing locations and

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
		<p>Discussions were held with regards to the potential routes to be used by abnormal loads carrying the Super Grid transformers. It was discussed that a route from the Hull via the A63 and A164 may be constrained during improvement works at the A63 and therefore ERYC were asked if they would support the use of an alternative route via Markfleet Lane, Ings Road, Sutton Road and the A1079.</p> <p>Discussions regarding the potential for cumulative impacts between Hornsea Four and the A164/ Jocks Lodge junction improvement Scheme.</p>	<p>and agreed that access designs could be developed post consented through the CTMP (ON-HUM-3.8).</p> <p>ERYC confirmed that they would support the use of the route via Markfleet Lane, Ings Road, Sutton Road and the A1079 (ON-HUM-2.8). Further details of the abnormal load assessment are provided in Section 7.10.2.</p> <p>It was agreed with ERYC that given uncertainties regarding the timings of the respective projects that the potential for cumulative impacts could be dealt with post DCO submission through the development of the CTMP for both projects (ON-HUM-4.3).</p>
HCC	7 November 2019, Skype Meeting with HCC - Post-PEIR	<p>In response to the PEIR, HCC requested that the traffic and transport study area also be extended to include roads within their administration area.</p> <p>HCC requested detail with regards to how HGV movements would be controlled including routeing and delivery hours. It was explained that routeing and delivery</p>	<p>The roads within the HCC administration area to be included within the transport study area were shared (via email with HCC) on the 25 November 2019 and agreed (subject to controls on HGV routeing via email received on the 5 December 2019 (ON-HUM-1.13)). The final agreed traffic and transport study area is shown in Figure 7.1.</p> <p>The oCTMP submitted with this DCO application (as Appendix F of Volume F2, Chapter 2: Outline Code of Construction Practice) includes details of measures to control HGV routeing.</p> <p>An oCTMP, has been submitted with this DCO application (as Appendix F of Volume F2, Chapter 2: Outline Code of Construction Practice). This</p>

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
		hours would be controlled through measures contained within the outline CTMP. A draft copy of the oCTMP was provided to HCC for review. HCC advised in June 2020 (ON-HUM-2.9) of additional junctions that should be included for further assessment and also amendments to text in relation to the approach to monitoring HGV routing.	oCTMP includes HCC request for additional junctions to be included as part of the assessment and the approach to monitoring of HGV routing.
ERYC	Meetings and emails with ERYC	A potential spatial conflict between the proposed accesses from the A164 and A1079 for Hornsea Four and the Jocks Lodge works was identified. The Applicant and ERYC therefore agreed amendments to the design of these accesses to ensure that these conflicts were removed (ON-HUM-4.4).	Details of the proposed access strategy (including the interface with the Jocks Lodge works) are outlined in Volume A6, Annex 7.1: Traffic and Transport Technical Report .
ERYC	Draft oCTMP, Traffic and Transport ES and Annex for comment	ERYC provided comments on the measures to prevent detritus and other material being deposited on the public highway in the oCTMP. No other comments were received on the draft documents.	Comments from ERYC in relation to the draft oCTMP have been incorporated the final oCTMP submitted with this DCO application (as Appendix F of Volume F2, Chapter 2: Outline Code of Construction Practice).
ERYC	12 May 2021, email to ERYC	Following comments from Lockington Parish Council at PEIR, the Applicant sought the views of ERYC in relation to HGV movements along Station Road. In particular the suitability of the assessment and whether the road would be appropriate for use by HGVs. ERYC confirmed that they considered the assessment was appropriate but noted that they would expect road/junction widening. In addition, ERYC also requested surveys of the existing road condition (condition surveys) to inform the potential requirement for preventative works (ON-HUM-3.11)	Section 7.11 contains an assessment of the impact of increases in construction traffic upon Driver delay – Local roads and outlines mitigation measures. The oCTMP submitted with this DCO application (as Appendix F of Volume F2, Chapter 2: Outline Code of Construction Practice) includes details of the approach to undertaking the condition surveys.
NH	Draft oCTMP, Traffic and Transport ES	NH provided a review of all the draft documents and confirmed that the assessment is appropriate (ON-HUM-3.12).	Comments from NH in relation to the draft oCTMP have been incorporated the final oCTMP submitted with this DCO application

Consultee	Date, Document, Forum	Comment	Where addressed in the ES
	and Annex for comment	NH requested minor amendments to the oCTMP to clarify the scope of a final CTMP. The text amendments were subsequently agreed with NH as being appropriate commitments and would be sufficient to manage capacity and road safety impacts on the strategic road network (ON-HUM-3.12).	(as Appendix F of Volume F2, Chapter 2: Outline Code of Construction Practice).

7.5 Study area

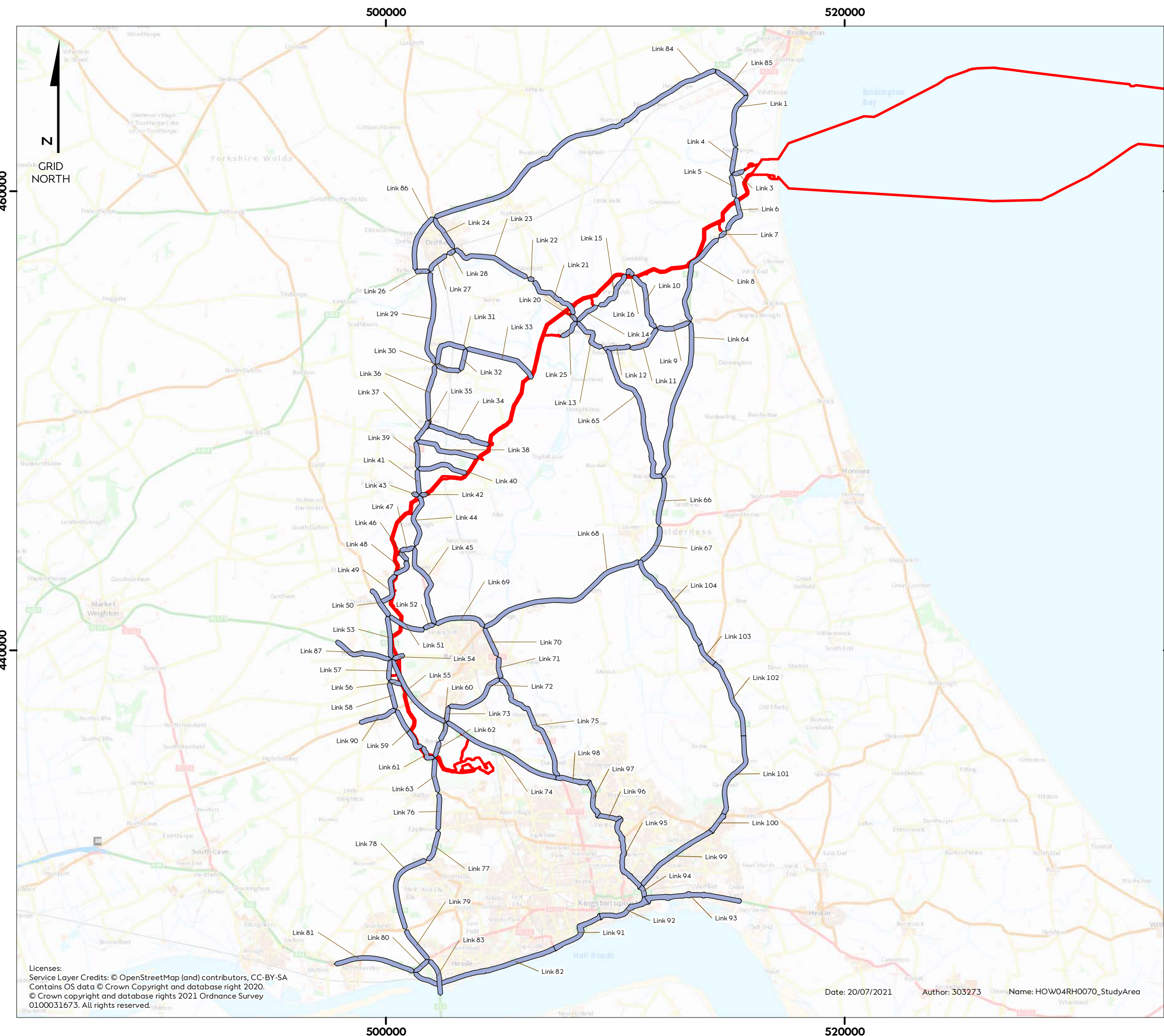
7.5.1.1 The traffic and transport study area has been informed by determining the most probable routes for traffic, for both the movement of materials and employees during construction of Hornsea Four, based on professional judgement. The extent of the traffic and transport study area was initially agreed with ERYC at the second Human Environment Technical Panel on the 1 May 2019 (ON-HUM-1.8). Subsequently, at a meeting with the ERYC on the 2 October 2019, the ERYC requested that the traffic and transport study area be extended to also include the A165 south east from its junction with the A1035 (ON-HUM-2.8).

7.5.1.2 HCC also requested that the initial traffic and transport study area be extended to include key roads within the HCC administration area. The revised traffic and transport study area encompassing the main A roads within the HCC administration area was shared with HCC on the 25 November 2019 and agreed (subject to controls on HGV routeing via email received on the 5 December 2019 (ON-HUM-1.13). The oCTMP submitted with this DCO application (as Appendix F of [Volume F2, Chapter 2: Code of Construction Practice](#)) includes details of measures to control HGV routeing. [Volume A4, Annex 3.3: Selection and Refinement of the Onshore Infrastructure](#) also includes details of the evolution of access design.

7.5.1.3 Following the completion of the PEIR, there have been a number of refinements to the proposed access locations. The traffic and transport study area has therefore been revised to remove those sections of highway (links) that would no longer be impacted by Hornsea Four construction traffic, no additional links have been included as a consequence of these access refinements. The roads removed are:

- Link 2 (an unnamed road to the south of the village of Fraisthorpe) has been removed as a final landfall location has been selected;
- Links 17 (Long Lane), 18 (Gembling Lane) and 19 (Out Gates) have been removed as construction traffic has been routed away from the settlement of Gembling through the introduction of a new access point located off link 10; and
- Links 88 (B1233) and 89 (Park Lane) have been removed as construction traffic would no longer be required to travel via Cottingham as access would now be taken from the A1079.

- 7.5.1.4 In order to allow cross referencing between the PEIR and the ES, links have not been re-numbered to account for the removal of these six links.
- 7.5.1.5 The updated traffic and transport study area is illustrated in [Figure 7.1](#). The traffic and transport study area is divided into 104 separate highway sections known as links, which are defined as sections of road with similar characteristics and traffic flows.
- 7.5.1.6 Routes that extend outside of the traffic and transport study area are routes where construction traffic has dissipated and/ or include roads with negligible sensitive receptors. These parameters combine and do not represent significant impacts on the existing highway network.

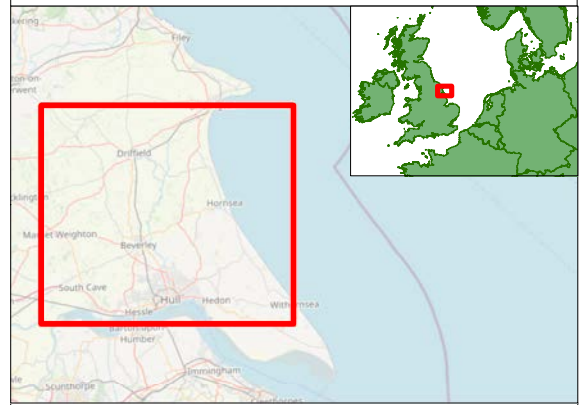


Hornsea Four

Figure 7.1

Traffic and Transport Study Area

- Order Limits
- Traffic Links



Coordinate system: British National Grid
 Scale@A3: 1:160,000

0 2 4 6 Kilometres

0 2 4 6 Miles

REV	REMARK	DATE
	First Issue for PEIR	08/07/2019
A	Updated following PEIR consultations, for DCO	20/07/2021

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Date: 20/07/2021 Author: 303273 Name: HOW04RH0070_StudyArea

Title: Study Area
 Document no: HOW04RH0070
 Created by: AZ
 Checked by: ST
 Approved by: CS



7.6 Methodology to inform baseline

7.6.1 Desktop Study

7.6.1.1 A desktop study was undertaken to obtain information pertinent to traffic and transport. Data were acquired within the traffic and transport study area through a detailed desktop review of existing studies and datasets, as listed in [Table 7.5](#).

Table 7.5: Key Sources of Traffic and Transport data.

Source	Summary	Coverage of Hornsea Four traffic and transport study area
ERYC and HCC Personal Injury Collision (PIC) data	PICs on the public highway that are reported to the police and which involve injury or death are recorded by the police on a STATS19 form and collated by the local highway authority. The PIC data includes a wide variety of information about the collision (such as time, date, location, road conditions).	PIC data for all links within traffic and transport study area covering the latest period available from the respective local highway authority, namely: <ul style="list-style-type: none"> For links within the ERYC administration area data was provided between the 1 January 2014 to 30 April 2019. For links within the HCC administration area data was obtained covering the period of 2 December 2014 to 2 December 2019.
DfT	National road traffic statistics provides a summary of traffic flows and vehicle composition (e.g. HGV, car, motorcycle) for a range of motorways and 'A' roads across the UK (DfT, n.d.)	Traffic count data for all main A roads within the traffic and transport study (captured in 2019) has been obtained.
ERYC Fixed Traffic Counts	The ERYC collect traffic flow information at several permanent count sites across the East Riding of Yorkshire.	Traffic count data for nine links within the traffic and transport study area covering the period (January to December 2018) has been obtained.
Sustrans	Map of the national cycle networks (Sustrans, n.d.)	Full coverage of the Hornsea Four traffic and transport study area.

7.6.2 Site Specific Surveys

7.6.2.1 To inform the EIA, site-specific traffic surveys were also undertaken, the scope and methodology of which was agreed with ERYC at the second Human Environment Technical Panel on the 1 May 2019 (ON-HUM-1.12). A summary of surveys is outlined in [Table 7.6](#) and is presented fully in [Volume A6, Annex 7.1: Traffic and Transport Technical Report](#).

Table 7.6: Summary of site-specific survey data.

Data	Date	Status	Coverage	Confidence	Notes
Classified Automatic Traffic Counts (ATC)	March 2019	Completed	28 links within the traffic and transport study area	High	Traffic counts commissioned by the Applicant which provide classified hourly and daily count and speed data

7.7 Baseline environment

7.7.1 Existing baseline

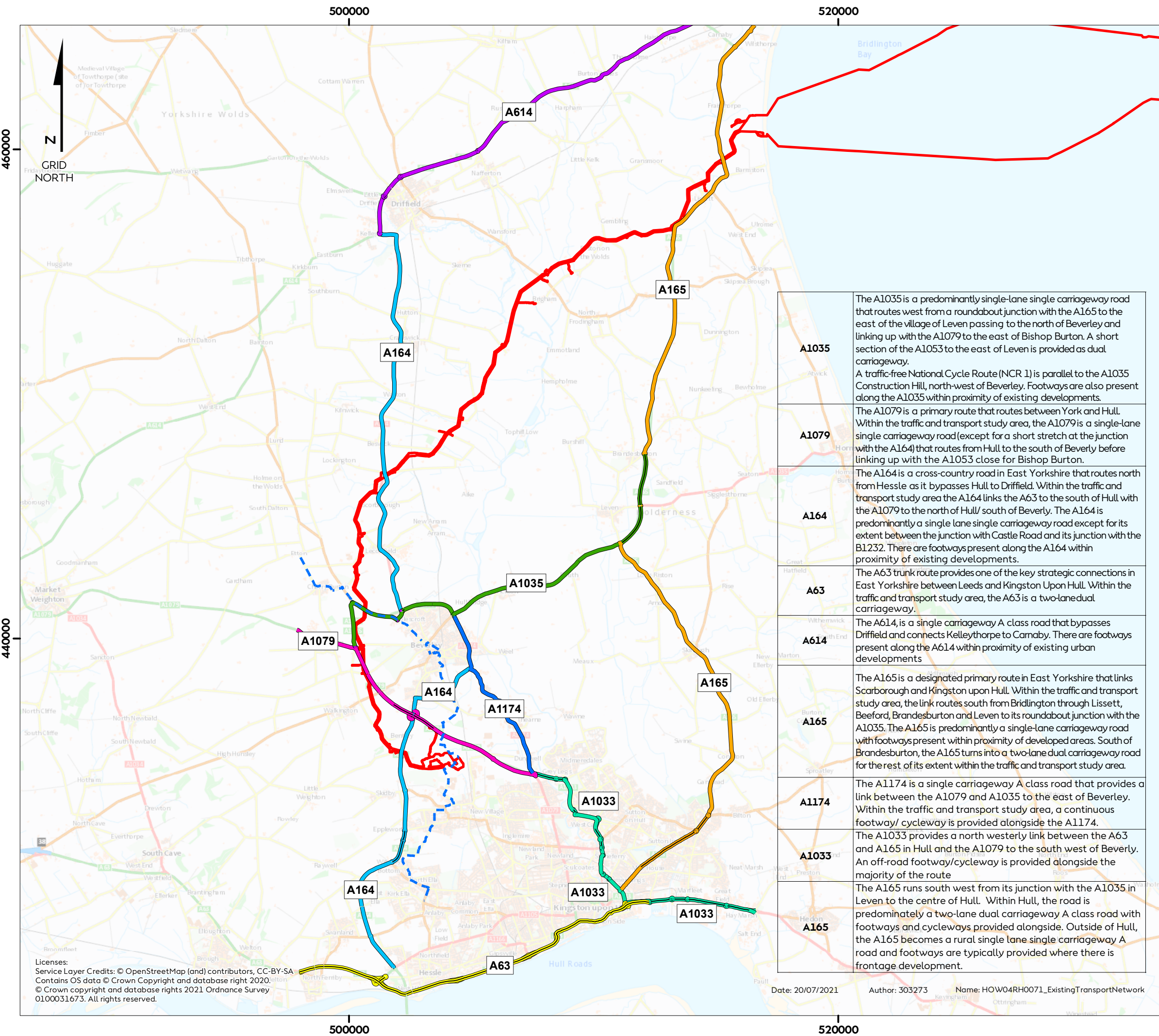
A Roads

7.7.1.1 The main A road network (managed by ERYC and HCC) in the vicinity of the onshore elements of Hornsea Four includes the A164, A165, A614, A1079, A1035, A1033, A1165, and A1174. The A63 and the A1033 (between the A63 and Hedon to the east of Hull) forms part of the Strategic Road (Trunk Road) Network managed by NH. These links are illustrated in [Figure 7.2](#).

Local access routes

7.7.1.2 From the main A road network, in order to access the majority of the proposed construction access points for Hornsea Four, construction vehicles would need to utilise the local road network. [Figure 7.3](#) depicts the proposed access locations, whilst [Table 7.7](#) provides a description of the proposed routes that construction traffic would use to access each of the accesses from the main A road network. A summary of how these access points have been selected is provided in [Volume A4, Annex 3.3: Selection and Refinement of the Onshore Infrastructure](#). [Figure 7.4](#) to [Figure 7.8](#) sets out the proposed access locations in more detail.

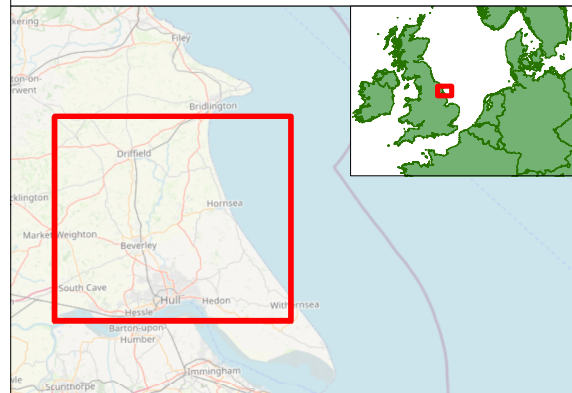
7.7.1.3 [Figure 4.21](#) of [Volume A1, Chapter 4: Project Description](#) presents the accesses potentially requiring detailed road junction works and traffic management arrangements. At the point of DCO application, detailed design of the accesses has not been fully progressed, however, it has been agreed with the ERYC at a meeting on the 2 October 2019 that the nature and extent of the access designs can be determined post consent (in consultation with the ERYC) through the development of the CTMP (DCO Requirement 18), secured by DCO Requirement 11 (Highway accesses) (ON-HUM-3.9). The oCTMP, submitted with this DCO application (as Appendix F of [Volume F2, Chapter 2: Outline Code of Construction Practice](#)), includes the commitment to submitting and agreeing the detail of the access and crossing designs with ERYC.



Hornsea Four
Figure 7.2
Existing Highway Network

- Order Limits
- National Cycle Route (NCR 1)
- A Road Classification**
- A165 Single carriageway
- A165 Dual carriageway
- A1033 Single carriageway
- A1033 Dual carriageway
- A1035 Single carriageway
- A1035 Dual carriageway
- A1079 Single carriageway
- A1079 Dual carriageway
- A1174 Single carriageway
- A164 Single carriageway
- A164 Dual carriageway
- A614 Single carriageway
- A63 Single carriageway
- A63 Dual carriageway

A1035	The A1035 is a predominantly single-lane single carriageway road that routes west from a roundabout junction with the A165 to the east of the village of Leven passing to the north of Beverley and linking up with the A1079 to the east of Bishop Burton. A short section of the A1053 to the east of Leven is provided as dual carriageway. A traffic-free National Cycle Route (NCR 1) is parallel to the A1035 Construction Hill, north-west of Beverley. Footways are also present along the A1035 within proximity of existing developments.
A1079	The A1079 is a primary route that routes between York and Hull. Within the traffic and transport study area, the A1079 is a single-lane single carriageway road (except for a short stretch at the junction with the A164) that routes from Hull to the south of Beverley before linking up with the A1053 close for Bishop Burton.
A164	The A164 is a cross-country road in East Yorkshire that routes north from Hessle as it bypasses Hull to Driffield. Within the traffic and transport study area the A164 links the A63 to the south of Hull with the A1079 to the north of Hull/ south of Beverley. The A164 is predominantly a single lane single carriageway road except for its extent between the junction with Castle Road and its junction with the B1232. There are footways present along the A164 within proximity of existing developments.
A63	The A63 trunk route provides one of the key strategic connections in East Yorkshire between Leeds and Kingston Upon Hull. Within the traffic and transport study area, the A63 is a two-lane dual carriageway.
A614	The A614, is a single carriageway A class road that bypasses Driffield and connects Kellethorpe to Carnaby. There are footways present along the A614 within proximity of existing urban developments
A165	The A165 is a designated primary route in East Yorkshire that links Scarborough and Kingston upon Hull. Within the traffic and transport study area, the link routes south from Bridlington through Lissett, Beeford, Brandesburton and Leven to its roundabout junction with the A1035. The A165 is predominantly a single-lane carriageway road with footways present within proximity of developed areas. South of Brandesburton, the A165 turns into a two-lane dual carriageway road for the rest of its extent within the traffic and transport study area.
A1174	The A1174 is a single carriageway A class road that provides a link between the A1079 and A1035 to the east of Beverley. Within the traffic and transport study area, a continuous footway/ cycleway is provided alongside the A1174.
A1033	The A1033 provides a north westerly link between the A63 and A165 in Hull and the A1079 to the south west of Beverley. An off-road footway/cycleway is provided alongside the majority of the route
A165	The A165 runs south west from its junction with the A1035 in Leven to the centre of Hull. Within Hull, the road is predominately a two-lane dual carriageway A class road with footways and cycleways provided alongside. Outside of Hull, the A165 becomes a rural single lane single carriageway A road and footways are typically provided where there is frontage development.



