



Hornsea Project Four: Preliminary Environmental Information Report (PEIR)

Volume 3: Chapter 7: Traffic and Transport

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Annexes

Annex	Title
7.1	Traffic and Transport Technical Report

Glossary

Term	Definition
Commitment	A term used interchangeably with mitigation. Commitments are Embedded Mitigation Measures. Commitments are either Primary (Design) or Tertiary (Inherent) and embedded within the assessment at the relevant point in the EIA (e.g. at Scoping or PEIR). The purpose of Commitments is to reduce and/or eliminate Likely Significant Effects (LSE's), in EIA terms.
Cumulative effects	The combined effect of Hornsea Project Four in combination with the effects from a number of different projects, on the same single receptor/resource.
Cumulative impact	Impacts that result from changes caused by other past, present or reasonably foreseeable actions together with Hornsea Project Four.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria.
Energy balancing infrastructure (EBI)	The onshore substation includes energy balancing Infrastructure. These provide valuable services to the electrical grid, such as storing energy to meet periods of peak demand and improving overall reliability.
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Directive and EIA Regulations, including the publication of an Environmental Statement.
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.
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.
Local Authority	The Local Authority is a body empowered by law to exercise various statutory functions for a particular area of the United Kingdom. This includes County Councils, District Councils and the Broads Authority, as set out in Section 43 of the Planning Act 2008. East Riding of Yorkshire Council (ERYC) is the Local Authority for the entirety of the on-shore project footprint.
Maximum design scenario	The maximum design parameters of each Hornsea Four asset (both on and offshore) considered to be a worst case for any given assessment.

Term	Definition
Mitigation	A term used interchangeably with Commitment(s) by Hornsea Four. Mitigation measures (Commitments) are embedded within the assessment at the relevant point in the EIA (e.g. at Scoping or PEIR).
National Grid Electricity Transmission (NGET) substation	The grid connection location for Hornsea Four.
Onshore export cables	Cables connecting the landfall first to the onshore substation and then on to the NGET substation at Creyke Beck.
Onshore substation / OnSS	Located as close as practical to the NGET substation at Creyke Beck and will include all necessary electrical plant to meet the requirements of the National Grid.
Orsted Hornsea Project Four Ltd.	The Applicant of proposed Hornsea Project Four offshore wind farm.
Traffic and Transport Study Area	Area within which environmental impacts may occur.
Trenchless Techniques	Also referred to as trenchless crossing techniques or trenchless methods. These techniques include 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
CoCP	Code of Construction Practice
CEA	Cumulative Effect Assessment
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
ERYC	East Riding of Yorkshire Council
ES	Environmental Statement
ESDAL	Electronic Service Delivery for Abnormal Loads
GEART	Guidelines for the Environmental Assessment of Road Traffic
HGV	Heavy Goods Vehicle
LCV	Light Commercial Vehicle

Acronym	Definition
NMU	Non motorised users
NCR	National Cycle Route
NMU	Non-Mortised User
NPS	National Policy Statement
NPPF	National Planning Policy Framework
NSIP	Nationally Significant Infrastructure Project
PEIR	Preliminary Environmental Information Report
PIC	Personal Injury Collision
PINS	Planning Inspectorate
PPG	Planning Practice Guidance

Units

Unit	Definition
km	Kilometres
mph	Miles per hour

7.1 Introduction

- 7.1.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents an assessment of the potential impacts of the Hornsea Project Four offshore wind farm (hereafter Hornsea Four) on 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.
- 7.1.1.2 Orsted Hornsea Project Four Limited (the Applicant) is proposing to develop Hornsea Four. Hornsea Four will include both offshore and onshore infrastructure including an offshore generating station (wind farm), export cables to landfall, and connection to the electricity transmission network and National Grid substation at Creyke Beck (please see [Volume 1, Chapter 4: Project Description](#) for full details on the Project Design).
- 7.1.1.3 This chapter summarises information contained within a technical report, which is included at [Volume 6, Annex 7.1: Traffic and Transport Technical Report](#).

7.2 Purpose

- 7.2.1.1 This PEIR presents the preliminary environmental information for Hornsea Four and sets out the findings of the Environmental Impact Assessment (EIA) to date to support the pre-Development Consent Order (DCO) application consultation activities required under the Planning Act 2008.
- 7.2.1.2 The feedback from this consultation will be used to inform the final project design where appropriate and the associated EIA (which will be reported in an Environmental Statement (ES)) that will accompany the DCO application made to the Secretary of State (SoS), which will be submitted to the Planning Inspectorate (PINS).
- 7.2.1.3 This PEIR 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