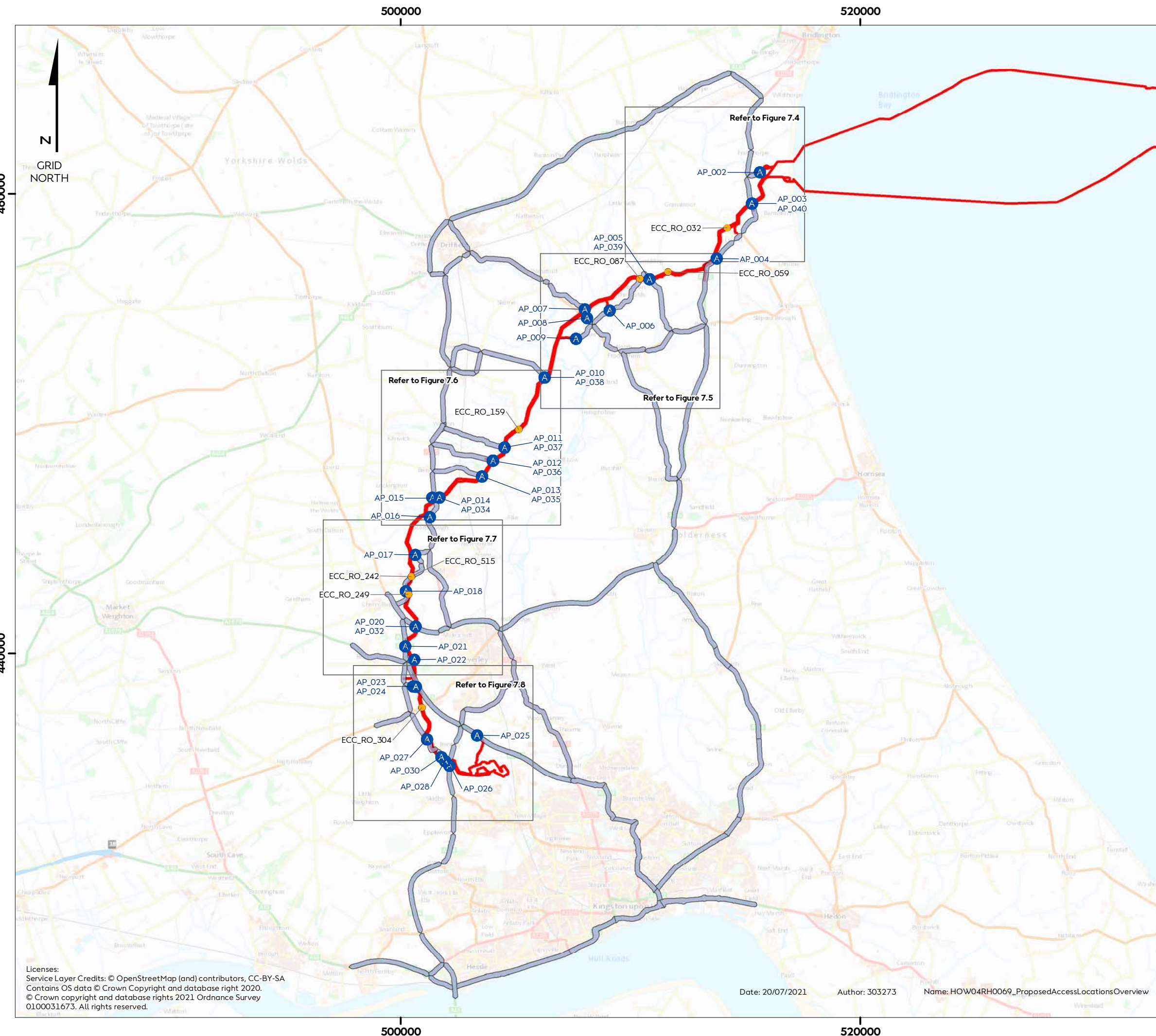
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Scale@A3: 1:150,000

0 2 4 6 Kilometres

0 2 4 Miles

REV	REMARK	DATE
	First Issue for PEIR	08/07/2019
A	Updated following PEIR consultations, for DCO	20/07/2021

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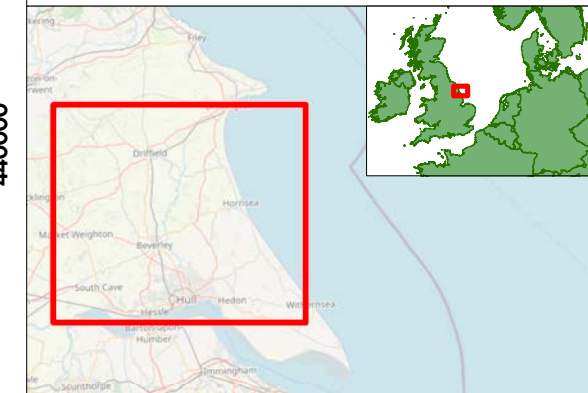


Hornsea Four

Figure 7.3

Proposed Access Locations - Key Plan

- Order Limits
- A Proposed Access Point
- Crossing Point
- Traffic Links



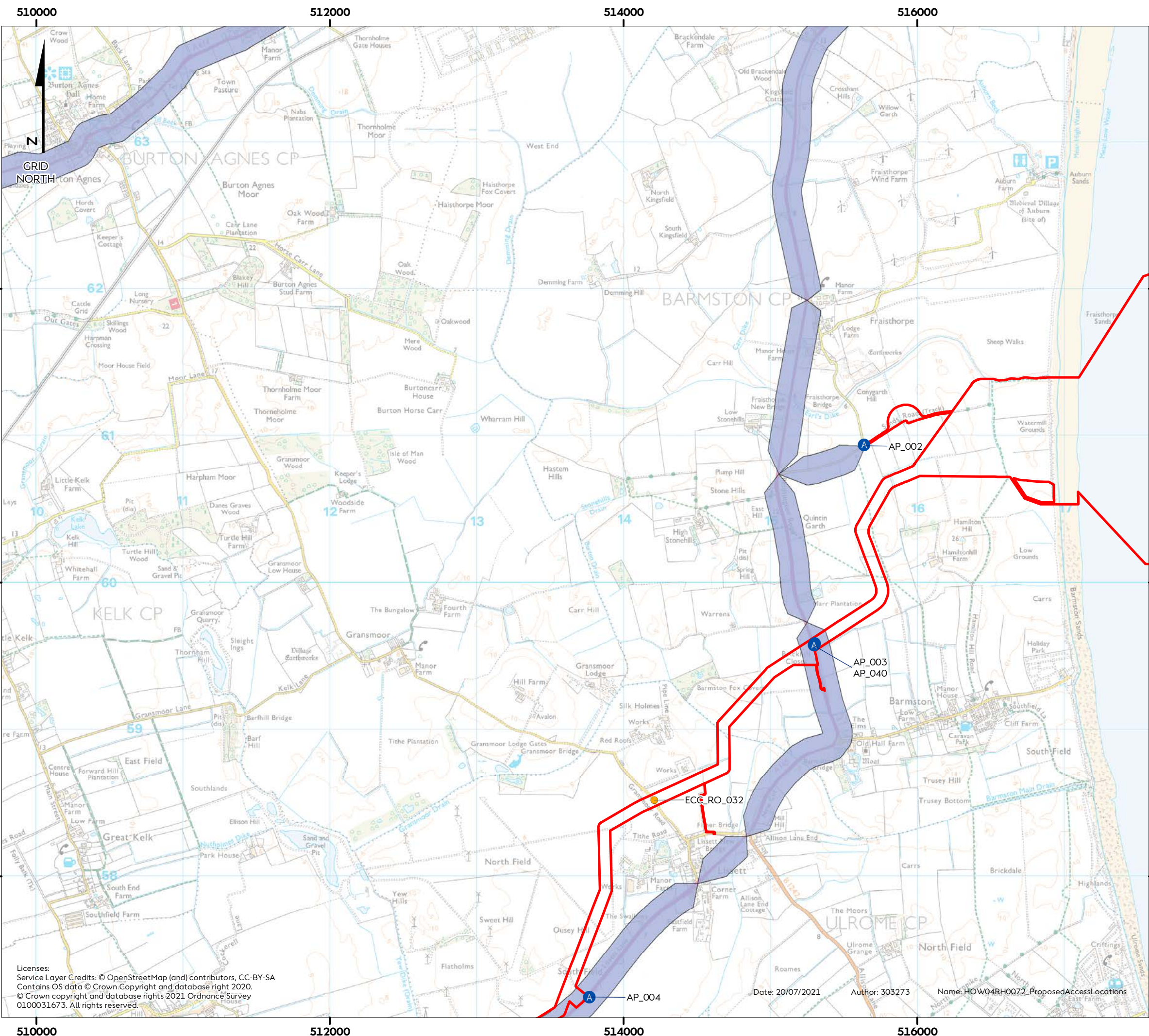
Coordinate system: British National Grid
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0 2 4 6 8 Kilometres

0 2 4 Miles

REV	REMARK	DATE
	First Issue for PEIR	25/06/2019
A	Updated following PEIR consultations, for DCO	20/07/2021

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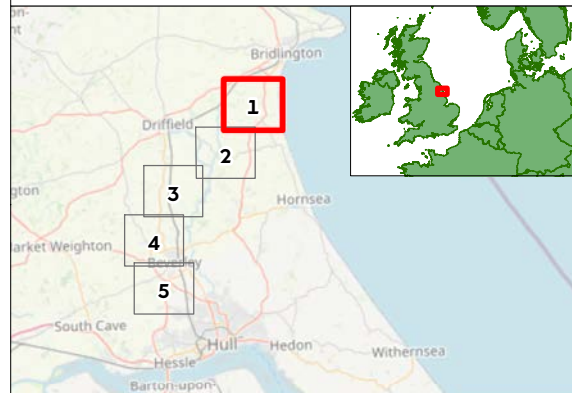
Hornsea Four

Figure 7.4

Proposed Access Locations

- Sheet 1 of 5

- Order Limits
- A Proposed Access Point
- Crossing Point
- Traffic Links




Coordinate system: British National Grid
 Scale@A3: 1:25,000

0 500 1,000 Metres

0 500 1,000 1,500 Yards

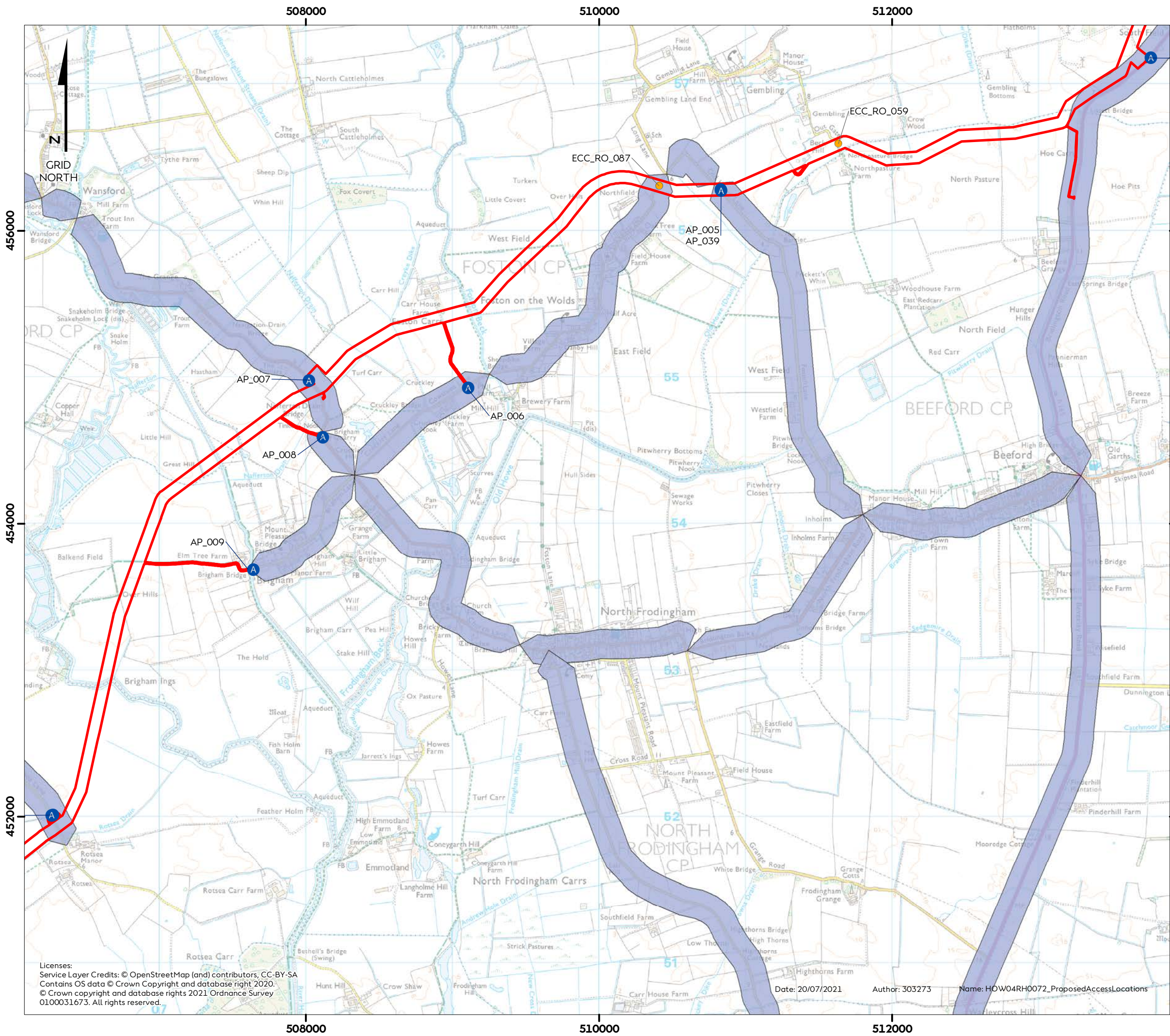
REV	REMARK	DATE
	First Issue for PEIR	08/07/2019
A	Updated following PEIR consultations, for DCO	20/07/2021

Title: Proposed Access Locations
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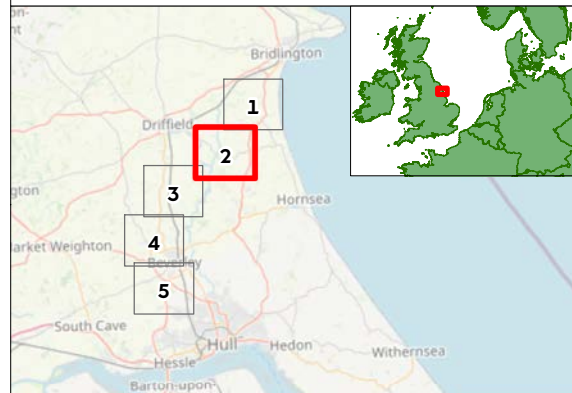
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Hornsea Four

Figure 7.5
Proposed Access Locations
- Sheet 2 of 5

- Order Limits
- A Proposed Access Point
- Crossing Point
- Traffic Links



Coordinate system: British National Grid
Scale@A3: 1:25,000
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0 500 1,000 1,500 Yards

REV	REMARK	DATE
	First Issue for PEIR	08/07/2019
A	Updated following PEIR consultations, for DCO	20/07/2021

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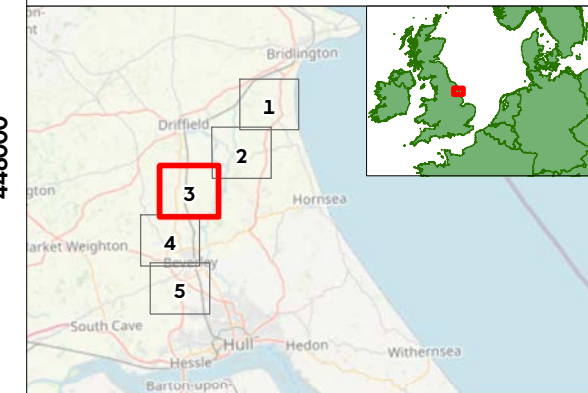
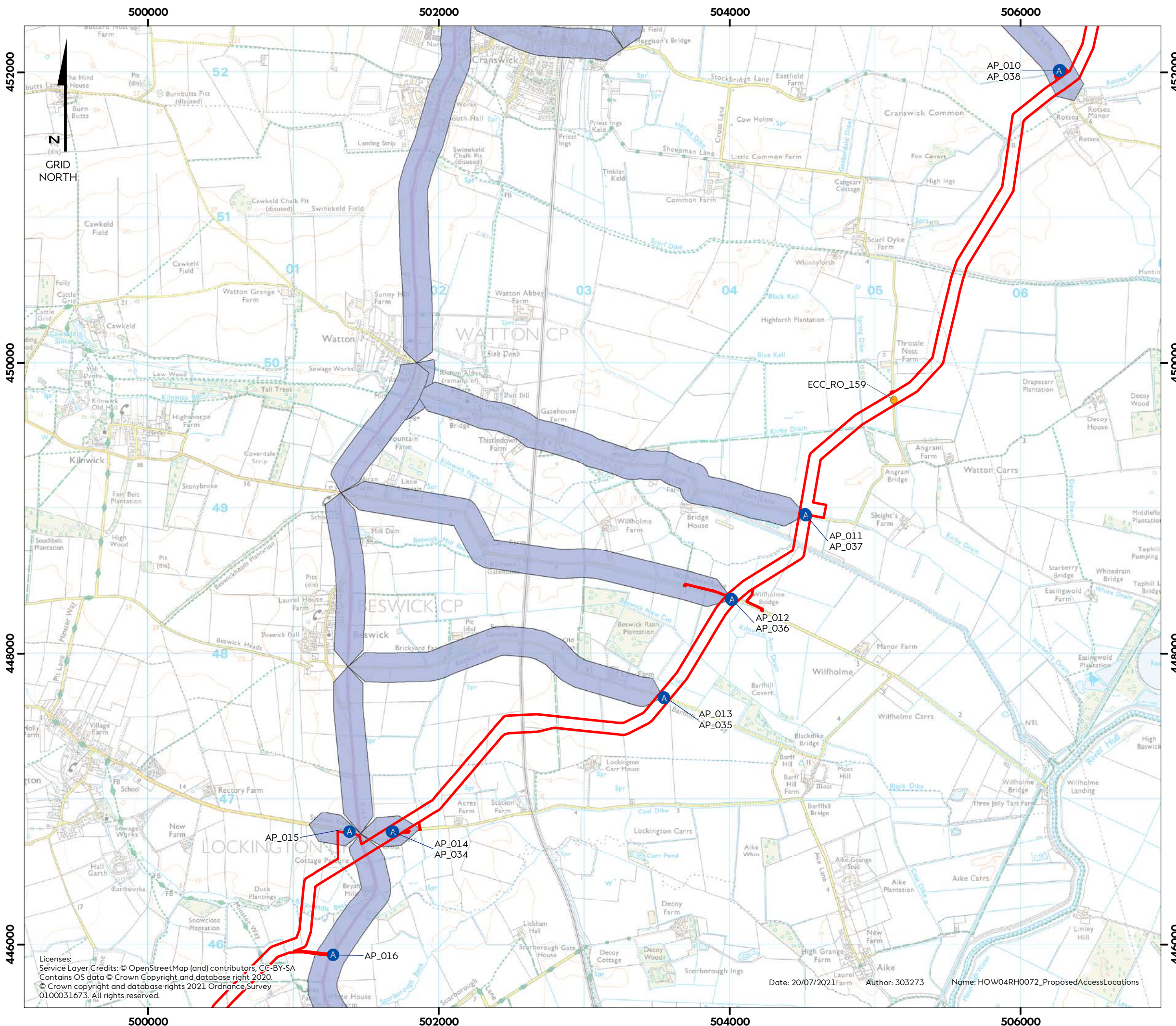
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Hornsea Four

Figure 7.6
Proposed Access Locations
- Sheet 3 of 5

- Order Limits
- A Proposed Access Point
- Crossing Point
- Traffic Links



Coordinate system: British National Grid
Scale@A3: 1:25,000

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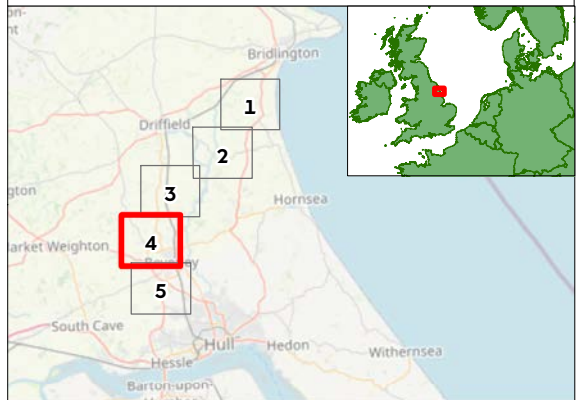
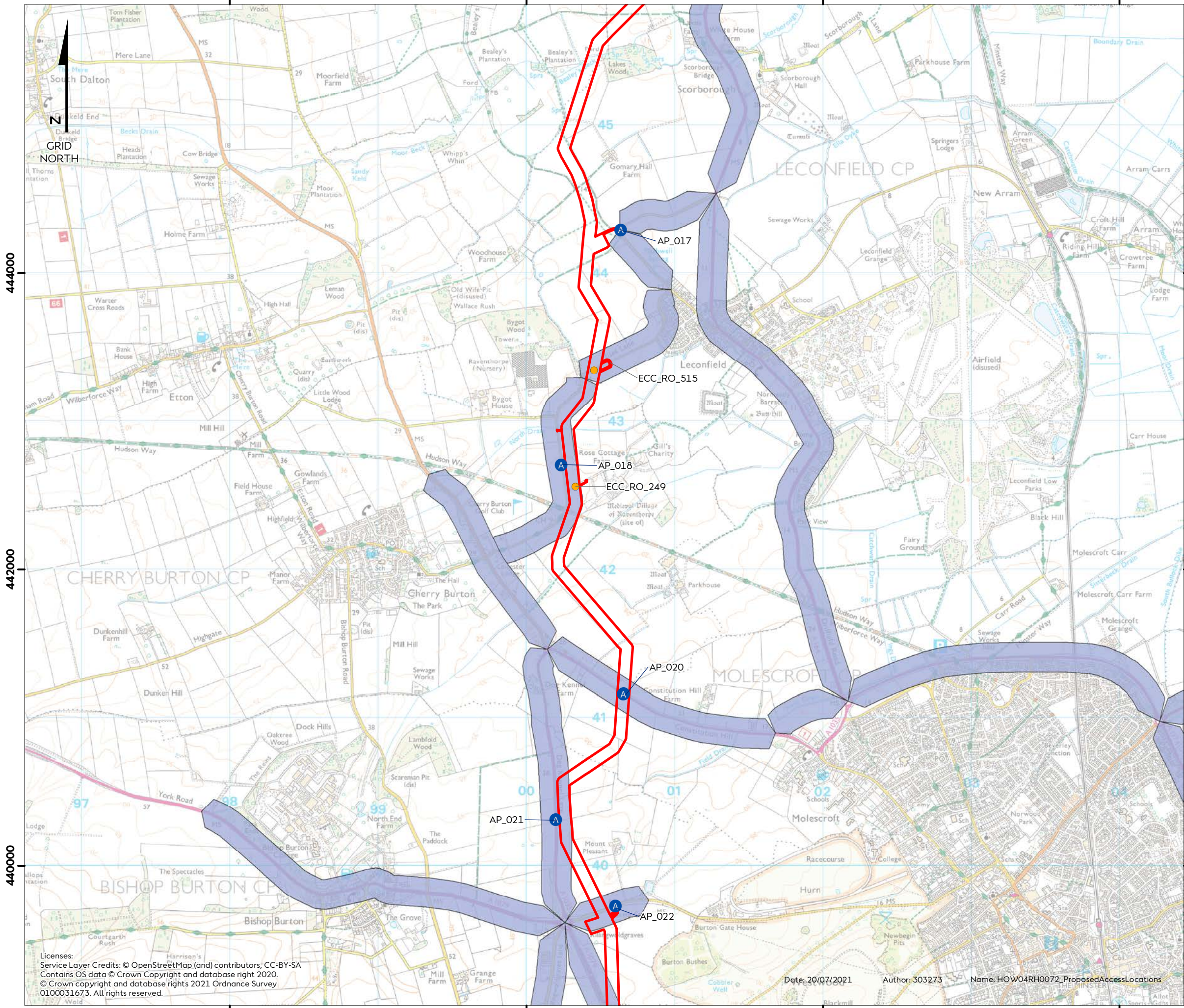
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Hornsea Four

Figure 7.7

Proposed Access Locations
- Sheet 4 of 5

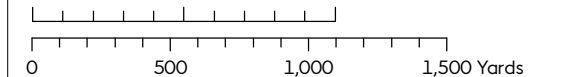
- Order Limits
- A Proposed Access Point
- Crossing Point
- Traffic Links



Coordinate system: British National Grid

Scale@A3: 1:25,000

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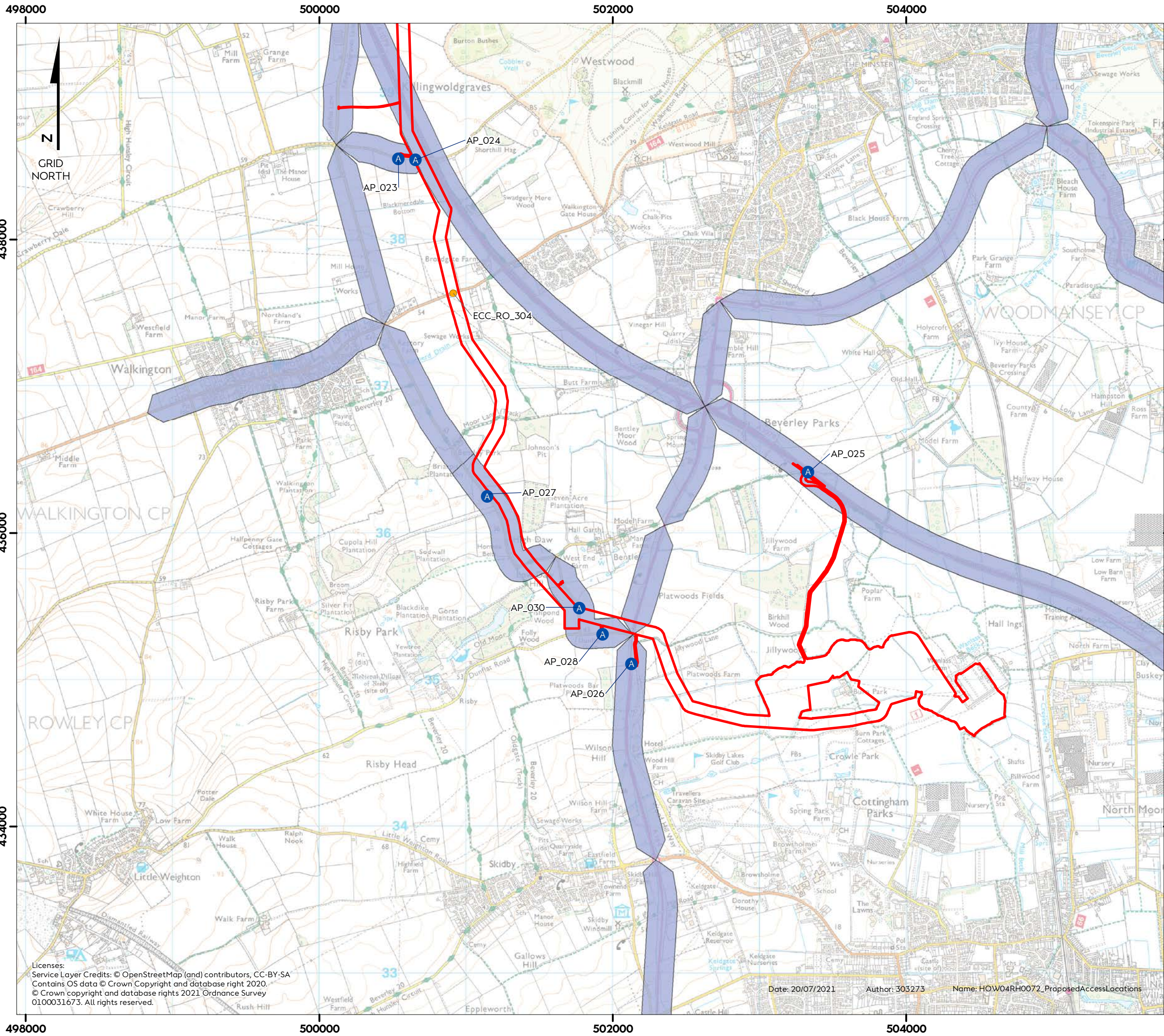
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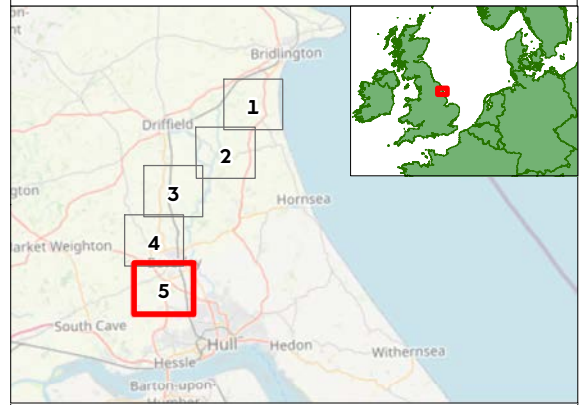
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Hornsea Four
 Figure 7.8
 Proposed Access Locations
 - Sheet 5 of 5

- Order Limits
- A Proposed Access Point
- Crossing Point
- Traffic Links



Coordinate system: British National Grid
 Scale@A3: 1:25,000
 0 500 1,000 Metres
 0 500 1,000 1,500 Yards

REV	REMARK	DATE
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Table 7.7: Description of Local Access Routes.

Access ID	Route description	Link description
AP_002	Access AP_002 is located off an unnamed road to the south of Fraisthorpe. All construction traffic would turn off the A165 on to the unnamed road, avoiding travelling through Fraisthorpe.	The route from the A165 to access AP_002 is via an unclassified road. The road is a single lane road with no passing places. There are no footways along this route.
AP_003, AP_004 and AP_040	Accesses AP_003, AP_004 and AP_040 would be accessed direct from the A165.	
AP_005 and AP_039	Accesses AP_005 and AP_039 are located to the south of the Hamlet of Gembling. All HGV traffic would travel to access AP_005 and AP_039 from the A165 via Beeford before heading north on Foston Lane towards Gembling.	The route from the A165 to access AP_005 and AP_039 is via the B1249 and unclassified roads (Foston Lane and Old Howe Lane). The B1249 is a single carriageway road with footways within proximity of Beeford. The unclassified roads are single lane roads with some passing places present. No footways are provided along Foston Lane and Old Howe Lane.
AP_006	Access AP_006 is located to the south-west of Foston on the Wolds on Cowslam Lane. At the junction with the B1249 two routes have been considered for HGV traffic to approach access AP_006. These routes include either vehicles travelling north towards the A614 via Wansford and Driffield or alternatively, vehicles heading south on the B1249 towards the A165 via North Frodingham and Beeford.	The route from the A165 to access AP_006 is westbound on the B1249 via North Frodingham. Along this route, the B1249 is a single carriageway road with footways within the proximity of developments. Alternatively, the route from the A614 to access AP_006 is southbound on the B1249 via Driffield. Similarly, the B1249 along this route is a single carriageway road with a footway provided along at least one side of the road through the settlements.
AP_007 and AP008	Accesses AP_007 and AP_008 are located off the B1249. Vehicles from these accesses would follow the same route as that described for access AP_006.	For both routes, direct vehicular access would be provided via Cruckley Lane/Cowslam Lane. Cruckley Lane/Cowslam Lane is an unclassified single carriageway road no footways or passing places.
AP_009	Access AP_009 is located off Brigham Lane that links to the B1249. At the B1249, vehicles would follow the same route as that described for access AP006.	The route from the B1249 to access AP_009 is via Brigham Lane, an unclassified road that routes through Brigham. The road is a single lane road with informal passing places. There are no footways along the road.
AP_010 and AP_038	Accesses AP_010 and AP_038 are located off Rotsea Lane to the east of Hutton Cranswick. From the A164, vehicles would travel via Hutton Cranswick to Meggison's Turnpike	The route from the A164 passes through Hutton Cranswick before turning on to Meggison's Turnpike and then Corpstanding Road/ Rotsea Lane.

Access ID	Route description	Link description
	before travelling along Rotsea Lane to access AP_010 and AP_038.	Through Hutton Cranswick the road is a single carriageway with a footway provided along at least one side of the road. Corpslanding Road and Rotsea Lane are single lane roads with passing places and no footways. An on-road National Cycle Route (NCR 1) runs via Main Street, Station Road and Meggison's Turnpike.
AP_011 and AP_037	Accesses AP_011 and AP_037 are located off Carr Lane to the east of Watton. All traffic would turn off the A164 onto Church Lane before travelling on Carr Lane towards access AP_011 and AP_037.	The route from the A164 to access AP_011 and AP_037 is via an unclassified road. The road is a single lane with some passing places. A footway is provided as the link passes a number of properties and St. Mary Watton church. No footways are provided for the remainder of the route.
AP_012 and AP_036	Accesses AP_012 and AP_036 are located off Wilfholme Road to the west of Wilfholme. All traffic would turn off the A164 directly onto Wilfholme Road.	The route from the A164 to access AP_012 and AP_036 is via Wilfholme Road. Wilfholme Road is a single lane road with passing places. There are no footways present along this route.
AP_013 and AP_035	Access AP_013 and AP_035 is located off Beswick Road to the west of Beswick. All traffic would turn off the A164 directly onto Beswick Road.	The route from the A164 to access AP_013 and AP_035 is via Beswick Road. Beswick Road is a single lane road with no passing places. There are no footways present along this route.
AP_014 and AP_034	Accesses AP_014 and AP_034 are located off Station Road east of the A164 and south of Beswick. All traffic would turn off the A164 directly onto Station Road.	The route from the A164 to accesses AP_014 and AP_034 is via Station Road. Station Road is a single lane road with passing places. There are no footways present along this route.
AP_015	Access AP_015 is located off Station Road west of the A164 and south of Beswick. All traffic would turn west off the A164 directly onto Station Road.	The route from the A164 to access AP_015 is via Station Road. Station Road is a narrow single carriageway with a footway on the northern side of the road.
AP_016	Access AP_016 would be accessed direct from the A164.	
AP_017	Access AP_017 is located off Old Road to the north of Leconfield. All traffic would turn off the A164 directly onto Old Road.	The route from the A164 to access, access AP_017 is via an unclassified road. The road is a single carriage road with no footways.
AP_018	Access AP_018 is located off Miles Lane to the west of Leconfield. All traffic would travel to access AP_018 from the A1035 via the B1248 before heading north-east on Miles Lane.	The route from the A1035 to access AP_018 is via the B1248 and Miles Lane. The B1248 is a single carriageway road with a footway and cycleway (NCR1) that runs parallel to the road. From the B1248, the route continues as Miles Lane, a single carriageway road with no footways.

Access ID	Route description	Link description
AP_020, AP_021 and AP_032	Accesses AP_020, AP_021 and AP_032 would be accessed direct from the A1035.	
AP_022	Access AP_022 would be accessed direct from the A1174.	
AP_023 and AP_024	Access AP_023 and AP_024 are located off Newbald Road to the north of Walkington. All traffic would turn off the A1079 at the roundabout with the A1035 onto Killingwoldgraves Lane before travelling south towards access AP_023 and AP_024.	The route from the A1079 to access AP_023 and AP_024 is via unclassified roads. The roads are single carriageway roads with no footways.
AP_025	Access AP_025 would be accessed direct from the A1079 via an extension to an existing layby.	
AP_026	Access AP_026 would be accessed via an existing layby that links directly to the A164.	
AP_027, AP_028 and AP_030	Accesses AP_027, AP_028 and AP_030 are located off Coppleflat Lane and Dunflat Road to the south of Walkington. All traffic would turn off the A164 on to Dunflat Road before travelling north towards Coppleflat Lane.	The route from the A164 to accesses AP_027, AP_028 and AP_030 is via unclassified roads. The roads are single carriageway roads and no footways are provided.

7.7.2 Traffic Flow Data

7.7.2.1 Traffic flow data for all links within the traffic and transport study area has been informed by traffic counts. [Volume A6, Annex 7.1: Traffic and Transport Technical Report](#) contains full details of these counts and a summary of the baseline traffic flows for all links within the traffic and transport study area.

7.7.3 Road safety

7.7.3.1 To understand whether Hornsea Four would have a significant road safety impact, it is necessary to establish a road safety baseline and identify any inherent road safety issues within the traffic and transport study area. This review utilises historic PIC data obtained from ERYC (for the period 1 January 2014 to 30 April 2019) and from HCC (for the period 1 December 2014 to 1 December 2019).

7.7.3.2 In consultation with the ERYC (at the second Human Environment Technical Panel on the 1 May 2019) it was agreed (ON-HUM-2.3) that due to the size of the traffic and transport study area, to present a proportional approach to the characterisation of the existing road safety baseline, the road safety review should first examine the baseline collision data. This first review would identify those links that have collision rates (number of collisions per mile) above or close to the national average for comparable road types. Where collision rates

are higher or close to national averages, a more detailed second stage review of the location and types of collisions has been undertaken.

7.7.3.3 Collision rates have been calculated (using the following formula) in billion vehicle miles for all links (illustrated within [Figure 7.1](#)) to enable direct comparison with national road safety statistics provided within Road Casualties Great Britain (DfT 2019).

$$\text{Collision Rate} = \frac{\text{Number of recorded PICs (per road)} \times 1 \text{ billion}}{\text{number of days over which collision data has been sourced} \times \text{Annual Average Daily Traffic} \times \text{length of road}}$$

7.7.3.4 The calculated collision rates have been compared to national average collision rates from Road Casualties Great Britain (DfT 2019) which presents collision rates per billion miles by road type for the last 10 years. National average collision rates have been calculated for each of the different road types for the period of 2014 to 2019 (to align with the five year period over which PIC data has been captured).

7.7.3.5 [Table 7.8](#) presents a summary of the collision rate per billion vehicle miles (from Road Casualties Great Britain) for different road types (as defined in Road Casualties Great Britain) and the calculated average collision rate for the respective local authority areas.

Table 7.8: Collision Rates by Road Type.

Road type	National average collision rate per billion miles							
	2014	2015	2016	2017	2018	2019	Ave. 2014 – 2019 (NYCC area)	Ave. 2015 – 2019 (HCC area)
Rural A road (RA)	279	261	243	206	195	183	237	218
Urban A road (UA)	862	806	757	743	689	681	771	735
Other rural roads (RO)	429	395	398	359	323	302	381	356
Other urban road (OA)	708	672	642	618	578	527	643	607

7.7.3.6 A summary of the results of the collision rate analysis is presented in [Table 7.9](#).

Table 7.9: Baseline PIC Analysis.

Links	Link description	No. of PICs and Severity				Road type	Collision Rates (number of collisions per billion vehicle miles)	
		Total	Fatal	Serious *	Slight **		National Average	Calculated
1, 4, 5, 6, 7 and 8	A165 from Moor Ln to Beeford B1242	29	1	5	23	RA	237	199
3	Unnamed road south of Fraisthorpe	0	0	0	0	RO	381	0
9	B1249 through Beeford	2	0	0	2	RO	381	465
10, 16	Foston Lane / Old Howe Lane	0	0	0	0	RO	381	0
11, 12 and 13	B1249 from Beeford through North Frodingham to Cruckley Lane	4	0	0	4	RO	381	179
20 – 23	B1249 from Driffield to Cruckley Lane	18	1	3	14	RO	381	528
14, 15	Cruckley Lane / Cowslam Lane / Sheepdike Lane	0	0	0	0	RO	381	0
24	B1249 Wansford Road / Scarborough Road	16	1	3	12	UO	643	1,729
25	Brigham Lane	0	0	0	0	RO	381	0
26	A164 south of Driffield A164	2	0	0	2	RA	237	244
29, 36, 37, 39, 41, 44, 45	A164 Driffield to Leconfield	42	1	11	30	RA	237	244
27, 28	Anderson Street / River Head / Beverly Road	10	0	3	7	UA	643	553
30	Station Road / Main Street through Hutton Cranswick	0	0	0	0	RO	381	0

Links	Link description	No. of PICs and Severity				Road type	Collision Rates (number of collisions per billion vehicle miles)	
		Total	Fatal	Serious *	Slight **		National Average	Calculated
31	Corpslanding Road / Howl Lane / Church Street / Hutton Road	0	0	0	0	RO	381	0
32	Maeggison's Turnpike	1	0	1	0	RO	381	346
33	Corpslanding Road / Rotsea Lane	0	0	0	0	RO	381	0
34, 35	Carr Lane / Church Lane	0	0	0	0	RO	381	0
38	Wilfolme Road	0	0	0	0	RO	381	0
40	Beswick Road / Barfhill Causeway	0	0	0	0	RO	381	0
42	Station Road east of A164	0	0	0	0	RO	381	0
43	Station Road west of A164	1	0	0	1	RO	381	8,958
46, 47	Old Road west of Leconfield / unnamed road west of junction with A164	2	0	0	2	RO	381	413
48, 49	Miles Lane	9	0	2	7	RO	381	821
50	B1248 north of the A1035	12	0	3	9	RO	381	612
51, 52	A1035 Constitution Hill / Beverley Northern Bypass	3	0	1	2	RA	237	110
53	A1035 Dog Kennel Lane	13	1	1	11	RA	237	380
54	A1174 east of the A1035	2	0	1	1	RA	237	589
55	A1079, A1174 and A164	12	1	2	9	RA	237	137
56	Newbald Road	2	0	1	1	RO	381	3,318

Links	Link description	No. of PICs and Severity				Road type	Collision Rates (number of collisions per billion vehicle miles)	
		Total	Fatal	Serious *	Slight **		National Average	Calculated
57, 58, 59, 61	Killingwoldgraves Lane / Copleflat Lane	15	0	7	8	RO	381	877
60, 62, 63, 76, 77, 78, 79, 83	A164 from A1079 / A15 Humber Bridge / unnamed road south of Copleflat Lane	107	2	10	95	RA	237	225
65	Main Street / Frodingham Road, Brandesburton to North Frodingham	12	0	1	11	RO	381	819
64, 66, 67	A165 from Beeford to A1035	29	1	6	22	RA	237	152
68	A1035, A165 to A1174	46	0	8	38	RA	237	244
69	A1035 Grange Way, north of Beverley	8	0	1	7	RA	237	239
70, 71	A1174 Swinemoor Lane / Hull Road	25	0	4	21	UA	771	571
72	A164 Minster Way	5	0	2	3	RA	237	154
73	A164, Minster Way to A1079	9	0	0	9	UA	771	571
74, 98	A1079, A164 to A1033 and A1033, A1079 to Roebank Roundabout	13	1	0	12	RA	237	90
75	A1174 Beverly Road / Hull Road	46	1	7	38	UA	771	478
80	A15 Boothferry Road	25	0	2	23	RA	218	280
81	A63 west of A15	38	0	6	32	RA	218	157

Links	Link description	No. of PICs and Severity				Road type	Collision Rates (number of collisions per billion vehicle miles)	
		Total	Fatal	Serious *	Slight **		National Average	Calculated
82, 91	A63 east of A15 to A1079	193	2	23	168	UA	735	301
84, 86	A614 from Caraby to Kellythorpe	53	2	17	34	RA	237	90
85	Bridlington Bay Road, A614 to A165	10	0	3	7	RO	381	498
87	A1079 through Bishop Burton	11	0	2	9	RA	237	334
90	B1230 through Walkington	2	0	0	2	RO	381	329
91	A63 east of A1166 to A1079	98	1	14	83	UA	735	597
92	A63, A1079 to A1033	77	0	11	66	UA	735	708
93	A63, A1033 to Somerden Roundabout	75	0	14	61	UA	735	404
94	A1033, A63 to A165	0	0	0	0	UA	735	0
95	A1033, A165 to Sutton Road	2	0	1	1	UA	735	22
96, 97	A1033, Sutton Road to A1174	0	0	0	0	UA	735	0
99	A165, A1033 to B1237	205	2	31	172	UA	735	3,215
100	A165, B1237 to B1238	24	0	4	20	UA	735	869
101, 102, 103, 104	A165, B1238 to A1035	1	0	1	0	RA	237	7

Notes

* An injury for which a person is detained in hospital as an "in-patient", or any of the following injuries whether or not they are detained in hospital: fractures, concussion, internal injuries, crushing, burns (excluding friction burns), severe cuts, severe general shock requiring medical treatment and injuries causing death 30 or more days after the accident.

** An injury of a minor character such as a sprain (including neck whiplash injury), bruise or cut which are not judged to be severe, or slight shock requiring roadside attention. This definition includes injuries not requiring medical treatment.

Links screened out of assessment, below national average collision rate

- 7.7.3.7 It is evident from [Table 7.9](#) that links 9, 20 – 24, 26, 29, 36, 37, 39, 43 – 50, 53, 54, 56 – 63, 65, 68, 69, 76 – 80, 85, 87, 99 and 100 have a collision rate that is higher than the national average for comparable road types and may be particularly sensitive to changes in traffic flow / type.
- 7.7.3.8 It is noteworthy that despite links 9, 26, 43, 46, 47, 54, and 56 all having two or less collisions on each respective link, the calculated collision rates for the links are higher than the corresponding national rates. This is attributed to the formula being a function of the road length and in these cases the road lengths are relatively small, thereby causing an anomaly.
- 7.7.3.9 A review of the collisions along links 9, 26, 43, 46, 47, 54, and 56 has identified that there is no pattern or commonality in the type and location of the collisions and therefore these links are not assessed further.
- 7.7.3.10 The remaining links (links 20 – 24, 29, 36, 37, 39, 44, 45, 48 – 50, 53, 57 – 63, 65, 68, 69, 76 – 80, 85, 87, 99 and 100) are considered potentially sensitive to changes in traffic flow and are therefore assessed further in [Section 7.11](#).

7.7.4 Highway capacity

- 7.7.4.1 Discussions with ERYC (1 May 2019), NH (5 September 2019) and HCC (7 May 2020) have been undertaken to identify junctions that are considered to be operating close to or above capacity (as defined by highways stakeholders) and would therefore potentially be sensitive to changes in traffic.
- 7.7.4.2 These junctions are detailed within [Table 7.10](#) (and depicted graphically on [Figure 7.9](#)).

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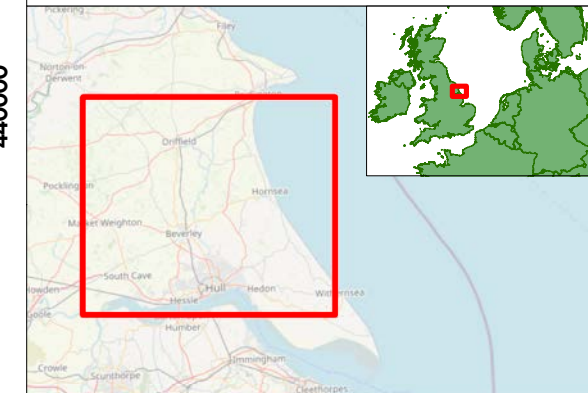
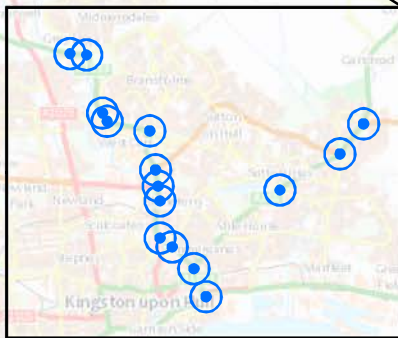
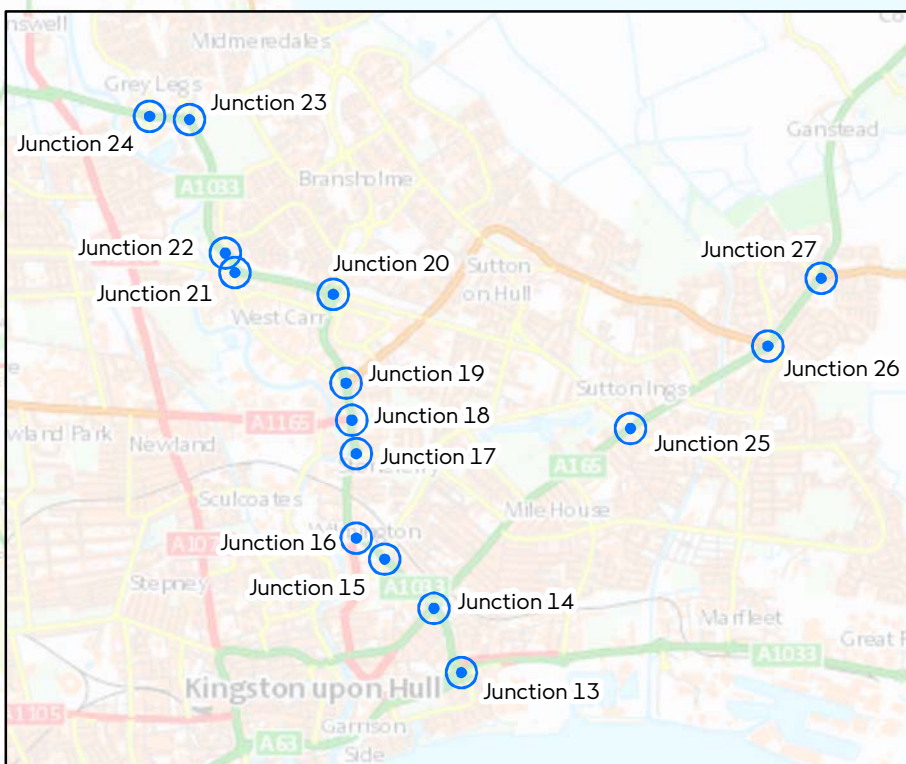
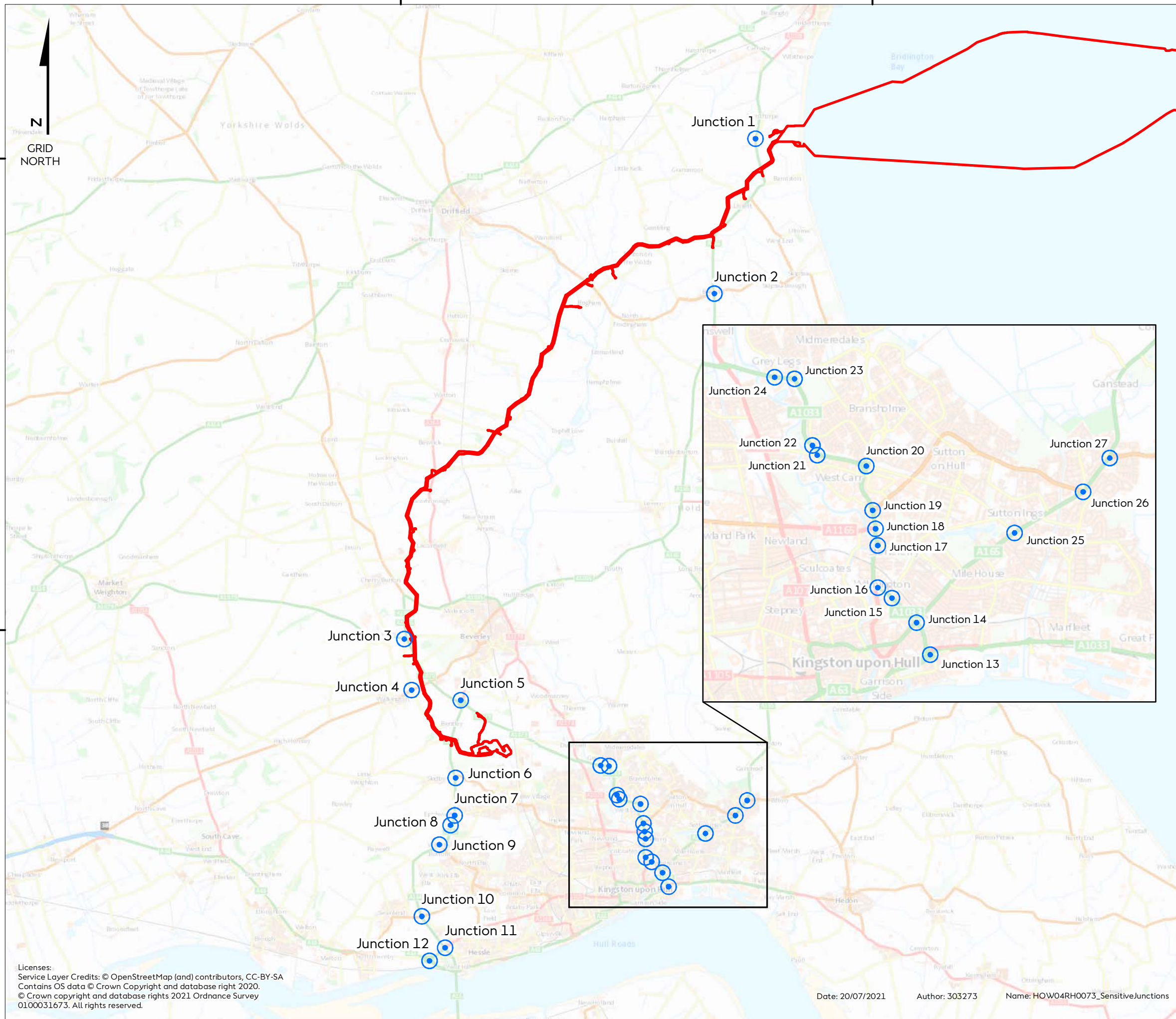
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Hornsea Four

Figure 7.9

Sensitive Junctions

-  Order Limits
-  Sensitive Junctions



Coordinate system: British National Grid
 Scale@A3: 1:160,000
 0 2 4 6 Kilometres
 0 2 4 Miles

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	First Issue for PEIR	08/07/2019
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Table 7.10: Junctions Identified as Sensitive to Changes in Traffic.

Junction notation	Location	Junction description
Junction 1	Junction of the A165 and unnamed road to the village of Fraisthorpe	Priority junction
Junction 2	Junction of the A165 / B1249 at Beeford	Staggered crossroads with right turn lanes
Junction 3	Junction of the A1079 / A1174 west of Beverley	Four arm roundabout junction
Junction 4	Junction of the B1230 and Copleflat Lane to the east of Walkington	Four arm traffic signal-controlled junction
Junction 5	A164 / A1079 (Jocks Lodge)	Cloverleaf junction
Junction 6	Junction of the A164, Main St and Harland Way	Four arm roundabout junction
Junction 7	Junction of the A164 and Castle Road	Three arm roundabout junction
Junction 8	Junction of the A164 and Willerby Court	Three arm roundabout junction
Junction 9	Junction of the A164, Albion Ln and the B1232	Four arm roundabout junction
Junction 10	Junction of the A164, Tranby Ln and B1231	Four arm roundabout junction
Junction 11	Junction of the A164, A15 and A1105	Four arm roundabout junction
Junction 12	Junction of the A63 and A15	Grade separated junction
Junction 13	Junction of the A63 and A0133	Grade separated junction
Junction 14	Junction of the A1033 and A165	Four arm signalised junction
Junction 15	Junction of the A1033 and James Reckitt Ave	Four arm roundabout junction
Junction 16	Junction of the A1033, A1165 and Cleveland St	Four arm roundabout junction
Junction 17	Junction of the A1165 and Chamberlain Road	Three arm roundabout junction
Junction 18	Junction of the A1165, A1033, and Ferry Lane	Four arm roundabout junction
Junction 19	Junction of the A1033, West Carr Lane and Leads Road	Four arm roundabout junction
Junction 20	Junction of the A1033, Sutton Road and Holwell Road	Four arm roundabout junction
Junction 21	Junction of the A1033, Sutton Road and Stockholm Road	Four arm roundabout junction
Junction 22	Junction of the A1033 and Ennerdale	Four arm roundabout junction
Junction 23	Junction of the A1033, Runnymede Way, John Newton Way and Gibraltar Way	Five arm roundabout junction
Junction 24	Junction of the A1033, Barnes Way and Gibraltar Way	Four arm roundabout junction
Junction 25	Junction of the A165, Ings Road and Maybury Road	Four arm signalised junction
Junction 26	Junction of the A165, Diadem Grove, Salthouse Road and Shannon Road	Five arm roundabout junction
Junction 27	Junction of the A165, Main Road and Shannon Road	Four arm roundabout junction

- 7.7.4.3 It is noted that the traffic flows derived to inform this impact assessment are a MDS (i.e. the maximum temporal traffic demand) informed by a number of assumptions based on current construction logistics knowledge. [Volume A6, Annex 7.1: Traffic and Transport Technical Report](#) contains full details of the MDS assumptions used to inform the traffic flows for this impact assessment.
- 7.7.4.4 During consultation with NH, ERYC and HCC it was agreed that rather than undertake a detailed assessment of sensitive junctions for the DCO application submission, it would be more appropriate to defer assessment until post determination (ON-HUM-2.8). The rationale for this approach is that there would be greater certainty regarding a number of traffic variables, including:
- The final construction programme, including details of the monthly breakdown of HGV and employee demand throughout construction;
 - Details of the peak and average HGV movements;
 - Details of the peak and average employee movements;
 - The anticipated mode of travel to be used by employees, i.e. the proportion that would use public transport, car-share, etc;
 - Details of the origin and destination of employees and HGV traffic;
 - Proposed HGV hourly profiles;
 - Proposed employee shift patterns; and
 - Timing of planned network improvements.
- 7.7.4.5 The oCTMP, submitted with this DCO application (as Appendix F of [Volume F2, Chapter 2: Outline Code of Construction Practice](#)), includes the commitment to submitting detail of the revised traffic forecasts through sensitive junctions. The relevant highway authorities will then be able to advise if they require more detailed assessment.
- 7.7.4.6 Should the assessments indicate potentially significant impacts, mitigation measures will be applied on a hierarchical basis with travel planning measures (e.g. use of minibuses or staggering shift times) being preferred. The measures would be agreed with the respective highway authority to ensure that residual impacts are not significant.
- 7.7.4.7 [Table 7.11](#) confirms (with supporting rationale) that PINS accepts the scoping out of operational traffic and transport effects from the assessment. Therefore, the assessment only considers baseline situation for the years that correspond with the construction phase of Hornsea Four.
- 7.7.4.8 The earliest start date for construction on Hornsea Four is 2024. Therefore 2024 has been adopted as a baseline year for background traffic growth in order to consider the greatest potential for change and has been used for the traffic and transport assessment presented in this ES. Background traffic growth for a later start date would be subject to further growth and therefore increases in Hornsea Four traffic would be less significant.
- 7.7.4.9 The baseline description provides an accurate reflection of the current state of the existing environment. The earliest possible date for the start of construction for the onshore

elements of Hornsea Four is 2024 with an expected operational life of 35 years, and therefore there exists the potential for the baseline to evolve between the time of assessment and point of impact. Outside of short-term or seasonal fluctuations, changes to the baseline in relation to traffic and transport usually occur over an extended period of time (considered in [Section 7.7.5](#)).

7.7.5 Evolution of the baseline

7.7.5.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 require that “an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge” is included within the ES (EIA Regulations, Schedule 4, Paragraph 3). From the point of assessment, over the course of the development and operational lifetime of the Hornsea Four (operational lifetime anticipated to be 35 years, long-term trends mean that the condition of the baseline environment is expected to evolve. This section provides a qualitative description of the evolution of the baseline environment, on the assumption that Hornsea Four is not constructed, using available information and specialist technical knowledge of traffic and transport.

7.7.5.2 Without Hornsea Four, the background traffic baseline is expected to evolve through further growth. To take account of sub-regional growth in housing and employment, a proportionate approach to forecasting future traffic growth has been agreed with ERYC. The proportionate approach uses factors from the DfT Trip End Model Presentation Programme (TEMPro) to convert baseline traffic flows to future year traffic flows. [Volume A6, Annex 7.1: Traffic and Transport Technical Report](#) contains full details of these counts and a summary of the baseline traffic flows for all links within the traffic and transport study area. Without Hornsea Four, the forecasted future traffic growth would be expected to continue.

7.7.6 Assumptions and Data Limitations

7.7.6.1 The baseline data and survey data have been obtained from recognised sources and methodologies with locations and specifications agreed with ERYC. The traffic data has been collected from a combination of sources which include the DfT traffic counts. DfT’s traffic counts for some of the individual road links are based upon forecasts from previous years surveys, and are therefore, not always based on up-to-date counts made at these locations. DfT counts have been augmented with other sources of traffic data, such as the commissioned classified Automatic Traffic Counts (ATCs) to establish a comprehensive understanding of the baseline environment.

7.8 Project basis for assessment

7.8.1 Impact register and impacts “Not considered in detail in the ES”

7.8.1.1 Upon consideration of the baseline environment, the project description outlined in [Volume A1, Chapter 4: Project Description](#), the Hornsea Four Commitments ([Volume A4, Annex 5.2](#):

Commitments Register) and response to formal consultation on the PEIR, several potential impacts upon traffic and transport are “Not considered in detail in the ES”. These impacts are outlined, together with a justification for why they are not considered further, in **Table 7.11** which should be read in conjunction with **Volume A4, Annex 5.1: Impacts Register**.

7.8.1.2 In July 2019, Highways England (now NH) issued an update to the DMRB significance matrix (see **Volume A1, Chapter 5: Environmental Impact Assessment Methodology**). Impacts formerly assessed within the category medium sensitivity and minor magnitude, as Minor (Not Significant), under the new guidance are now within the significance range of Slight or Moderate and therefore require professional judgement. Following a review of impacts, it was considered that the changes do not alter the overall significance of the impacts assessed at Scoping and in the PEIR (see **Volume A4, Annex 5.1: Impacts Register**). Therefore, impacts assessed as not significant at PEIR have not been considered in detail within this ES chapter, unless there has been a material change to Hornsea Four, baseline characterisation, or the assessment methodology that necessitates re-assessment. A summary of the justification for this consideration is provided in **Table 7.11**.

Table 7.11: Traffic and transport impact register - Impacts scoped out of assessment and justification.

Project activity and impact	Likely significance of effect	Approach to assessment	Justification
Impacts from traffic generation: Operation (TT-O-10)	Not Significant	Scoped Out	Agreement from PINS during EIA Scoping (November 2018, ID:4.19.4) and with ERYC at the first Human Environment Technical Panel meeting on 7 January 2019 that operational impacts can be scoped out (ON-HUM-1.1). The rationale for this agreement being the low levels of operational traffic demand. Onshore operation and maintenance will be largely preventative and corrective, with remote monitoring of the onshore cables and onshore substation. Further details of the operation of Hornsea Four are provided in Volume A1, Chapter 4: Project Description .
Impacts from traffic generation: Decommissioning (TT-D-11)	Not Significant	Scoped Out	Agreement from PINS during EIA Scoping (November 2018, ID:4.19.5) and with ERYC at the first Human Environment Technical Panel meeting on 7 January 2019 that decommissioning impacts can be scoped out (ON-HUM-3.3).
Impact from transport of offshore project	Not Significant	Not considered in detail in the ES	This impact is not considered in detail in the ES chapter, as agreed with ERYC at the second Human Environment Technical Panel on the 1

Project activity and impact	Likely significance of effect	Approach to assessment	Justification
components on the road network: Construction Phase (TT-C-1)			<p>May 2019 that the movement of offshore components can be scoped out (ON-HUM-3.8).</p> <p>The Applicant is currently considering ports suitable for the construction base for the offshore elements of Hornsea Four, but no decision has been made at this time. A wide area across the southern North Sea is being considered including ports such as Grimsby, Immingham, Hull, Felixstowe and Teesside. Other ports in the area may also be suitable for the construction port. Port selection will be dependent upon, and only take place following, grant of development consent for Hornsea Four, a Contract for Difference (CfD) and on the findings of further technical studies and commercial negotiations which are informed by the DCO and CfD. As such, the DCO application for Hornsea Four will not include development activities at potential construction ports. Where necessary, any such development activity would be subject to separate consent(s) such as a planning permission or a Harbour Revision Order.</p>
Impact from traffic on pedestrian delay and amenity (TT-C-7)	Not Significant	Not considered in detail in the ES	<p>It was agreed with ERYC (at the first Human Environment Technical Panel on the 7 January 2019) that the pedestrian delay part of this impact can be considered as part of the wider amenity impact assessment contained within Section 7.11.1 (ON-HUM-1.4).</p>

Notes:

Grey - Potential impact is scoped out and both PINS and Hornsea Four agree.

Red – Potential impact is not considered in detail in the ES with no consensus between PINS and Hornsea Four at EIA Scoping and further justification provided during the pre-application stage.

7.8.2 Commitments

7.8.2.1 Hornsea Four has adopted commitments (primary design principles inherent as part of Hornsea Four, installation techniques and engineering designs/modifications) as part of it's pre-application consultation and design phase, to eliminate and/or reduce the likely significant effect (LSE) of a number of impacts. These are outlined in [Volume A4, Annex 5.2 Commitments Register](#). Further commitments (adoption of best practice guidance), referred to as tertiary commitments in [Table 7.12](#) below, are embedded as an inherent aspect of the EIA process. Secondary commitments are incorporated to reduce LSE to environmentally

acceptable levels following initial assessment i.e. so that residual effects are reduced to environmentally acceptable levels.

7.8.2.2 The commitments adopted by Hornsea Four in relation to traffic and transport are presented in [Table 7.12](#).

Table 7.12: Relevant Traffic and Transport Commitments.

Commitment ID	Measure Proposed	How the measure will be secured
Co1	<p>Primary: All Environment Agency (EA) 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. Main rivers will not be temporarily dammed and/or rerouted.</p>	DCO Requirement 17 (CoCP)
Co36	<p>Primary: Core working hours for the construction of the onshore components of Hornsea Four will be as follows:</p> <ul style="list-style-type: none"> • Monday to Friday: 07:00 - 18:00 hours; • Saturday: 07:00 - 13:00 hours; • Up to one hour before and after core working hours for mobilisation ("mobilisation period"), i.e. 06:00 to 19:00 weekdays and 06:00 to 14:00 Saturdays; and • Maintenance period 13:00 to 17:00 Saturdays. <p><i>Activities carried out during mobilisation and maintenance will not generate significant noise levels (such as piling, or other such noisy activities).</i></p> <p>In circumstances outside of normal working practices, specific works may have to be undertaken outside the core working hours. ERYC will be informed in writing.</p>	DCO Requirement 17 (CoCP)
Co62	<p>Secondary: Temporary access points off the highway will be installed to facilitate vehicular access from the road, and into the onshore cable corridor during construction. The access points will be constructed in line with the local authorities' requirements, relevant appropriate standards and in accordance with the principles established in the Outline Construction Traffic and Travel Management Plan.</p>	DCO Requirement 18 (Construction traffic management plan); and Access to Works Plans
Co124	<p>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.</p>	DCO Requirement 17 (CoCP)

Commitment ID	Measure Proposed	How the measure will be secured
Co127	Tertiary: An Onshore Decommissioning Plan will be developed prior to decommissioning in a timely manner. 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 flood risk, pollution prevention and avoidance of ground disturbance. The Onshore Decommissioning Plan will be in line with the latest relevant available guidance.	DCO Requirement 24 (Onshore decommissioning)
Co144	Tertiary: A Construction Traffic Management Plan (CTMP) will be developed in accordance with the outline CTMP to be submitted with the DCO application. The CTMP will set standards and procedures for: <ol style="list-style-type: none"> 1. Managing the numbers and routeing of HGVs during the construction phase; 2. Managing the movement of employee traffic during the construction phase; 3. Details of localised road improvements necessary to facilitate safe use of the existing road network; and 4. Detail of measures to manage the safe passage of HGV traffic via the local highway network. 	DCO Requirement 18 (Construction traffic management plan)
Co150	Primary: A new temporary and permanent access for the onshore substation will be taken directly from the A1079, to route construction and operation and maintenance traffic away from Cottingham and Dunswell.	DCO Requirement 18 (Construction traffic management plan)
Co171	Secondary: HGVs will avoid travel through Foston on the Wolds.	DCO Requirement 18 (Construction traffic management plan)

7.9 Maximum Design Scenario

- 7.9.1.1 This section describes the parameters on which the traffic and transport assessment has been based. These are the parameters which are judged to give rise to the maximum levels of effect for the assessment undertaken, as set out in [Volume A1, Chapter 4: Project Description](#). Should Hornsea Four be constructed to different parameters within the design envelope, then impacts would not be any greater than those set out in this ES using the MDS presented in [Table 7.13](#).
- 7.9.1.2 Traffic demand has been forecasted by applying a first principles approach to generate traffic volumes from an understanding of material quantities and personnel numbers. This traffic demand has been assigned to the proposed access locations serving the onshore elements of Hornsea Four.
- 7.9.1.3 The detailed derivation and distribution of the traffic numbers and MDS parameters are provided within [Volume A6, Annex 7.1: Traffic and Transport Technical Report](#). [Table 7.13](#) provides a brief summary of the realistic MDS parameters of the onshore infrastructure that are relevant to potential impacts on traffic and transport during the construction of Hornsea Four. Please refer to [Volume A1, Chapter 4: Project Description](#) for more detail regarding specific activities, and their durations within the construction phase.

Table 7.13: Maximum design scenario for impacts on traffic and transport.

Impact and Phase	Embedded Mitigation Measures	Maximum Design Scenario / Rochdale Envelope	Justification
<i>Construction</i>			
Driver Delay (Capacity) (TT-C-2, TT-C-3, TT-C-4)	Primary: Co1 Co150 Tertiary: Co124	Earliest construction commencement year: 2024 Landfall: <ul style="list-style-type: none"> Construction duration: 32 months Landfall compound: Number: 1, Total Area: 40,000 m², Duration: 32 months HDD: Number: 8 Transition Joint Bays (located within Landfall compound area): Number: 6, Depth: 6m 	The MDS would result in the highest numbers of vehicle movements across the highway network to inform the EIA.
Driver Delay (Local Roads) (TT-C-4, TT-C-5)	Co144 Secondary: Co62	Onshore Export Cable Corridor: <ul style="list-style-type: none"> Construction duration: 30 months Primary logistics compounds: Number 1, size 140x140 m, duration 36 months Secondary logistics compounds: Number: 7, Size: 90x90 m, Duration: 36 months ECC: Length: 39 km (approximate), Width: 80 m, Area: 3,120,000 m² Cable circuits (High Voltage Alternating Current (HVAC) system): Number: 6 Cable trench: Depth: 1.5 m, Width at base: 1.5 m, Width at surface: 5 m Haul Road: Number: 1, Width: 6 m, Length: 37 km, Depth: 0.4 m Temporary access roads: Length: 5.1 km, (approximate), Width: 6 m, Depth: average of 0.4 m 	HGV and employee numbers developed and informed by realistic maximum assumptions for material demand per month and required resource, based on the below Hornsea Four MDSs. An indicative construction programme has been developed based on previous project experience. This is presented in Volume A6, Annex 7.1: Traffic and Transport Technical Report For the driver delay impacts, it is assumed that all employees would depart and leave within a single hour and that this hour could also overlap with the network am or pm peak hours.

Impact and Phase	Embedded Mitigation Measures	Maximum Design Scenario / Rochdale Envelope	Justification
<i>Construction</i>			
		<ul style="list-style-type: none"> Joint Bays: Number: 240, Area: 40 m² per Joint Bay HDDs: Number: 112, HDD compounds (entry and exit): 45 50x50 m compounds <p>Onshore Substation and Energy Balancing Infrastructure:</p> <ul style="list-style-type: none"> Construction duration: 43 months Temporary access road: Number: 1, Length: 1,800 m, Width: 1.5 m (7 m road, 8 m soil storage) Permanent infrastructure area: 155,000 m² Temporary works area: 130,000 m² <p>400 kV ECC:</p> <ul style="list-style-type: none"> Cable circuits: Number: 4 Cable trench depth: 1.5 m Length: 2,100 m, Width: 60 m <p>Associated Peak Movements and Routing:</p> <ul style="list-style-type: none"> Peak HGV movements: 838 two-way HGV movements per day (inclusive of 10% increase accounting for incidental deliveries and theoretical MDS based on the peak month of construction activity, accounting for potential acceleration or slippage of activities) Construction Routing: All HGV traffic is assumed to have an origin on either the M62/A63 west of Hull or from the ports 	<p>Agreement with ERYC at the Technical Panel meeting on the 1 May 2019 and HCC on the 5 December 2019 (via email) (ON-HUM-2.1) that all HGV traffic has been assumed to have an origin towards Hull and the M62.</p> <p>The proposed commitments limit the traffic and transport impacts of Hornsea Four.</p>
Severance (TT-C-6)			<p><u>Severance</u></p> <p>The MDS would result in the highest numbers of vehicle movements across the highway network.</p>
Pedestrian Amenity (TT-C-7)			<p><u>Pedestrian Amenity</u></p> <p>The MDS would result in the highest numbers of vehicle movements across the highway network.</p>

Impact and Phase	Embedded Mitigation Measures	Maximum Design Scenario / Rochdale Envelope	Justification
<i>Construction</i>			
Accidents and Road Safety (TT-C-8)		<p>located along the A63/A1033 within Hull</p> <ul style="list-style-type: none"> Peak light vehicle movements to the ECC (excluding the Onshore substation (OnSS) and Energy Balancing Infrastructure (EBI)) (inclusive of 10% increase accounting for movements between work areas and incidental deliveries throughout the day): Total movements capped at 404 two-way light vehicle movements per day. Due to the difficulty of forecasting a detailed construction programme, a MDS of 108 two-way light vehicle movements have been assigned to each access at one time. However, movements have been capped on individual road link to 404 per day to ensure impacts are realistic on main A roads. Peak light vehicle movements to the OnSS and EBI: a MDS of 550 two-way light vehicle movements (inclusion of a 10% to account for movements between work areas and incidental deliveries throughout the day) has been assumed to the OnSS and EBI. All employees are assumed to drive themselves to work, with no sharing, bus, walking or cycling. All materials and plant are assumed to be delivered by road with no reduction of HGV traffic due to the use of rail. 	<p><u>Accidents and Roads Safety</u></p> <p>The MDS would result in the highest numbers of vehicle movements across the highway network.</p>
Abnormal loads (TT-C-9)	<p>Primary: Co150</p> <p>Tertiary: Co144</p>	<p>Onshore Export Cable Corridor, Cable Drums:</p> <ul style="list-style-type: none"> Weight: 32,700 kg To be transported on an articulated HGV with a low loader/ load bed trailer. The vehicle and trailer combination would have an overall length of approximately 24 m. 	<p>The largest load required to be transported to site would require the largest vehicle, therefore having the greatest potential impact upon structures, highway condition, and manoeuvrability.</p>

Impact and Phase	Embedded Mitigation Measures	Maximum Design Scenario / Rochdale Envelope	Justification
<i>Construction</i>			
		<p>Onshore Substation and Energy Balancing Infrastructure:</p> <p>Transformers:</p> <ul style="list-style-type: none"> • Number: 6, Weight: 387,000 kg, Height: 5.0 m, Length: 11.65 m, Width: 4.2 m. • To be transported by a specialist abnormal load vehicle of approximately 93 m in length. 	
<i>Operation</i>			
Scoped out of assessment			
<i>Decommissioning</i>			
Scoped out of assessment			

7.10 Assessment methodology

7.10.1.1 The assessment methodology for traffic and transport was presented in Annex C of the Scoping Report (Orsted 2018). All variations to the traffic and transport methodology have been agreed in consultation with ERYC and NH at Technical Panel meetings and are included in the methodology set out in this section (ON-HUM-2.8).

7.10.2 Overview

7.10.2.1 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. The terms used to define sensitivity and magnitude are adopted from GEART.

7.10.2.2 In order to provide a proportional assessment and define the extent and scale of assessment, the following rules, taken from GEART, have been used:

- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%); and
- Rule 2: Include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more (or where the number of HGVs is predicted to increase by 10% or more).

7.10.2.3 In justifying these rules GEART examines the science of traffic forecasting and states:

"It is generally accepted that accuracies greater than 10% are not achievable. It should also be noted that the day to day variation of traffic on a road is frequently at least some + or - 10%. At a basic level, it should therefore be assumed that projected changes in traffic of less than 10% create no discernible environmental impact.

...a 30% change in traffic flow represents a reasonable threshold for including a highway link within the assessment."

7.10.2.4 Therefore, changes in traffic flows below the GEART Rules (thresholds) are assumed to not result in significant environmental effects and have therefore not been taken further in this traffic and transport assessment.

7.10.2.5 The exception to the GEART Rule 1 and 2 is the consideration of the effects of driver delay and road safety. These effects can be potentially significant when high baseline traffic flows are evident, and a lower change in traffic flow can be potentially significant. Full details of the methodology adopted for these effects are set out later in this section.

7.10.2.6 The following environmental effects have been identified as being susceptible to changes in traffic flow and are appropriate to the traffic and transport study area.

Driver Delay

7.10.2.7 GEART recommends the use of proprietary software packages to model junction delay and hence increased vehicle delays. However, it is noted that vehicle delays are only likely to be significant when the surrounding highway network is at, or close to capacity.

7.10.2.8 Consultation with the ERYC (at the second Human Environment Technical Panel on the 1 May 2019), NH (at a meeting on the 5 September 2019) and HCC (at a meeting on the 7 May 2020) identified sensitive junctions that require an assessment of potential delays for drivers during peak hours. The assessment therefore seeks to disaggregate the peak hour traffic movements through these junctions to facilitate a judgement of the potential significance of the driver delay effects.

7.10.2.9 Consultation with the ERYC has also identified that driver delay could occur on local roads where the addition of construction traffic (especially HGVs) could introduce delays as vehicles are not able to pass each other. The assessment therefore provides a review of the likely peak hour increases in traffic along local roads.

Severance

7.10.2.10 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. The term is used to describe a complex series of factors that separate people from places and other people. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to relatively minor traffic flows if they impede pedestrian access to essential facilities. Severance effects could equally be applied to residents, motorists, cyclists or pedestrians.

7.10.2.11 GEART suggests that changes in total traffic flow of 30%, 60% and 90% are considered to be slight, moderate and substantial respectively.

Pedestrian Amenity

7.10.2.12 Pedestrian amenity is broadly defined as the relative pleasantness of a journey, and is affected by traffic flow, traffic composition, footway width and separation from traffic. This definition also includes pedestrian fear and intimidation and can be considered to be a much broader category including consideration of the exposure to noise and air pollution, and the overall relationship between pedestrians and traffic, covered in [Section 7.14](#).

7.10.2.13 GEART suggests that a threshold of a doubling of total traffic flow or the HGV component may lead to a negative impact upon pedestrian amenity.

Accidents and Road Safety

7.10.2.14 The salient GEART guidance on road safety is as follows:

“Where a development is expected to produce a change in the character of traffic (e.g. HGV movements on rural roads), then data on existing accident levels may not be sufficient. Professional judgement will be needed to assess the implications of local circumstances, or factors which may elevate or lessen the risk of accidents, e.g. junction conflicts.”

7.10.2.15 In this context, an examination of the existing collisions occurring within the traffic and transport study area will be undertaken to identify any links with collision rates that are higher than national averages. These links are considered to be sensitive to changes in traffic flows (sensitive receptors) and therefore a more detailed analysis of significance has been undertaken in the context of Hornsea Four.

7.10.2.16 In addition to considering existing patterns of collisions that could be exacerbated by the increase in Hornsea Four traffic, the road safety assessment also considers the potential for the introduction of new risks associated with the formation of new accesses.

Abnormal Loads (TT-C-9)

7.10.2.17 The importing of large Abnormal Indivisible Loads (ALLs) may lead to delays on the highway network. The construction of the onshore substation (OnSS) for Hornsea Four is likely to require the delivery of up to six Super Grid transformers. An ALL study ([Volume A6, Annex 7.2: Abnormal Load Report](#)) has been undertaken by Mammoet (heavy transportation and lifting contractors) to inform the management measures required to deliver ALLs to the Onshore substation for Hornsea Four.

7.10.2.18 The ALL study has identified that the load could come from the Hull Port, with the most likely port facility being the existing King George Dock. Two routes have been reviewed (as shown in [Volume A6, Annex 7.2: Abnormal Load Report](#)) to reach the OnSS access from the A1079, these are:

- **Route 1:** Heading west from the King George Dock via the A63 to the A164 and then heading north on the A164 before travelling east to the OnSS access from the A1079; or
- **Route 2:** Heading north from King George Dock via the Markfleet Avenue, before continuing west along Ings Road, Cavendish Road and Sutton Road to the junction with the A1033. The ALL vehicle would then follow the A1033 before continuing on to the A1079 to reach the OnSS access from the A1079.

7.10.2.19 Consultation with NH has identified that during the construction of the A63 Castle Street Improvements (which could overlap with the construction of Hornsea Four), it may not be possible for ALLs to transverse via Route 1. ERYC have confirmed that they would support the use of the Route 2 (ON-HUM-2.8) (which avoids the requirement to travel via the A63).

7.10.2.20 The AIL study highlights that both routes would require local accommodation works (removal of signs, railings, pruning of tress and contraflow manoeuvres, etc.). Route 1 would also require an overall marginal reduction in the height of the load to be feasible.

7.10.2.21 To ensure that delays are managed and minimised, prior to the movement of any AIL the contractor would be required to submit notifications to the relevant authorities (police, highway authorities and bridge / structure owners) through ESDAL (Electronic Service Delivery for Abnormal Loads). The ESDAL process would detail which of the proposed routes would be used and ensure the timing of AIL movements would be co-ordinated and potential impacts would not be significant.

7.10.3 Sensitive Receptors

7.10.3.1 The sensitivity of a road (link) can be defined by the type of user groups who may use it. A sensitive area may for example be a village environment or where pedestrian or cyclist activity may be high, for example near a school. [Table 7.14](#) provides broad definitions of the different sensitivity levels (derived from GEART) which have been applied to the assessment.

Table 7.14: Definition of terms relating to receptor sensitivity.

Sensitivity	Definition used in this chapter
Very High	High concentrations of sensitive receptors with limited or no separation from traffic provided by the highway environment and high levels of non-motorised user (NMU) * activity.
High	Concentrations of sensitive receptors (e.g. hospitals, schools, residential dwellings, areas with high footfall etc.) with limited separation from traffic provided by the highway environment and low to moderate levels of NMU activity; or A low concentration of sensitive receptors and NMU activity but with no separation from traffic provided by the highway environment.
Medium	A low concentration of sensitive receptors (e.g. residential dwellings, pedestrian desire lines, etc.) and some separation from traffic provided by the highway environment.
Low	Few sensitive receptors and / or highway environment can accommodate changes in volumes of traffic.
Negligible	Links that fall below GEART Rule 1 and 2 screening thresholds.

Notes

* Non-motorised users (NMUs) include pedestrians, cyclists and equestrians

7.10.3.2 In addition to the consideration of the sensitivity of highway links, areas with existing road safety issues and congested junctions (identified by ERYC and NH) have also been assigned a degree of sensitivity.

7.10.3.3 With regards to highway safety, areas with existing road safety patterns are considered to be highly sensitive to changes in traffic and are outlined further in [Section 7.7.3](#).

7.10.3.4 With regards to driver delay, discussions with ERYC, NH and HCC have identified congested junctions considered to be highly sensitive to changes in traffic. These locations are discussed further in [Section 7.7.4](#).

7.10.3.5 The criteria for defining magnitude in this chapter are outlined in [Table 7.15](#).

7.10.3.6 [Table 7.15](#) details the assessment framework for magnitude thresholds adapted from GEART. These thresholds are guidance only and provide a starting point by which transport data will inform a local analysis of the impact magnitude in the traffic and transport assessment.

Table 7.15: Traffic and Transport assessment framework.

Effect	Magnitude of Effect			
	<i>Negligible</i>	<i>Minor</i>	<i>Moderate</i>	<i>Major</i>
Driver Delay	Informed by projected traffic increases through sensitive junctions and along local roads within the traffic and transport study area.			
Severance	Changes in total traffic flows of less than 30%	Changes in total traffic flows of 30.1 to 60%	Changes in total traffic flows of 60.1 to 90%	Changes in total traffic flows of over 90%
Pedestrian Amenity	Change in traffic flows (or HGV component) less than 100%	Greater than 100% increase in traffic (or HGV component) and a review based upon the quantum of vehicles, vehicle speed and pedestrian footfall		
Accidents and Road Safety	Informed by a review of existing collision patterns and trends based upon the existing personal injury collision records and the forecast increase in traffic.			

7.10.3.7 The significance of the effect upon traffic and transport is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The method employed for this assessment is presented in [Table 7.16](#). Where a range of significance of effect is presented in [Table 7.16](#), the final assessment for each effect is based upon expert judgement.

7.10.3.8 For the purposes of this assessment, any effects with a significance level of slight or less have been concluded to be not significant in terms of the EIA Regulations.

Table 7.16: Matrix used for the assessment of the significance of the effect.

		Magnitude of impact (degree of change)			
		<i>Negligible</i>	<i>Minor</i>	<i>Moderate</i>	<i>Major</i>
Environmental value (sensitivity)	Low	Neutral or Slight (Not Significant)	Neutral or Slight (Not Significant)	Slight (Not Significant)	Slight (Not Significant) or Moderate (Significant)
	Medium	Neutral or Slight (Not Significant)	Slight (Not Significant) or Moderate (Significant)	Moderate or Large (Significant)	Moderate or Large (Significant)
	High	Slight (Not Significant)	Slight (Not Significant) or Moderate (Significant)	Moderate or Large (Significant)	Large or Very Large (Significant)
	Very High	Slight (Not Significant)	Moderate or Large (Significant)	Large or Very Large (Significant)	Very Large (Significant)

7.10.4 Sensitivity of receptors

7.10.4.1 **Table 7.14** highlights the qualification of the sensitivity assessment for each of the links within the traffic and transport study area. A desktop exercise informed by site visits has been undertaken to identify the sensitive receptors in the study area utilising these definitions.

7.10.4.2 All links within the traffic and transport study area have been assigned a sensitivity based on the receptors served. **Table 7.17** details the routes and the rationale for the applied link sensitivity with **Figure 7.10** illustrating these routes graphically.

Table 7.17: Review of sensitive receptors.

Link ID	Link description	Link sensitivity	Rationale for link sensitivity
1	A165 from Moor Ln to Fraisthorpe	Low	Main A road with sporadic frontage development.
2	Link no longer forms part of the traffic and transport study area.		
3	Unnamed Road from its junction with A165 south of Fraisthorpe	Low	Unclassified road with no frontage development.
4	A165 to the west of Fraisthorpe	Low	Main A road with sporadic frontage development.
5	A165 south of Fraisthorpe	Low	Main A road with sporadic frontage development.
6	A165 west of Barmston	Low	Main A road with sporadic frontage development.
7	A165 east of Lissett	Low	Main A road with sporadic frontage development.
8	A165 south of Lissett to Beeford	Medium	Predominantly of low sensitivity, however as the link enters the built-up area of Beeford there are residential properties and a restaurant that front on to the A165 (approximately 10% of the link is of high sensitivity).

Link ID	Link description	Link sensitivity	Rationale for link sensitivity
9	B1249 through Beeford	High	There are a number of high sensitive receptors located along this link including a school, church, community centre, shop, public house and residential properties.
10	Foston Lane / Old Howe Lane	Low	Unclassified road with sporadic frontage development.
11	B1249 between Beeford and North Frodingham	Low	Unclassified road with sporadic frontage development.
12	B1249 through North Frodingham	High	There are a number of high sensitive receptors located along this link including a school, post office, public house and residential properties.
13	B1249 Church Lane	Medium	There a number of properties along the link as well as a Church with narrow footway to the front.
14	Cruckley Lane / Cowslam Lane	Low	Unclassified road with sporadic frontage development.
15	Sheepdike Lane through Foston on the Wolds	High	There are a number of residential properties along this link. The link also lacks footways along its full length and where footways are provided they tend to be narrow.
16	Old Howe Lane	Low	Unclassified road with no frontage development.
17, 18 & 19	Links no longer form part of the traffic and transport study area.		
20	B1249 north of Brigham Lane	Low	Main B road with no frontage development.
21	B1249 south of Wansford	Low	Main B road with no frontage development.
22	B1249 through Wansford	High	There are a number of residential properties and a public house linked by a narrow footway.
23	B1249 Wansford to Driffield	Medium	Predominantly of low sensitivity, however as the link enters the built-up area of Driffield there are some residential properties that front on to the road.
24	B1249 Wansford Road / Scarborough Road	High	Provides access to residential properties and a school and part of national cycle route 1.
25	Brigham Lane	High	The hamlet of Brigham is located along the link, no footways are provided to link properties.
26	A164 south of Driffield	High	The link provides access to Driffield Rugby Union Club and Showground.
27	Beverley Road from A164 to River Head	High	The link provides access to residential properties and a Driffield Showground.
28	Anderson Street / River Head	High	The link provides access to Driffield railway station, a public house and residential properties.
29	A164 between Driffield and Hutton Cranswick	Low	Main A road with sporadic frontage development.
30	Station Road / Main Street through Hutton Cranswick	High	There are a number of high sensitive receptors located along this link including a school, shops, play area,

Link ID	Link description	Link sensitivity	Rationale for link sensitivity
			railway station and residential properties. National cycle route 1 also travel on road along the link.
31	Corpslanding Road / Howl Lane / Church Street / Hutton Road	High	The link provides access to residential properties and a church. No footways are provided along some of the link and where footways are provided they are narrow.
32	Maeggison's Turnpike	High	Unclassified road with sporadic frontage development. However, part of the link forms an on-road section of National cycle route 1.
33	Corpslanding Road / Rotsea Lane	Low	Unclassified road with sporadic frontage development.
34	Carr Lane / Church Lane east of Watton	Medium	Unclassified road with sporadic frontage development. There is a small hamlet with a church, these properties and the church are linked by a footway.
35	Church Lane east of Watton	Low	Unclassified road with no frontage development.
36	A164, Hutton Cranswick to Watton	Medium	Main A road with some localised frontage residential development, footways are provided along the link.
37	A614, Watton to Wilfholme Road	Low	Main A road with sporadic frontage development.
38	Wilfholme Road	Low	Unclassified road with only sporadic development.
39	A164, Wilfholme Road to Beswick	High	Main A road with a primary school located remote from community linked by a narrow footway.
40	Beswick Road / Barfhill Causeway	Low	Unclassified road with only sporadic development.
41	A164, Beswick Road to Station Road	Low	Main A road with no frontage development.
42	Station Road east of A164	Low	Unclassified road with no frontage development.
43	Station Road west of A164	Low	Unclassified road with no frontage development.
44	A164 south of Station Road	Low	Main A road with sporadic frontage development.
45	A164 north of Leconfield	Medium	There are residential properties along the link, however, footways and crossings are provided.
46	Old Road west of Leconfield	Low	Unclassified road with no frontage development.
47	Unnamed Road west of junction with A164 to Old Road	Low	Unclassified road with no frontage development.
48	Miles Lane west of Leconfield	High	Provides access to residential properties, playing fields, a village hall, and a recreation club.
49	Miles Lane east of B1248	Low	Unclassified road with sporadic frontage development.
50	B1248 north of the A1035	Low	Main B road with sporadic frontage development.
51	A1035 Constitution Hill	Low	Main A road with sporadic frontage development.
52	Beverley Northern Bypass	Low	Main A road with no frontage development.
53	A1035 Dog Kennel Lane	Low	Main A road with no frontage development.
54	A1174 east of the A1035	Low	Main A road with no frontage development.
55	A1079, A1174 and A164	Low	Main A road with no frontage development.

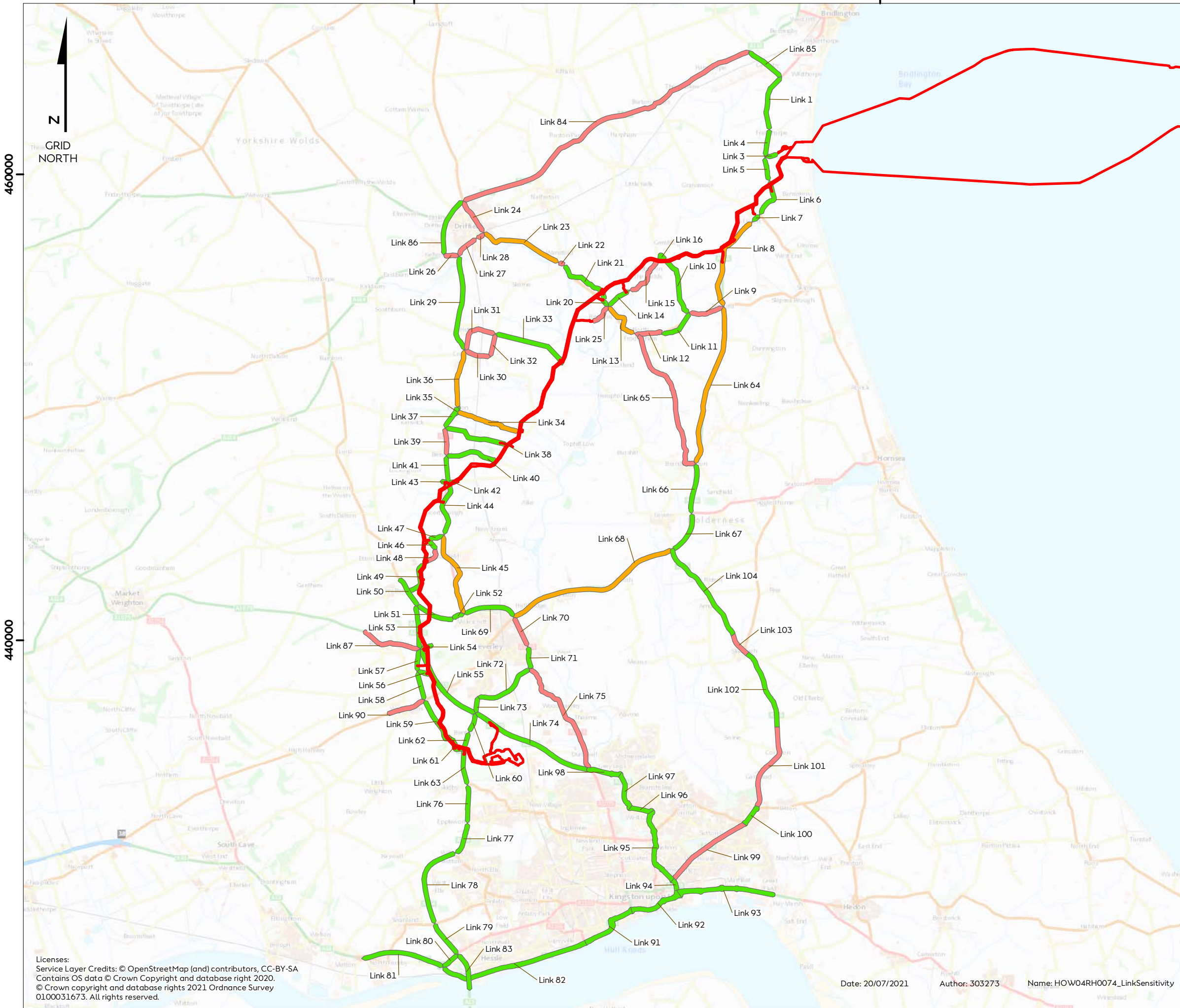
Link ID	Link description	Link sensitivity	Rationale for link sensitivity
56	Newbald Road	Low	Unclassified road with no frontage development.
57	Killingwoldgraves Lane / Coppleflat Lane	Low	Unclassified road with sporadic frontage development.
58	Coppleflat Lane south of Newbald Road	Low	Unclassified road with sporadic frontage development.
59	Coppleflat Lane south of Walkington	Low	Unclassified road with sporadic frontage development.
60	A164 south of A1079	Low	Main A road with sporadic frontage development.
61	Unnamed Road south of Coppleflat Lane to junction with A164	Low	Unclassified road with no frontage development.
62	A164 south of Coppleflat Lane	Low	Main A road with no frontage development.
63	A164 north of Skidby	Low	Main A road with no frontage development.
64	A165 Beeford to Brandesburton	Medium	Predominantly of low sensitivity, however as the link enters the built-up area of Beeford there are residential properties that front on to the A165.
65	Main Street / Froddingham Road, Brandesburton to North Froddingham	High	Provides access to residential properties, a school, public house, shops and a play area.
66	A165, Brandesburton to Leven	Low	Main A road with no frontage development.
67	A165, B1244 to A1035	Low	Main A road with no frontage development.
68	A1035, A165 to A1174	Medium	Provides access to residential properties and a public house.
69	A1035 Grange Way, north of Beverley	Low	Main A road with no frontage development.
70	A1174 Swinemoor Lane	High	The link has wide footway/ cycleways and crossing points but provides access to a hospital, residential properties and retail units.
71	A1174 Hull Road	Low	Main A road with no frontage development.
72	A164 Minster Way	Low	Main A road with no frontage development.
73	A164, Minster Way to A1079	Low	Main A road with no frontage development.
74	A1079, A164 to A1033	Low	Main A road with sporadic frontage development.
75	A1174 Beverly Road / Hull Road	High	Provides access to residential properties, a school and public house.
76	A164, B1233 to Castle Road	Low	Main A road with no frontage development.
77	A164, Castle Road to B1232	Low	Main A road with sporadic frontage development.
78	A164 south of B1232	Low	Main A road with no frontage development.
79	A164 south of B1231	Low	Main A road with no frontage development.

Link ID	Link description	Link sensitivity	Rationale for link sensitivity
80	A15 Boothferry Road	Low	There are a number of industrial/ office units however these are set back from the main road and wide footways / cycleways are provided.
81	A63 west of A15	Low	Main A road with no frontage development.
82	A63 Clive Sullivan Way	Low	Main A road with no frontage development.
83	A15 Humber Bridge	Low	Main A road with no frontage development.
84	A614 north of Driffield	High	Main A road, however, the route passes through a number of small communities where residential properties and public houses are accessed direct from the road.
85	Bridlington Bay Road, A614 to A165	Low	Unclassified road with sporadic frontage development.
86	A614 east of Driffield	Low	Main A road with sporadic frontage development.
87	A1079 through Bishop Burton	High	Main A road, however, the route passes through a number of small communities where residential properties and public houses are accessed direct from the road.
88 & 89	Links no longer form part of the traffic and transport study area.		
90	B1230 through Walkington	High	Provides access to residential properties, a public house, shop and village hall. In addition, cycle route 164 runs on-road via the link.
91	A63 from the A1166 to Ferensway	Low	The road is a main dual carriageway A road. There is generally no frontage development along the road, however close to St James Street there is a small concentration of industrial/ retail units and a public house. These are separated from the road by a wide footway and a nearby signalised crossing provides links across the A63.
92	A63 from the Ferensway to A1165	Low	The road is a main dual carriageway A road. There is generally no frontage development along the road, however between Ferensway and Market Place there are a number of offices and residential properties. These are separated from the road by a wide footway and verge and a nearby signalised crossing provides links across the A63.
93	A1033 east of the A1165	Low	The road is a main dual carriageway A road. There is generally no frontage development along the road, however close to Markfleet Avenue there is a small concentration of residential properties and retail units. These are separated from the road by a wide footway and a nearby signalised crossing provides links across the A1033.

Link ID	Link description	Link sensitivity	Rationale for link sensitivity
94	A1033 Mount Pleasant	Low	The road is a main single carriageway A road. There is generally no frontage development along the road, however close to its junction with the A165 there are two retail units on both sides of the road. These are separated from the road by a wide footway and two nearby signalised crossings provides links between them.
95	A1033 Holwell Road	Low	There are a number of industrial/ office units, a school and a residential development present along the link however these are set back from the main road and wide footways / cycleways are provided.
96	A1033 Sutton Road	Low	Main A road with no frontage development.
97	A1033 Thomas Clarkson Way	Low	Main A road with no frontage development.
98	A1033 Raich Carter Way	Low	Main A road with no frontage development.
99	A165 north east from Hull	High	Main A road, however the route passes through a number of small communities where residential properties and public houses are accessed direct from the road.
100	A165 Holderness Road	Low	Main A road. There are a few residential properties with direct access to the road, however there are footways along both sides of the road that are set back behind wide verges and linked by signal-controlled crossings.
101	A165 Ganstead Lane	High	Main A road, however the route passes through a small community where residential properties and public houses are accessed direct from the road.
102	A165 Northfield Road	Low	Main A road with sporadic frontage development.
103	A165 through Skirlaugh	High	Main A road, however the route passes through a small community where residential properties and public houses are accessed direct from the road.
104	A165 south of A1035 to Skirlaugh	Low	Main A road with sporadic frontage development.

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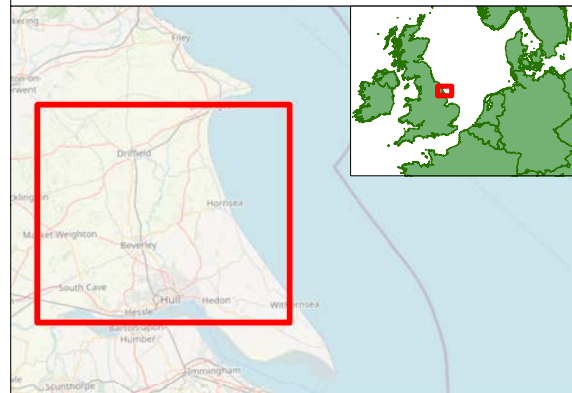


Hornsea Four

Figure 7.10

Link Sensitivity

- Order Limits
- Link Sensitivity**
- High
- Medium
- Low



Coordinate system: British National Grid
 Scale@A3: 1:160,000
 0 2 4 6 Kilometres
 0 2 4 Miles

REV	REMARK	DATE
	First Issue for PEIR	08/07/2019
A	Updated following PEIR consultations, for DCO	20/07/2021

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Date: 20/07/2021 Author: 303273 Name: HOW04RH0074_LinkSensitivity



7.11 Impact assessment

7.11.1 Construction

7.11.1.1 The impacts of the onshore construction of Hornsea Four have been assessed on traffic and transport. The environmental impacts arising from the construction of Hornsea Four are listed in [Table 7.13](#) along with the MDS against which each construction phase impact has been assessed.

7.11.1.2 The identification of the traffic and transport environmental impacts requires an assessment of the volume of traffic associated with construction activities and the significance of this additional traffic. [Volume A6, Annex 7.1: Traffic and Transport Technical Report](#) contains the derivation of construction traffic flows and background traffic flows that have informed this assessment.

Traffic and Transport: Screening

7.11.1.3 [Table 7.18](#) summarises the assigned daily peak two-way vehicle movements (i.e. arrivals and departures) of all materials, personnel and plant when distributed across the highway network.

7.11.1.4 [Table 7.18](#) also provides a comparison of the peak daily construction flows with the forecast background daily traffic flows in 2024 and identifies the screened links. [Table 7.18](#) also includes details of average construction flows.

7.11.1.5 In accordance with GEART (Rule 1 and 2), only those sensitive links that show greater than 10% increase in total traffic flows (or HGV component) or, for all other links, a greater than 30% increase in total traffic or the HGV component are considered when assessing the traffic effect of severance and pedestrian amenity upon receptors. Links that are screened out of the assessment are highlighted blue within the following [Table 7.18](#).

7.11.1.6 It is noted from [Table 7.18](#) that 62 of the links within the study area are above the GEART screening thresholds and taken forward for assessment. Links (1, 4, 6, 15 – 16, 27 - 29, 36 – 37, 46, 48, 50 – 53, 55, 58, 59, 66 – 69, 73, 75, 80 – 87, 91 – 93) are below GEART screening thresholds and are therefore not considered further in the assessment of severance and pedestrian amenity effects.

Table 7.18: Existing and proposed daily traffic flows.

Link	Link description	Link sensitivity	Background 2024 flows Annual Average Weekday Traffic (AAWT*)		Peak daily two-way Construction vehicle movements		Average daily two-way Construction vehicle movements		Peak percentage Increase	
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
1	A165 from Moor Ln to Fraisthorpe	Low	12,295	302	21	0	10	0	0.2%	0.0%
3	Unnamed Road from its junction with A165 south of Fraisthorpe	Low	507	3	209	93	78	24	41.2%	2717.9%
4	A165 to the west of Fraisthorpe	Low	12,295	302	21	0	10	0	0.2%	0.0%
5	A165 south of Fraisthorpe	Low	12,295	302	215	93	81	24	1.7%	30.9%
6	A165 west of Barmston	Low	11,581	450	343	122	141	36	3.0%	27.1%
7	A165 east of Lissett	Low	9,853	313	343	122	141	36	3.5%	39.0%
8	A165 south of Lissett to Beeford	High	9,853	313	394	172	164	59	4.0%	55.2%
9	B1249 through Beeford	High	2,588	54	198	84	94	40	7.6%	156.6%
10	Foston Lane / Old Howe Lane	Low	321	9	130	15	62	7	40.6%	160.8%
11	B1249 between Beeford and North Frodingham	Low	4,442	84	70	70	33	33	1.6%	83.2%
12	B1249 through North Frodingham	High	4,442	84	70	70	33	33	1.6%	83.2%
13	B1249 Church Lane	Medium	4,442	84	474	70	230	33	10.7%	83.2%
14	Cruckley Lane / Cowslam Lane	Low	554	8	133	23	64	12	24.0%	288.8%
15	Sheepdike Lane through Foston on the Wolds	High	554	8	10	0	5	0	1.7%	0.0%
16	Old Howe Lane	Low	321	9	10	0	5	0	3.0%	0.0%
20	B1249 north of Brigham Lane	Low	4,442	84	291	70	138	33	6.6%	83.2%
21	B1249 south of Wansford	Low	4,442	84	185	70	88	33	4.2%	83.2%
22	B1249 through Wansford	High	4,442	84	80	70	38	33	1.8%	83.2%
23	B1249 Wansford to Driffield	Medium	5,909	93	80	70	38	33	1.3%	75.0%
24	B1249 Wansford Road / Scarborough Road	High	5,909	93	80	70	38	33	1.3%	75.0%
25	Brigham Lane	High	554	8	127	19	61	9	22.9%	236.3%
26	A164 south of Driffield	High	11,218	545	156	70	84	33	1.4%	12.8%
27	Beverley Road from A164 to River Head	High	11,534	208	0	0	0	0	0.0%	0.0%

Hornsea 4



Link	Link description	Link sensitivity	Background 2024 flows Annual Average Weekday Traffic (AAWT*)		Peak daily two-way Construction vehicle movements		Average daily two-way Construction vehicle movements		Peak percentage Increase	
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
28	Anderson Street / River Head	High	11,534	208	0	0	0	0	0.0%	0.0%
29	A164 between Driffield and Hutton Cranswick	Low	11,218	545	156	70	84	33	1.4%	12.8%
30	Station Road / Main Street through Hutton Cranswick	High	2,531	35	139	32	67	16	5.5%	88.9%
31	Corpslanding Road / Howl Lane / Church Street / Hutton Road	High	562	8	108	0	51	0	19.2%	0.0%
32	Maeggison's Turnpike	High	2,531	35	139	32	67	16	5.5%	88.9%
33	Corpslanding Road / Rotsea Lane	Low	562	8	139	32	67	16	24.8%	393.9%
34	Carr Lane / Church Lane east of Watton	Medium	313	18	133	25	62	11	42.6%	138.4%
35	Church Lane east of Watton	Low	313	18	133	25	62	11	42.6%	138.4%
36	A164, Hutton Cranswick to Watton	Medium	9,930	450	287	101	147	49	2.9%	22.5%
37	A614, Watton to Wilfholme Road	Low	9,930	450	413	126	206	59	4.2%	28.1%
38	Wilfholme Road	Low	81	0	119	12	57	6	146.9%	n/a
39	A164, Wilfholme Road to Beswick	High	10,339	254	524	138	259	65	5.1%	54.3%
40	Beswick Road / Barfhill Causeway	Low	38	0	124	16	59	8	327.1%	n/a
41	A164, Beswick Road to Station Road	Low	10,339	254	579	154	314	73	5.6%	60.5%
42	Station Road east of A164	Low	317	9	121	14	58	7	38.3%	149.3%
43	Station Road west of A164	Low	686	5	175	67	66	15	25.5%	1462.9%
44	A164 south of Station Road	Low	10,339	254	670	245	485	100	6.5%	96.4%
45	A164 north of Leconfield	Medium	8,538	415	705	280	540	115	8.3%	67.4%
46	Old Road west of Leconfield	Low	3,988	19	8	0	4	0	0.2%	0.0%
47	Unnamed Road west of junction with A164 to Old Road	Low	3,988	19	150	35	70	15	3.8%	178.9%
48	Miles Lane west of Leconfield	High	3,988	19	8	0	4	0	0.2%	0.0%
49	Miles Lane east of B1248	Low	3,988	19	118	11	56	5	3.0%	54.1%
50	B1248 north of the A1035	Low	13,915	314	114	11	55	5	0.8%	3.4%

Hornsea 4



Link	Link description	Link sensitivity	Background 2024 flows Annual Average Weekday Traffic (AAWT*)		Peak daily two-way Construction vehicle movements		Average daily two-way Construction vehicle movements		Peak percentage Increase	
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
51	A1035 Constitution Hill	Low	11,642	1,105	719	295	547	122	6.2%	26.6%
52	Beverley Northern Bypass	Low	11,642	1,105	705	280	540	115	6.1%	25.3%
53	A1035 Dog Kennel Lane	Low	16,984	1,118	748	323	561	137	4.4%	28.9%
54	A1174 east of the A1035	Low	6,673	58	196	20	102	8	2.9%	34.4%
55	A1079, A1174 and A164	Low	22,591	1,328	1,017	367	643	157	4.5%	27.7%
56	Newbald Road	Low	1,773	1	132	24	63	12	7.4%	2113.7%
57	Killingwoldgraves Lane / Copleflat Lane	Low	3,335	76	614	24	589	12	18.4%	32.0%
58	Copleflat Lane south of Newbald Road	Low	3,335	76	589	0	589	0	17.7%	0.0%
59	Copleflat Lane south of Walkington	Low	3,335	76	244	12	116	6	7.3%	15.3%
60	A164 south of A1079	Low	37,994	1,623	1,364	838	780	379	3.6%	51.6%
61	Unnamed Road south of Copleflat Lane to junction with A164	Low	2,546	25	246	33	116	14	9.7%	129.9%
62	A164 south of Copleflat Lane	Low	37,994	1,623	1,364	838	810	379	3.6%	51.6%
63	A164 north of Skidby	Low	36,513	1,560	1,364	838	726	379	3.7%	53.7%
64	A165 Beeford to Brandesburton	High	9,631	614	661	257	297	99	6.9%	41.8%
65	Main Street / Froddingham Road, Brandesburton to North Froddingham	High	2,126	18	405	0	197	0	19.0%	0.0%
66	A165, Brandesburton to Leven	Low	18,988	1,165	661	257	494	99	3.5%	22.0%
67	A165, B1244 to A1035	Low	18,988	1,165	663	257	497	99	3.5%	22.0%
68	A1035, A165 to A1174	Medium	22,557	1,353	721	257	530	99	3.2%	19.0%
69	A1035 Grange Way, north of Beverley	Low	13,272	1,243	405	0	271	0	3.0%	0.0%
70	A1174 Swinemoor Lane	High	17,673	907	721	257	373	99	4.1%	28.3%
71	A1174 Hull Road	Low	16,346	845	721	257	373	99	4.4%	30.4%
72	A164 Minster Way	Low	10,651	518	517	257	253	99	4.8%	49.5%
73	A164, Minster Way to A1079	Low	25,456	1,087	528	257	258	99	2.1%	23.6%
74	A1079, A164 to A1033	Low	21,749	1,211	1,671	838	1,064	379	7.7%	69.2%

Hornsea 4



Link	Link description	Link sensitivity	Background 2024 flows Annual Average Weekday Traffic (AAWT*)		Peak daily two-way Construction vehicle movements		Average daily two-way Construction vehicle movements		Peak percentage Increase	
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
75	A1174 Beverly Road / Hull Road	High	16,628	901	251	0	120	0	1.5%	0.0%
76	A164, B1233 to Castle Road	Low	37,994	1,623	1,333	838	680	379	3.5%	51.6%
77	A164, Castle Road to B1232	Low	37,994	1,623	1,333	838	680	379	3.5%	51.6%
78	A164 south of B1232	Low	23,090	1,475	1,270	838	623	379	5.5%	56.8%
79	A164 south of B1231	Low	23,090	1,475	1,188	838	577	379	5.1%	56.8%
80	A15 Boothferry Road	Low	37,906	3,371	838	838	379	379	2.2%	24.8%
81	A63 west of A15	Low	60,906	7,324	838	838	379	379	1.4%	11.4%
82	A63 Clive Sullivan Way	Low	72,698	7,189	838	838	379	379	1.2%	11.7%
83	A15 Humber Bridge	Low	26,401	1,954	328	0	185	0	1.2%	0.0%
84	A614 north of Driffield	High	10,177	726	48	0	28	0	0.5%	0.0%
85	Bridlington Bay Road, A614 to A165	Low	9,118	814	63	0	35	0	0.7%	0.0%
86	A614 east of Driffield	Low	16,736	1,122	156	70	84	33	0.9%	6.2%
87	A1079 through Bishop Burton	High	11,818	776	239	0	135	0	2.0%	0.0%
90	B1230 through Walkington	High	3,335	76	589	0	589	0	17.7%	0.0%
91	A63 from the A1166 to Ferensway	Low	65,185	6,171	838	838	379	379	1.3%	13.6%
92	A63 from the Ferensway to A1165	Low	49,017	5,437	838	838	379	379	1.7%	15.4%
93	A1033 east of the A1165	Low	45,394	5,057	861	838	393	379	1.9%	16.6%
94	A1033 Mount Pleasant	Low	21,441	1,471	857	838	391	379	4.0%	56.9%
95	A1033 Holwell Road	Low	28,242	2,131	1,283	838	632	379	4.5%	39.3%
96	A1033 Sutton Road	Low	22,221	914	1,303	838	649	379	5.9%	91.7%
97	A1033 Thomas Clarkson Way	Low	22,221	914	1,288	838	642	379	5.8%	91.7%
98	A1033 Raich Carter Way	Low	20,221	833	1,348	838	681	379	6.7%	100.6%
99	A165 north east from Hull	High	17,140	1,257	331	257	135	99	1.9%	20.4%
100	A165 Holderness Road	Low	29,557	763	358	257	148	99	1.2%	33.7%
101	A165 Ganstead Lane	High	10,952	684	358	257	148	99	3.3%	37.5%
102	A165 Northfeild Road	Low	10,952	684	358	257	148	99	3.3%	37.5%

Hornsea 4



Link	Link description	Link sensitivity	Background 2024 flows Annual Average Weekday Traffic (AAWT*)		Peak daily two-way Construction vehicle movements		Average daily two-way Construction vehicle movements		Peak percentage Increase	
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
103	A165 through Skirlaugh	High	10,952	684	358	257	148	99	3.3%	37.5%
104	A165 south of A1035 to Skirlaugh	Low	10,952	684	486	257	239	99	4.4%	37.5%

Notes

*	Annual Average Weekday Traffic (AAWT)
	Links screened out of assessment, below GEART screening thresholds

Driver Delay - Capacity (TT-C-2, TT-C-3, TT-C-4)

7.11.1.7 The oCTMP, submitted with this DCO application (as Appendix F of **Volume F2, Chapter 2: Outline Code of Construction Practice**), includes the commitment to submit further assessment of traffic flows through sensitive junctions to ensure that residual driver delay – capacity impacts are not significant. **Section 7.7.4** includes further details.

Driver delay - Local roads (TT-C-4, TT-C-5)

7.11.1.8 For this effect, an evaluation of when the highway network is of substandard width to prevent two HGVs from passing (therefore leading to delays associated within waiting and manoeuvring) has been adopted as a pragmatic threshold to screen the study area for potential significant impacts.

Magnitude of impact

7.11.1.9 A review of all links within the traffic and transport study area has been undertaken to identify any links of substandard width which would prevent two HGVs from passing (typically roads less than 5.5 m wide).

7.11.1.10 **Table 7.19** provides a summary of the magnitude of impact for each of the links identified as of substandard width. The impact upon all links is predicted to be of medium-term duration, continuous and fully reversible. It is predicted that the impact will affect the receptors directly.

Table 7.19: Impacts upon driver delay – local roads.

Links	Description of existing situation	Peak hourly construction flows		Rationale for magnitude	Magnitude
		Light vehicles	HGVs		
3	Single lane road, no passing places ~3 m wide	53	9	The existing road is not wide enough for two vehicles to pass and no passing places are provided.	Major
10, 16	Single lane road, informal passing places ~4 m wide	51	2	The existing road incorporates informal passing places to allow two light vehicles to pass. However, the passing places would not allow two HGVs to pass.	Moderate
15	Narrow two lane with pinch points ~5 m wide	4	0	The existing road is generally wide enough for two light vehicles to pass and no HGVs are proposed to travel via this link.	Negligible
25	Single lane road, formal and informal passing places ~4 m wide	49	2	The existing road incorporates passing places to allow light vehicles to pass. However, the passing places would not allow two HGVs to pass.	Moderate

Links	Description of existing situation	Peak hourly construction flows		Rationale for magnitude	Magnitude
		Light vehicles	HGVs		
32	Narrow two lane with pinch points ~5 m wide	49	3	The existing road is generally wide enough for two light vehicles to pass. However, two HGVs meeting may experience difficulty attempting to pass each other.	Moderate
33	Single lane road, formal passing places ~3 m wide	49	3	The existing road incorporates passing places to allow two light vehicles to pass. However, the passing places would not allow two HGVs to pass.	Moderate
34	Single lane road, formal passing places ~4 m wide	49	3		Moderate
38	Single lane road, no passing places ~3 m wide	49	1	The existing road is not wide enough for two vehicles to pass and no passing places are provided.	Major
40	Single lane road, no passing places ~3 m wide	49	2		Major
42	Single lane road, formal passing places ~4 m wide	49	1	The existing road incorporates passing places to allow two light vehicles to pass. However, the passing places would not allow two HGVs to pass.	Moderate
43	Narrow two lane road ~ 5 to 5.5m wide	49	7	The existing road allows to light vehicles to pass, but due to a failure of the edge of the road, the effective width is limited making it hard for two HGVs to pass.	Moderate

Sensitivity of the receptor

7.11.1.11 Each of the 12 links have been identified as being of substandard width. The sensitivity of the links is therefore considered to be **high**.

Significance of the effect

7.11.1.12 **Table 7.20** provides a summary of the sensitivity of each receptor, the magnitude of impact and overall significance of the effect.

Table 7.20: Significance of impacts upon driver delay - local roads.

Link	Magnitude	Sensitivity	Significance	Rationale for significance	Significant in EIA terms
3	Major	High	Large Adverse	An increase of up to nine HGVs per hour would be likely to result in conflict between HGVs attempting to pass each other.	Significant
10, 16	Moderate		Moderate Adverse	An increase of up to two HGVs per hour attempting to travel via a road of substandard width could occasionally lead to conflict between HGVs attempting to pass each other.	Significant
15	Negligible		Slight Adverse	No HGVs are forecast to travel along this link.	Not significant
25	Moderate		Moderate Adverse	An increase of up to two HGVs per hour attempting to travel via a road of substandard width could occasionally lead to conflict between HGVs attempting to pass each other.	Significant
32	Moderate		Moderate Adverse	An increase of up to three HGVs per hour attempting to travel via a road of substandard width could occasionally lead to conflict between HGVs attempting to pass each other.	Significant
33	Moderate		Moderate Adverse	An increase of up to three HGVs per hour attempting to travel via a road of substandard width could occasionally lead to conflict between HGVs attempting to pass each other.	Significant
34	Moderate		Moderate Adverse	An increase of up to three HGVs per hour attempting to travel via a road of substandard width could occasionally lead to conflict between HGVs attempting to pass each other.	Significant
38	Major		Large Adverse	An increase of one HGV per hour attempting to travel via a road of substandard width with no passing places could occasionally lead to conflict with other oncoming vehicles.	Significant
40	Major		Large Adverse	An increase of two HGV per hour attempting to travel via a road of substandard width could occasionally lead to conflict between HGVs attempting to pass each other.	Significant
42	Moderate		Moderate Adverse	An increase of up to one HGVs per hour attempting to travel via a road of substandard width could occasionally lead to conflict between HGVs attempting to pass each other.	Significant
43	Moderate	Moderate Adverse	An increase of up to seven HGVs per hour attempting to travel via a road of reduced width could lead to accelerated failure of the edge of the road and increased potential for	Significant	

Link	Magnitude	Sensitivity	Significance	Rationale for significance	Significant in EIA terms
				conflict between HGVs attempting to pass each other.	

Further mitigation (Driver delay - Local roads)

7.11.1.13 **Table 7.21** details further mitigation measures that would be applied to reduce the potentially significant adverse driver delay effects upon local roads. The measures outlined in **Table 7.21** are intended to provide an indicative and proportionate means of mitigating the proposed effects, the final measures will be agreed with the ERYC through the development of the CTMP (Co144) prior to commencement of relevant works.

Table 7.21: Potential further mitigation measures for driver delay upon local roads.

Links	Potential Mitigation Measures
3	Potential to widen the existing junction of link 3 with the A165, if deemed necessary, to allow two HGVs to pass and provide new passing places along link 3 to allow light vehicles and HGVs to pass.
10, 16	Two light vehicles can only pass through the use of informal passing places; therefore, the existing passing places could be formalised. Alternatively, an escort vehicle could be used to guide HGVs along the link.
25, 33, 34, 42	Two light vehicles can pass using passing places, therefore, an escort vehicle could be used to guide HGVs along the links
32	Two light vehicles can currently pass along this link, therefore, to manage HGVs an escort vehicle could be used. The escort vehicle would travel ahead of the HGV and hold up an oncoming traffic at a suitable point where two vehicles can pass.
38, 40	New passing places could be provided to allow light vehicles to pass, if deemed necessary. Alternatively, an escort vehicle could be used to guide HGVs along the link.
43	Potential to widen the existing junction of link 43 with the A164 and widen along link 43 to access AP_015 to allow two HGVs to pass.

Notes: Mitigation measures that require works on the public highway, outside of the Hornsea Four Order Limits have not been detailed at this point of the application. Article 14 of the draft DCO includes powers to increase the width of any street or make passing places in any street outside of the Order limits with the consent of the street authority (namely ERYC). The final measures (including requirement for public highway works) will be agreed with the ERYC through the development of the CTMP (Co144) prior to commencement of relevant works.

7.11.1.14 With the further mitigation in place overall it is predicted that the sensitivity of links would remain **high** but that the magnitude would be reduced to **slight**. The residual effect is therefore not significant in EIA terms.

Severance (TT-C-6)

7.11.1.15 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery.

Magnitude of impact

7.11.1.16 **Table 7.22** provides a summary of the magnitude of impact for each of the screened links and the spatial extent. The impact upon all links is predicted to be of medium-term duration, continuous and fully reversible. It is predicted that the impact will affect the receptors directly.

Table 7.22: Magnitude of severance impacts.

Links	local/regional/national	Rationale for magnitude	Magnitude
38, 40	Local	The peak daily change in total traffic flow is greater than 90%	Major
3, 10, 34, 35, 42	Local	The peak daily change in total traffic flow is between 30 and 60%	Minor
5, 7- 8, 26, 39, 41, 44, 45, 54, 60, 62 – 64, 70 – 72, 74, 76 – 79, 94 - 104	Regional	The peak daily change in total traffic flow is less than 30%	Negligible
9, 11 - 14, 20 – 25, 30 - 33, 43, 47, 49, 56 - 57, 61, 65, 90	Local		

Sensitivity of the receptor

7.11.1.17 The sensitivity of each highway link is detailed in **Table 7.17** and **Figure 7.10**.

Significance of the effect

7.11.1.18 **Table 7.23** provides a summary of the sensitivity of each receptor, the magnitude of impact and overall significant of the effect.

Table 7.23: Significance of severance effects.

Link	Magnitude	Sensitivity	Significance	Rationale for significance	Significant in EIA terms
38, 40	Major	Low	Slight Adverse	The sensitivity of the links is assessed as low noting that there is no or sporadic development along these links and no footways suggesting there would be limited pedestrian activity.	Not significant
3, 10, 35, 42	Minor	Low	Slight Adverse	The sensitivity of the links is assessed as low noting that there is no or sporadic development along these links and no footways suggesting there would be limited pedestrian activity.	Not significant

Link	Magnitude	Sensitivity	Significance	Rationale for significance	Significant in EIA terms
34		Medium	Slight Adverse	The sensitivity of the link is assessed as medium noting that there is sporadic frontage development along the link and whilst there is a small hamlet with a church, these properties and the church are linked by a footway.	Not significant
5, 7 – 9, 11 – 14, 20 – 26, 30 - 33, 39, 41, 43 – 45, 47, 49, 54, 56 – 57, 60 – 65, 70 – 72, 74, 76 – 79, 90, 94 - 104	Negligible	Low – High	Slight Adverse	The sensitivity of links varies between low and high, however, the magnitude of change would be negligible.	Not significant

Pedestrian Amenity (TT-C-7)

7.11.1.19 Pedestrian amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and footway width and separation from traffic. GEART suggests that a threshold of a doubling of total traffic flow or the HGV component may lead to a negative impact upon pedestrian amenity.

Magnitude of impact

7.11.1.20 **Table 7.24** provides a summary of the magnitude of impact for each of the screened links. The impact upon all links is predicted to be of medium - term duration, continuous and fully reversible. It is predicted that the impact will affect the receptors directly.

Table 7.24: Magnitude of pedestrian amenity impacts.

Link	Magnitude	Rationale for magnitude
10, 25, 38, 40, 42	Minor	The peak daily change in total traffic flow or HGV component is greater than 100%, however, Table 7.18 details that the peak increase HGV traffic along these links would be less than 20 two-way HGV movements per day, equivalent to one delivery per hour.
14, 33 - 35, 47, 56, 61	Moderate	The peak daily change in total traffic flow or HGV component is greater than 100%, however, Table 7.18 details that the peak increase HGV traffic along these links would be less than 60 two-way HGV movements per day, equivalent to three deliveries per hour.
3, 9, 43, 98	Major	The peak daily change in total traffic flow or HGV component is greater than 100% and Table 7.18 details that the peak increase HGV traffic along these links would be greater than 60 two-way HGV movements per day.
5, 7 – 8, 11 – 13, 20 – 24, 26, 30 – 32, 39, 41, 44 – 45, 49, 54, 57, 60, 62 – 65, 70 – 72, 74, 76 – 79, 90, 94 – 97, 99 - 104	Negligible	The peak daily change in total traffic flow or HGV component is less than 100%

Sensitivity of the receptor

7.11.1.21 The sensitivity of each highway link is detailed in [Table 7.17](#) and [Figure 7.10](#).

Significance of the effects

7.11.1.22 [Table 7.25](#) provides a summary of the sensitivity of each receptor, the magnitude of impact and overall significant of the effect.

Table 7.25: Significance of pedestrian amenity effects.

Link	Magnitude	Sensitivity	Significance	Rationale for significance	Significant in EIA terms?
10, 38, 40, 42	Minor	Low	Slight Adverse	The sensitivity of the links is assessed as low noting that there is no or only sporadic development along these links and no footways suggesting there would be limited pedestrian activity.	Not significant
25		High	Slight Adverse	The hamlet of Brigham is located along the link, no footways are provided to link properties. Noting the	Not significant

Link	Magnitude	Sensitivity	Significance	Rationale for significance	Significant in EIA terms?
				concentrations of sensitive receptors, the significance is considered to be minor.	
14, 33, 35, 47, 56, 61	Moderate	Low	Slight Adverse	The sensitivity of links is assessed as low noting that there is no or only sporadic development along these links and no footways suggesting there would be limited pedestrian activity.	Not significant
34		Medium	Moderate Adverse	The sensitivity of link is assessed as medium noting that there is only sporadic frontage development along the link and whilst there is a small hamlet with a church, these receptors are linked by a footway.	Significant
3, 43, 98	Major	Low	Slight Adverse	The sensitivity of links is assessed as low noting that there is no development along these links suggesting there would be limited pedestrian activity.	Not significant
9		High	Large Adverse	The sensitivity of link is assessed as high noting that there are a number of high sensitive receptors located along this link including a school, church, community centre, shop, public house and residential properties.	Significant
5, 7 – 8, 11 – 13, 20 – 24, 26, 30 – 32, 39, 41, 44 – 45, 49, 54, 57, 60, 62 – 65, 70 – 72, 74, 76 – 79, 90, 94 – 97, 99 - 104	Negligible	Low – High	Slight Adverse	The sensitivity of links varies between low and high, however, the magnitude of change would be negligible.	Not significant

Further mitigation

- 7.11.1.23 Significant effects associated with an increase in construction traffic upon links 9 and 34 have been identified. The following section sets out further mitigation measures to be applied to reduce the significance of pedestrian amenity impacts upon these links.
- 7.11.1.24 Link 9 forms a route to serve accesses AP_005 to AP_009 and AP_039 from the A165 via Beeford, North Frodingham and Church End. The traffic derivation (contained in [Volume A6, Annex 7.1: Traffic and Transport Technical Report](#)) assumes that construction activities occur simultaneously at access AP_005 to AP_009 and AP_039. In total, of the 84 two-way HGV movements, 15 are forecast to travel to and from accesses AP_005 and AP_039, 23 to and from access AP_006, 19 to and from access AP_007, eight from access AP_009 and 19 to and from access AP_009. It would therefore be proposed that construction works for these sections would be staggered to avoid an overlap of construction activities, this would therefore reduce the peak two-way HGV movements from 84 to 23.
- 7.11.1.25 In addition, noting that a school is located on link 9 all movements along this link would be scheduled to occur outside of school start and finish times. The limit on HGV movements and delivery hours (via link 9) are secured through controls and measures (embedded within the oCTMP (Co144) submitted with this DCO application (as Appendix F of [Volume F2, Chapter 2: Outline Code of Construction Practice](#)).
- 7.11.1.26 With the further mitigation in place overall it is predicted that the sensitivity of link 9 would remain unchanged at **high**, but that the magnitude would be reduced to **slight**. The residual effect is therefore of **slight** significance, which is not significant in EIA terms.
- 7.11.1.27 Link 34 forms a route to serve accesses AP_011 and AP_037 to the east of Watton. In total it is forecasted that up to 25 two-way HGV movements would pass along this link. The driver delay assessment ([Table 7.21](#)) identifies that link 34 is not wide enough for two vehicles to pass and as such it is proposed that potential mitigation may comprise all deliveries being escorted along this link. Escort vehicles would ensure the route ahead was clear by temporary holding back traffic prior to calling through deliveries. This would ensure that delay effects are managed to slight significance.
- 7.11.1.28 To reduce the potential impacts upon pedestrian amenity, mitigation measures will be explored. This could include all deliveries being escorted, drivers required to travel at no more than 20 mph and when passing pedestrians, cyclists or equestrians in the road, the escort vehicle would stop the HGV to allow the pedestrian, cyclist or equestrian to pass.
- 7.11.1.29 This mitigation strategy is secured through controls and measures within the oCTMP (Co144) submitted with this DCO application (as Appendix F of [Volume F2, Chapter 2: Outline Code of Construction Practice](#)).
- 7.11.1.30 With the further mitigation in place overall it is predicted that the sensitivity of link 34 would remain **medium** but that the magnitude would be reduced to **minor**. The residual

effect is therefore considered to be **slight adverse significance**, which is not significant in EIA terms.

Accidents and Road Safety (TT-C-8)

Magnitude of impact

7.11.1.31 **Table 7.26** provides a summary of links with a collision rate higher than the national average for comparable roads (identified in **Section 7.7.3**). **Table 7.26** also includes details of the peak increase in daily construction flows (in comparison to the forecast background daily traffic flows in 2024) to contextualise the potential for significant effects. The impact upon all links is predicted to be of medium-term duration, continuous and fully reversible. It is predicted that the impact will affect the receptors directly.

Table 7.26: Accidents and Road Safety Analysis.

Sensitive Link	Percentage increase		Rationale for Magnitude
	All vehicles	HGVs	
B1249 (Links 20 – 23)	6.6%	83.2%	It is assessed that a change in HGV traffic of up to 83.2% could potentially represent a moderate magnitude of change.
B1249 (Link 24)	1.3%	75.0%	It is assessed that a change in HGV traffic of up to 75.0% could potentially represent a moderate magnitude of change.
A164 (Links 29, 36, 37, 39, 41, 44 and 45)	8.3%	96.4%	It is assessed that the change in HGV traffic of up to 96.4% could potentially represent a major magnitude of change.
Miles Lane (Link 48 and 49)	3.0%	54.1%	It is assessed that a change in HGV traffic of up to 54.1% could potentially represent a moderate magnitude of change.
B1248 (Link 50)	0.8%	3.4%	It is assessed that a peak change of 0.8% in total traffic and 3.4% in HGV traffic represents a negligible magnitude of change.
A1035 (Link 53)	4.4%	28.9%	It is assessed that a change in HGV traffic of up to 28.9% could potentially represent a minor magnitude of change.
Killingwoldgraves Lane / Copleflat Lane (Links 57, 58, 59 and 61)	18.4%	129.9%	It is assessed that the change in HGV traffic of up to 129.9% could potentially represent a major magnitude of change.
Main Street / Froddingham Road (Link 65)	19.0%	0.0%	It is assessed that a peak change of 19.0% in total traffic could potentially represent a minor magnitude of change.
A1035, A165 (Link 68)	3.2%	19.9%	It is assessed that a peak change of 3.2% in total traffic and 19.9% in HGV traffic represents a minor magnitude of change.
A1035 (Link 69)	3.0%	0.0%	It is assessed that a peak change of 3.0% in total traffic represents a negligible magnitude of change.

Sensitive Link	Percentage increase		Rationale for Magnitude
	All vehicles	HGVs	
A15 (Link 80)	2.2%	24.8%	It is assessed that the change in HGV traffic of up to 24.8% could potentially represent a minor magnitude of change.
Brdlington Bay Road (Link 85)	0.7%	0.0%	It is assessed that a peak change of 0.7% in total traffic represents a negligible magnitude of change.
A1079 (Link 87)	2.0%	0.0%	It is assessed that a peak change of 2.0% in total traffic represents a negligible magnitude of change.
A165 (Link 99)	1.9%	20.4%	It is assessed that the change in HGV traffic of up to 20.4% could potentially represent a minor magnitude of change.
A165, B1237 to B1238 (Link 100)	1.2%	33.7%	It is assessed that the change in HGV traffic of up to 33.7% could potentially represent a moderate magnitude of change.

Sensitivity of the receptor

7.11.1.32 Each of the 7 sections of road (identified in [Table 7.26](#)) has a collision rate higher than the national average for comparable roads. The sensitivity of these roads is therefore, considered to be **high**.

Significance of the effect

7.11.1.33 Overall, it is predicted that the sensitivity of links 50, 53, 65, 68, 69, 80, 85, 87 and 99 is **high** and the magnitude is **negligible** to **minor**. The effect is therefore of **slight** adverse significance which is not significant in EIA terms.

7.11.1.34 The magnitude of effect for links 20 - 24, 29, 36, 37, 39, 41, 44 – 45, 48, 49, 57, 58, 58, 61 and 100 range between moderate and major which would potentially result in significant effects. Further consideration is therefore given to each of these roads to understand the types and locations of the collisions in detail.

Links 20 – 23 – B1249

7.11.1.35 Link 20 - 23 (the B1249 to Drifffield) is identified as having a collision rate above the national average for comparable roads. A review of the collisions along the links has identified that within the five year study period there have been 18 collisions, of which one was fatal, three were classified as serious and 14 were slight.

7.11.1.36 In total of the 18 collisions, 13 collisions involved single vehicles losing control whilst negotiating bends and three collisions involved cars crossing the centre line and colliding with an oncoming vehicle (one of which was a motorcycle). The collision with a motorcycle resulted in a fatal injury to the rider. Twelve of these 16 collisions are located over an approximate 2.9km stretch of the B1249 between Wansford and Cruckley Lane.

- 7.11.1.37 The remaining two collisions involve a car colliding with a pedestrian (who was walking in the road) and car colliding with the rear of a stationary vehicle (at temporary traffic signals).
- 7.11.1.38 Traffic flows along links 20 – 23 are forecast to increase by up to 6.6% and HGV flows by 83.2% as a result of construction traffic.
- 7.11.1.39 Whilst a pattern of loss of control collisions is identified, this type of collision would not be sensitive to vehicle composition and therefore it is more appropriate to focus upon the total change in traffic rather than changes in HGVs.
- 7.11.1.40 It is therefore considered that an increase in total traffic of 6.6% along links 20 - 23 represents a **negligible** magnitude of effect on a **high** sensitive receptor. The effect is therefore assessed as **slight** which is not significant in EIA terms.
- 7.11.1.41 It is however noteworthy that the accesses AP_007 and AP_008 would be served from the B1249 in the proximity of the section of road where there is a history of collisions due to loss of control. It is proposed that in the vicinity of all accesses there would be temporary traffic management including a reduction in the speed limit and advanced warning signs. It is considered that these measures would further assist in reducing speeds through these bends reducing the potential for loss of control collisions. Further detail in relation to these measures is provided within the oCTMP (as Appendix F of [Volume F2, Chapter 2: Outline Code of Construction Practice](#)).

Link 24 – B1249

- 7.11.1.42 Link 24 (the B1249) is identified as having a collision rate above the national average for comparable roads. A review of the collisions along link 24 has identified that within the five year study period there have been 15 collisions, of which three were classified as serious and 12 slight. Of the 15 collisions, four involved motorcycles and six involved vulnerable road users (pedestrians and cyclists). The remaining five collisions involved cars. There were no collisions involving HGVs along the link.
- 7.11.1.43 Considering the four collisions involving motorcycles, three were single vehicle loss of control collisions which suggests that the collisions could all be attributed to poor driving manoeuvres. Of the six collisions involving vulnerable road users, four involved turning vehicles and cyclists at priority junctions and two involved pedestrians on the main carriageway.
- 7.11.1.44 It is also noted that the five collisions involving only cars occurred within the proximity of priority junctions. Whilst the collisions are not at a specific location, it is apparent a pattern of collisions along the B1249 involving turning vehicles and cyclists within proximity of the priority junctions has been identified.
- 7.11.1.45 No construction traffic is projected to turn from, or on to the B1249 and would therefore not exacerbate the existing road safety problem. This routing strategy is secured through

controls and measures (such as direction signing and delivery instructions) embedded within the oCTMP (Co144) submitted with this DCO application (as Appendix F of [Volume F2, Chapter 2: Outline Code of Construction Practice](#)).

7.11.1.46 It is therefore considered that an increase in total traffic of 1.3% through these junctions represents a **negligible** magnitude of effect on a **high** sensitive receptor. The effect is therefore assessed as of **slight adverse** significance which is **not significant** in EIA terms.

Links 29, 36, 37, 39, 41, 44 and 45 – A165

7.11.1.47 Links 29, 36, 37, 39, 41, 44 and 45 (the A165 from Driffield to A1035) are identified as having a collision rate marginally above the national average for comparable roads. A review of the collisions along the links has identified that within the five-year study period there have been 42 collisions, of which one was fatal, 11 were classified as serious and 30 were slight. Of the 42 collisions, two involved HGVs, four involved motorcycles and four involved vulnerable road users (pedestrians and cyclists). The remaining collisions primarily involved cars.

7.11.1.48 Considering the four collisions involving motorcycles, two were single vehicle loss of control collisions, one due to a car pulling out into the path of an oncoming motorcycle and one due to a collision with a car whilst attempting an overtake. No common pattern to the type or location of collisions involving motorcyclists is identified.

7.11.1.49 Of the four collisions involving vulnerable road users, one collision involved a car clipping a cycle whilst passing, a second involved a car pulling out of a junction into the path of a cycle and a third involved a pedestrian walking in the road being struck by a car. The fourth collision resulted in an injury to a cyclist as they leant against a van before it set off. No common pattern to the type or location of collisions involving vulnerable road users is identified.

7.11.1.50 The remaining 38 collisions primarily involved collisions between cars. Of the 38 collisions, (with the exception of one location) there are no more than two collisions at anyone location suggesting that there is no emerging location ('cluster') of collisions. Three collisions were identified to have occurred at the junction of the A164 and the Avenue junction (leading to Church Lane towards Watton). All three of these collisions resulted in rear end shunts on the minor road (the Avenue) as drivers failed to give way at the junction.

7.11.1.51 In summary, of the 38 collisions:

- 13 were single vehicle loss of control collisions;
- 12 were rear end shunt collisions at junctions;
- 6 were collisions between turning vehicles turning into and out of junctions;
- 4 were attributable to drivers veering into the opposite lane and colliding with an oncoming vehicle; and
- 3 were collisions between overtaking vehicles.

- 7.11.1.52 Whilst a pattern of loss of control and rear end shunt collision types is identified, these types of collisions would not be sensitive to vehicle composition and therefore it is more appropriate to focus upon the total change in traffic rather than changes in HGVs.
- 7.11.1.53 It is therefore considered that an increase in total traffic of 8.3% along links 29, 36, 37, 39, 41, 44 and 45 represents a **negligible** magnitude of effect on a **high** sensitive receptor. The effect is therefore assessed as **slight** which is not significant in EIA terms.

Links 48 and 49 – Miles Lane

- 7.11.1.54 Links 48 and 49 (Miles Lane) are identified as having a collision rate above the national average for comparable roads. A review of the collisions has identified that within the five year study period there have been nine collisions, two of which were classified as serious and six slight. Of the nine collisions, six were single vehicle collisions and three were collisions involving multiple vehicles. There were no collisions involving HGVs along the links.
- 7.11.1.55 Considering the nine collisions that occurred on Miles Lane, eight were due to loss of control (four occurred when the carriageway was damp) and one was a rear end shunt type collision. It is also noted that five loss of control collisions occurred on link 48 within the vicinity of a bend near the junction of Miles Lane and Bygot Wood. A pattern of loss of control collisions is therefore identified.
- 7.11.1.56 Construction traffic travelling via links 48 and 49 would be associated with vehicles accessing access AP_018. Access AP_018 is located to the west of the bend near the junction of Miles Lane and Bygot Wood where a pattern of loss of control collisions is identified. Therefore, no HGV traffic would pass through this bend and total traffic flows would be expected to increase by up to 0.2%. It is therefore considered that an increase in total traffic of 0.2% through this bend represents a **negligible** magnitude of effect on a **high** sensitive receptor. The effect is therefore assessed as of **slight adverse** significance which is **not significant** in EIA terms
- 7.11.1.57 Southwest of Miles Lane, a total of 10 collisions were identified at the crossroad junction with the B1248 (link 49 and 50). Eight of these collisions were classified as slight and two serious. Of the 10 collisions, nine involved vehicles entering the major road and colliding with oncoming vehicles and one collision was a rear end shunt type collision. A pattern of collisions involving vehicles entering the major road and colliding with oncoming vehicles is identified at this junction.
- 7.11.1.58 It is considered that an increase in HGV traffic of up to 54.1% turning through this junction represents a **moderate** magnitude of effect on a **high** sensitive receptor. The effect is therefore assessed as of **moderate adverse** significance, which is significant in EIA terms.

Link 57, 58, 59 and 61 – Killingwoldgraves Lane / Copleflat Lane

7.11.1.59 Killingwoldgraves Lane and Copleflat Lane are identified as having a collision rate above the national average for comparable roads. A review of the collisions has identified that within the five-year study period there have been 15 collisions, of which, eight were classified as slight and seven serious.

7.11.1.60 Along the link, six collisions occurred within the proximity of the crossroad junction with Newbald Road and Walkington Heads, a further five collisions occurred within proximity of the crossroad junction with Broadgate and East End. Further south, four collisions occurred along the bends within the proximity of the settlement of Bentley.

7.11.1.61 Of the six collisions at the crossroad junction with Newbald Road and Walkington Heads, five were collisions involving vehicles pulling out into the path of oncoming vehicles on the main carriageway and one was due to a vehicle veering into the lane of oncoming traffic. A pattern of collisions involving vehicles pulling out into the path of oncoming vehicles on the minor road is identified around the crossroad junction with Newbald Road and Walkington Heads.

7.11.1.62 The four collisions along the bends within proximity of the settlement of Bentley involved three loss of control collisions and a collision due to a vehicle straying into the path of an oncoming vehicle.

7.11.1.63 There is no similarity between the types of collisions that occurred within the proximity of the crossroad junction with Broadgate and East End.

7.11.1.64 It is considered that an increase in HGV traffic of up to 129.9% turning through this junction represents a **major** magnitude of effect on a **high** sensitive receptor. The effect is therefore assessed as of **large adverse** significance, which is significant in EIA terms.

Link 100 – A165

7.11.1.1 Link 100 (the A165) is identified as having a collision rate above the national average for comparable roads. A review of the collisions along Link 100 has identified that within the five-year study period there have been 24 collisions, of which four were classified as serious and 20 as slight. Of the 24 collisions, three involved motorcycles and 10 involved vulnerable road users. Of the remaining 11 collisions, one involved a bus, two involved HGVs and the remaining eight collisions involved cars.

7.11.1.2 Of the 24 collisions recorded, 12 occurred within the proximity of the roundabout with the B1237 and nine occurred within proximity of the roundabout with the B1238. The remaining collisions are spread out across the link and show no pattern.

7.11.1.3 The seven collisions within the proximity of the roundabout with the B1238 comprised of three rear end shunt type collisions, three collisions between turning vehicles on the carriageway of the roundabout and one collision involving a vehicle emerging from the car

park on Main Road after the roundabout. There is an average of less than two collisions per year and no particular pattern in the location or type of collisions are identified.

7.11.1.4 The 12 collisions within the proximity of the roundabout with the B1237 included four collisions as a result of vehicles failing to give way at the roundabout, four collisions involving vehicles colliding with vulnerable road users whilst entering or exiting the roundabout, two collisions between turning vehicles on the carriageway of the roundabout and two rear end shunt type collisions on the approach to the roundabout.

7.11.1.5 A pattern of collisions between turning vehicles occurring on the carriageway of the roundabout with the B1237 and a pattern of collisions involving vulnerable road users are therefore identified.

7.11.1.6 Traffic flows along link 100 are forecast to increase by up to 1.2% and HGV flows by 33.7% as a result of construction traffic.

7.11.1.7 Whilst a pattern of collisions between turning vehicles on the roundabout carriageway is identified, this type of collisions would not be sensitive to vehicle composition and therefore it is more appropriate to focus upon the total change in traffic rather than changes in HGVs.

7.11.1.8 With regards to the pattern of collisions involving vulnerable road users identified, these types of collisions could potentially be influenced by vehicle type. However, three of the four collisions have been identified to occur on the Salthouse Road and Shannon Road arms which are not part of the routes that would be used the Hornsea Four construction traffic.

7.11.1.9 It is therefore considered that an increase in total traffic of 1.2% along link 100 represents a **negligible** magnitude of effect on a **high** sensitive receptor. The effect is therefore assessed as **slight** which is not significant in EIA terms.

Further mitigation

7.11.1.10 Significant effects associated with an increase in construction traffic through the junction of the B1248 and Miles Lane and the junction of Coppleflat Lane and Newbald Road have been identified.

7.11.1.11 The following section sets out further mitigation measures which could be applied to reduce the significance of accidents and road safety effects upon these links. The measures outlined are intended to provide an indicative and proportionate means of mitigating the proposed effects, the final measures would however be agreed with the ERYC through the development of the CTMP (Co144) prior to the commencement of relevant works.

7.11.1.12 To reduce the impact of HGV movements through these junctions it is proposed that a temporary reduction in the existing speed limit could be applied to reduce the speed on all approaches to 30 mph. This could be supported by temporary warning signs to advise of turning HGV traffic. In addition, for the duration of the construction phase the Principal

Contractor could be required to ensure that existing verges and hedges are well maintained to ensure forward visibility is preserved.

7.11.1.13 The warning signs would help highlight to members of the public the potential for turning traffic, and the reason behind the temporary speed limit, thereby helping to encourage a reduction in speeds. A reduction in speeds would provide drivers with more time to make manoeuvres and judge gaps in traffic. The enhanced maintenance of the junction visibility splays would ensure that the forward visibility of oncoming traffic is optimised throughout construction.

7.11.1.14 With the further mitigation in place overall it is predicted that the sensitivity of the links would remain **high** but that the magnitude would be reduced to **minor**. The residual effect is therefore of **slight adverse** significance, which is not significant in EIA terms.

7.11.1.15 Consideration has also been given to road safety impacts at new temporary points of access on to the highway network. It is considered that at these locations, the intensification of slow-moving construction traffic, aligned to high speed rural roads has the potential to lead to significant adverse road safety impacts.

7.11.1.16 During the selection of the access locations, consideration has been given to maximising road safety by ensuring that sufficient forward visibility can be provided. Four access design concepts have been developed for Hornsea Four and are detailed within [Volume A6, Annex 7.1: Traffic and Transport Technical Report](#).

7.11.1.17 It has been agreed with the ERYC that the access concepts presented within [Volume A6, Annex 7.1: Traffic and Transport Technical Report](#) can be updated post consent as part of the detailed CTMP to provide more detailed location specific layouts. Each access design would also be subject to an independent Stage 1 Road Safety Audit. The oCTMP (Secured by DCO Requirement 18), submitted with this DCO application (as Appendix F of [Volume F2, Chapter 2: Outline Code of Construction Practice](#)), includes the commitment to submitting and agreeing the detail of the access and crossing designs with ERYC (secured by DCO Requirement 11).

7.11.1.18 In all cases, each access would be provided with advanced hazard warning signs in accordance with the Traffic Signs Manual, Chapter 8, Traffic Safety Measures and Signs for Road Works and Temporary Solutions, Parts 1 and 2, commonly referred to as Chapter 8 (DfT 2009). This signage will encourage drivers to slow in the knowledge that there is a hazard ahead, such as the potential for turning vehicles.

7.11.1.19 With the further mitigation in place overall it is predicted that the sensitivity of new highway accesses would be **high** but that the magnitude would be **minor**. The residual effect is therefore considered to be of **slight adverse** significance, which is not significant in EIA terms.

Future monitoring

- 7.11.1.20 An oCTMP (as Appendix F of [Volume F2, Chapter 2: Outline Code of Construction Practice](#)) is submitted in support of the DCO application for Hornsea Four.
- 7.11.1.21 The oCTMP contains monitoring and enforcement measures to ensure the project's HGV and employee traffic is within the bounds of the MDS impacts assessed.
- 7.11.1.22 A final CTMP which accords with the oCTMP would be submitted to and approved by ERYC in consultation with HCC and NH prior to commencement of relevant works (Co144).

7.11.2 Operation and Maintenance

- 7.11.2.1 The impacts of the onshore operation and maintenance of Hornsea Four on traffic and transport have been scoped out of the assessment because no likely significant effects have been identified. Further information is provided in [Table 7.11](#).

7.11.3 Decommissioning

- 7.11.3.1 The impacts of the onshore decommissioning of Hornsea Four on traffic and transport have been scoped out of the assessment because no likely significant effects have been identified. Further information is provided in [Table 7.11](#).

7.12 Cumulative effect assessment (CEA)

- 7.12.1.1 Cumulative effects can be defined as:

- effects upon a single receptor to arise as a result of impact interaction between different environmental topics from Hornsea Four; and
- incremental effects on that same receptor from other proposed and reasonably foreseeable projects and developments in combination with Hornsea Four. This includes all projects that result in a comparative effect that is not intrinsically considered as part of the existing environment and is not limited to offshore wind projects.

- 7.12.1.2 The overarching method followed in identifying and assessing potential cumulative effects in relation to the onshore environment is set out in [Volume A4, Annex 5.5: Onshore Cumulative Effects](#) and [Volume A4, Annex 5.6: Location of Onshore Cumulative Schemes](#). The approach is based upon the Planning Inspectorate (PINS) Advice Note 17: Cumulative Effects Assessment (PINS 2019). 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 Hornsea Four Order Limits.

- 7.12.1.3 The CEA has followed a four-stage approach developed from PINS Advice Note 17. These stages are set out in Table 2 of [Volume A4, Annex 5.5: Onshore Cumulative Effects](#), with Table 4 detailing the onshore long list search areas extents or Zone of Impacts for each topic

area. The proposed tier structure that is intended to ensure that there is a clear understanding of the level of confidence in the cumulative assessments provided in the Hornsea Four ES is set out in Table 3 of [Volume A4, Annex 5.5: Onshore Cumulative Effects](#).

7.12.1.4 At the Technical Panel meetings with ERYC, discussions were held with regards to those projects and developments that the ERYC considered could act cumulatively with Hornsea Four (ON-HUM-4.2). These discussions identified that of the projects listed within Appendix A of [Volume A4, Annex 5.5: Onshore Cumulative Effects](#) the ERYC considered that the following two schemes should be assessed within the CEA, namely:

- A164/ Jocks Lodge highway improvement scheme; and
- A63 Castle Street highway improvement scheme.

7.12.1.5 The A164/ Jocks Lodge and A63 Castle Street improvement schemes are therefore considered further below. Sub-regional growth in housing and employment, as adopted by the region's Local Plans has been captured within future year growth factors applied to the forecast traffic flows (further detail is provided in [Section 7.7.4.3](#)). The cumulative effect of housing and employment projects is therefore inherent in the traffic and transport impact assessment.

7.12.1.6 In addition to these two improvement schemes, information has become available relating to the following schemes:

- National Grid Creyke Beck substation expansion;
- Scotland England Green Link 2 (SEGL2); and
- Albanwise Solar Farm.

7.12.1.7 The available information relating to the three schemes listed above has been reviewed to identify potential cumulative effects on traffic and transport receptors.

7.12.2 National Grid Creyke Beck substation expansion and SEGL2

7.12.2.1 There is a potential temporal and spatial overlap between the National Grid Creyke Beck substation expansion and the SEGL2 project with Hornsea Four, and therefore cumulative impacts on traffic and transport receptors. However, at the time of submission of this ES, there is insufficient information currently known about these projects to enable the traffic demand and distribution to be determined adequately to inform a robust assessment. As such, a quantitative cumulative impact assessment could not be undertaken. It is expected that as part of future planning applications for the Creyke Beck substation expansion and SEGL2 project, a cumulative assessment with Hornsea Four would be undertaken to consider potential cumulative effects. Furthermore, due to the nature of the developments and the regulatory regimes under which they will be constructed, it is assumed (with high confidence) that appropriate mitigation measures will be incorporated into the application documents thus limiting the potential for cumulative effects to occur.

7.12.3 Albanwise Solar Farm

7.12.3.1 There is a potential temporal and spatial overlap between the Albanwise Solar Farm project with Hornsea Four, and therefore cumulative impacts on traffic and transport receptors could occur. The construction access for the Albanwise Solar Farm (as presented in the CTMP accompanying the planning application) is planned to be taken from the A164. Hornsea Four proposes a temporary access from the A164 as well as a bespoke permanent access off the A1079.

7.12.3.2 There is no spatial overlap between the Hornsea Four A164 temporary access and the Albanwise Solar Farm development A164 access. In addition, the forecasted volume of construction traffic for the Albanwise Solar Farm development CTMP is considered to be negligible in the context of background traffic flows on the A164. Therefore, by definition, these negligible impacts would not give rise to a significant cumulative effect with Hornsea Four.

7.12.4 A164/ Jocks Lodge

7.12.4.1 ERYC submitted an application for improvements to the A164/Jocks Lodge (referred to hereafter as Jocks Lodge) junction in May 2020 with approval subsequently granted in July 2020.

7.12.4.2 The Jocks Lodge proposals include a new roundabout on the A1079 with new link roads providing access to the A164 and Lincoln Way roundabout. The A164 would also be widened to become a dual carriageway as far as Castle Hill roundabout.

7.12.4.3 Construction is currently programmed to commence in 2022 and is scheduled for completion in 2026. There could therefore be a potential temporal overlap between the construction of Hornsea Four (scheduled to commence construction in 2024 at the earliest) and the Jocks Lodge. However, the majority of construction is anticipated to be complete prior to the start of construction on Hornsea Four.

7.12.4.4 A review of the Transport Assessment (TA) submitted in support of the Jocks Lodge application has been undertaken to understand the potential for cumulative effects. The TA includes outlines that there could be 144 two-way HGV movements per day, and that these vehicles would be expected to travel from the M62/A63 towards the A164. No further details with regards to the fluctuations in HGV demand throughout the construction programme or employee traffic demand is provided.

7.12.4.5 [Table 7.18](#) identifies that at link 60 (the A164 to the south of Jocks Lodge) background daily traffic flows in 2024 would be 37,994 vehicles of which 1,623 would be HGVs. It can therefore be calculated an additional 144 two-way HGV movements would represent a 0.4% increase in total traffic and 8.9% increase in HGV traffic.

7.12.4.6 The change in traffic on the A164 is significantly less than the 30% threshold whereby GEART suggest significant adverse impacts may be experienced. The Jocks Lodge

construction traffic would therefore be assessed to result in negligible environmental effects. Therefore, by definition, these negligible impacts would not give rise to a significant cumulative effect with Hornsea Four.

7.12.4.7 A potential spatial conflict between the access from the A164 and A1079 for Hornsea Four traffic and the Jocks Lodge works was also identified. In response, the Applicant and ERYC have agreed amendments to the design and location of accesses AP_025 and AP_026 to ensure that there would be no conflicts. Further details of the proposed access strategy are outlined in [Volume A6, Annex 7.1: Traffic and Transport Technical Report](#).

7.12.5 A63 Castle Street

7.12.5.1 NH submitted a DCO application for improvements to the A63 Castle Street in 2018 with approval subsequently granted in June 2020.

7.12.5.2 The A63 Castle Street proposals would include the creation of a new junction by lowering the level of the A63 at the Mytongate junction. Ferensway and Commercial Road would cross the A63 creating a split-level junction. Between Princes Dock Street and Market Place the eastbound carriageway would be widened to three lanes and a new bridge would be constructed over the A63 at Porter Street.

7.12.5.3 Construction commenced in 2020 and is scheduled for completion by 2024/2025. There could therefore be a potential temporal overlap between the construction of Hornsea Four (scheduled to commence construction in 2024 at the earliest) and the A63 Castle Street scheme.

7.12.5.4 A review of the TA submitted in support of the Castle Street application has been undertaken to understand the potential for cumulative effects, however, no details are provided with regards to forecast construction traffic movements. The Applicant has therefore undertaken further engagement with NH to seek information in relation to the likely quantum of construction traffic demand that could be expected during the construction of the A63 Castle Street scheme.

7.12.5.5 NH have confirmed that during the construction phase, there could be 12,240 HGV movements per day, or approximately 40 movements per day (80 two-way movements). NH have advised that in relation to the assignment of the HGV traffic, that the concrete, aggregates, and 'muck away' would all travel from the A63 towards Foster Street in Hull, with additional miscellaneous deliveries to multiple UK destinations.

7.12.5.6 NH have identified that there could be up to 51,000 employee movements per day, however, no details were provided in relation to daily movements. Adopting the same assumptions as HGV (in relation to working days) it can be assumed that there could be approximately 167 employees per day (51,000 divided by 306 working days a year),

equivalent to 334 two-way movements. NH have advised that employees would travel to a compound at Welling Street to the south of the A63 from multiple UK destinations.

7.12.5.7 Adopting a worst-case assumption, the total A63 Castle Street construction traffic movements (414 two-way movements) have been applied to the A63 (link 92) towards the wider UK road network and also north on the A1033 (links 94 and 95) towards Hull (via Foster Street) and the East Riding of Yorkshire. The following [Table 7.27](#) provides a summary of the existing link sensitivity and traffic flows on these links (taken from [Table 7.18](#)) in comparison to the proposed A63 Castle Street construction traffic demand.

Table 7.27: Existing and Proposed Castle Street Traffic Flows.

Link	Link description	Link sensitivity	Daily background traffic flows (2024)		Daily two-way A63 Castle St construction vehicle movements		Percentage Increase	
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
92	A63 from the Ferensway to A1165	Low	49,017	5,437	414	80	0.8%	1.5%
94	A1033 Mount Pleasant	Low	21,441	1,471	414	80	1.9%	5.4%
95	A1033 Holwell Road	Low	28,242	2,131	414	80	1.5%	3.8%

7.12.5.8 It can be identified from [Table 7.27](#) that changes in total and HGV traffic from the A63 Castle Street scheme would be significantly less than the 30% threshold whereby GEART suggest significant adverse impacts may be experienced. The A63 Castle Street construction traffic would therefore be assessed to result in negligible environmental effects. Therefore, by definition, these negligible impacts would not give rise to a significant cumulative effect with Hornsea Four.

7.12.6 CEA Summary

7.12.6.1 During the Technical Panel meetings with ERYC and NH the potential for cumulative effects with Jocks Lodge and the A63 Castle Street schemes was discussed. It was agreed that due to uncertainties regarding the timings of the respective projects, that the potential for cumulative effects would be better managed through management measures within the respective CTMPs (ON-HUM-4.2).

7.12.6.2 The oCTMP (as Appendix F of [Volume F2, Chapter 2: Outline Code of Construction Practice](#)) submitted in support of the DCO application for Hornsea Four therefore contains a commitment that if the finalised construction programmes for the CEA projects highlight a

potential overlap, the Applicant would engage with ERYC and NH to agree appropriate mitigation measures to be included in the final CTMP.

7.12.6.3 Mitigation measures could include for example, the ERYC, NH and Hornsea Four projects committing to a programme of works that manages peak traffic movements. A final CTMP which accords with the oCTMP will be submitted to and approved by ERYC, HCC and NH prior to commencement of relevant works (Co144).

7.12.6.4 The permissions for the A63 Castle Street and Jocks Lodge improvement schemes both also include similar conditions and requirements to produce documents detailing how construction traffic will be managed. Requirements 4 for A63 Cattle Street sets out the requirement to produce a Traffic and Transport Management Plan and Condition 13 for Jocks Lodge to produce a CTMP.

7.13 Transboundary effects

7.13.1.1 A screening of transboundary impacts has been carried out and is presented in Appendix K of the EIA Scoping Report (Orsted 2018). This screening exercise identified that there was no potential for significant transboundary effects regarding traffic and transport from Hornsea Four upon the interests of other European Economic Area (EEA) States and this is not discussed further.

7.14 Inter-related effects

7.14.1.1 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 traffic and transport are presented in [Table 7.28](#). 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.

7.14.1.2 A description of the process to identify and assess these effects is presented in Section 2 of [Volume A1 Chapter 5: EIA Methodology](#).

Table 7.28: Inter-related effects assessment for traffic and transport.

Project phase(s)	Nature of inter-related effect	Assessment alone	Inter-related effects assessment
<i>Project-lifetime effects</i>			
The operational and decommissioning impacts have been scoped out of the assessment and therefore Project-lifetime effects are not considered further.			
<i>Receptor-led effects</i>			
Construction (TT-C-4, TT-C-5, TT-C-6, TT-C-7, TT-C-8 and TT-C-9)	Impact of construction traffic upon tourism activity	Chapter 6: Land Use and Agriculture identifies that the main impacts upon tourists could result from restricted access to Public Rights of Way, Bridleways, cycle routes and beaches. The impacts of construction traffic upon these receptors is assessed within the Land Use and Agriculture chapter and no significant residual effects have been identified.	
	Impact of construction traffic noise upon roadside receptors	The forecast construction traffic numbers contained within this chapter have been used to inform an assessment of the traffic borne noise impacts contained within Chapter 8: Noise and Vibration . No significant residual noise and vibration effects have been identified.	
	Impact of construction traffic emissions upon air quality receptors	The forecast construction traffic numbers contained within this chapter have been used to inform an assessment of the traffic borne air quality impacts contained within Chapter 9: Air Quality . No significant residual air quality effects have been identified.	
	Impact of construction traffic upon human health	Volume A4, Annex 5.8: Health Impact Assessment brings together the conclusions of Chapters 6, 7, 8 and 9 and the relevant information in terms of population health (i.e. statistics on relevant population groups, health asset profiles, etc.), thereby identifying the scope for all effects to interact to create inter-related effects on a receptor (or group). The Health Impact Assessment concludes that Hornsea Four is not expected to have a significant effect on human health of either the general population or vulnerable groups within the population.	

7.14.1.3 The assessment concludes that there are no significant inter-related impacts from the construction or operation of Hornsea Four on traffic and transport.

7.15 Conclusion and summary

- 7.15.1.1 This chapter of the ES has assessed the potential impact of the onshore development of Hornsea Four on traffic and transport.
- 7.15.1.2 **Table 7.29** presents a summary of the significant impacts assessed within this ES, the associated mitigation and the residual effects.
- 7.15.1.3 The construction phase of Hornsea Four presents the highest potential for significant traffic and transport environmental effects. Impacts during decommissioning would result in an effect of equal significance, at worst. Further details will be provided and secured within a Decommissioning Plan, agreed with stakeholders prior to decommissioning commencing (Co127).
- 7.15.1.4 No cumulative or inter-related effects have been identified which increase the significance of any standalone assessment set out in this chapter.
- 7.15.1.5 In summary, no residual impacts have been identified which are considered significant in EIA terms on traffic and transport.

Table 7.29: Summary of potential impacts assessed for Traffic and Transport.

Impact and Phase	Receptor and value/sensitivity	Magnitude and Significance	Mitigation ¹	Residual impact	
<i>Construction</i>					
Driver Delay (Capacity) (TT-C-2, TT-C-3, TT-C-4)	Junctions 1 to 27 – High	<p>The oCTMP, submitted with this DCO application (as Appendix F of Volume F2, Chapter 2: Outline Code of Construction Practice), includes the commitment to submitting the further assessment of traffic flows through sensitive junctions in advance of construction to inform an agreement whether further mitigation may be required. The rationale for this approach is that there would be greater certainty regarding a number of traffic variables, including:</p> <ul style="list-style-type: none"> • The origin of supply chain and employees; • Employee mode share, i.e. the proportion of employees that would be likely to car-share, use public transport; • If employees start and finish times would overlap with network peak hours; and • Timing of planned highway network improvements. <p>The mitigation measures would be agreed with NH, HCC and ERYC to ensure that residual impacts are not significant. Mitigation measures would be applied on a hierarchical basis with soft travel planning measures (e.g. use of minibuses or staggering shift times) being preferred to harder engineering measures (e.g. junction improvements).</p>		Not significant	
Driver Delay (Local roads) (TT-C-4, TT-C-5)	Links 3, 10, 16, 15, 25, 32 - 34, 38, 40, 42, - High	Link ID	Magnitude	Significance	Potential mitigation measures for driver delay effects could include: <ul style="list-style-type: none"> • Junction widening; • Road widening;
		Link 3	Major	Large	
		Link 10, 16	Moderate	Moderate	
		Link 15	Negligible	Slight	
		Link 25	Moderate	Moderate	
Link 32	Moderate	Moderate			

¹ All mitigation will be agreed with the relevant stakeholders as part of the approval of the CTMP.

Hornsea 4



Impact and Phase	Receptor and value/sensitivity	Magnitude and Significance			Mitigation ¹	Residual impact
		Link 33	Moderate	Moderate	<ul style="list-style-type: none"> Provision of new passing places; Formalisation or widening of existing passing places; and Use of an escort vehicle. 	
		Link 34	Moderate	Moderate		
		Link 38	Major	Large		
		Link 40	Major	Large		
		Link 42	Moderate	Moderate		
		Link 43	Moderate	Moderate		
Severance (TT-C-6)	All screened links – Low to High	Link ID	Magnitude	Significance	n/a	Slight Adverse
		38, 40	Major	Slight		
		3, 10, 34, 35, 42	Minor	Slight		
		5, 7 – 9, 11 – 14, 20 – 26, 30 – 33, 39, 41, 43 – 45, 47, 49, 54, 56 – 57, 60 – 65, 70 – 72, 74, 76 – 79, 90, 94 – 104	Negligible	Slight		
Pedestrian Amenity (TT-C-7)	Links	Link ID	Magnitude	Significance	Potential mitigation for amenity effects could include: <ul style="list-style-type: none"> Use of an escort vehicle to guide HGVs along links; Avoiding traffic movements during school start and finish times; and Reducing Hornsea Four's peak traffic movements through measures such as scheduling of 	Slight Adverse
	Low - High	10, 25, 38, 40, 42	Minor	Not Significant		
	Low	14, 33, 35, 47, 56, 61	Moderate	Slight		
	Medium	34		Moderate		
	Low	3, 43, 98	Major	Moderate		
	High	9		Large		
	All screened links - Low - High	5, 7 – 8, 11 – 13, 20 – 24, 26, 30 – 32, 39, 41, 44 – 45, 49, 54, 57, 60, 62 – 65, 70 – 72, 74, 76 – 79, 90, 94 – 97, 99 – 104	Negligible	Not Significant		

Hornsea 4



Impact and Phase	Receptor and value/sensitivity	Magnitude and Significance			Mitigation ¹	Residual impact
					construction activities.	
Accidents and Road Safety (TT-C-8)	Links	Magnitude	Significance		-	-
	B1249 (Links 20 – 23)	Minor	Not significant		n/a	Not significant
	B1249 (Link 24) / High	Negligible	Not significant		n/a	Not significant
	A164 (Links 29, 36, 37, 39, 41, 44 and 45)	Minor	Not significant		n/a	Not significant
	Miles Lane (Link 48 and 49) / High	Negligible	Not significant		n/a	Not significant
	B1248 (Link 50) / High	Negligible	Not Significant		n/a	Not significant
	A1035 (Link 53) / High	Minor	Not Significant		n/a	Not significant
	Killingwoldgraves Lane / Copleflat Lane (Links 57, 58, 59 and 61) / High	Major	Large		Potential mitigation measures could include: <ul style="list-style-type: none"> • a reduction in the existing speed limit; • provision of warning signs; and • enhanced maintenance of the junction visibility splays. 	Slight Adverse
Main Street / Froddingham Road (Link 65) / High	Minor	Not significant		n/a	Not significant	

Hornsea 4



Impact and Phase	Receptor and value/sensitivity	Magnitude and Significance		Mitigation ¹	Residual impact
	A1035, A165 (Link 68)	Minor	Not significant	n/a	Not significant
	A1035 (Link 69)	Negligible	Not significant	n/a	Not significant
	A15 (Link 80) / High	Negligible	Not significant	n/a	Not significant
	Brdlington Bay Road (Link 85) / High	Negligible	Not significant	n/a	Not significant
	A1079 (Link 87) / High	Negligible	Not significant	n/a	Not significant
	A16 (Link 99) / High	Minor	Not significant	n/a	Not significant
	A165, B1237 to B1238 (Link 100) / High	Negligible	Not significant	n/a	Not significant

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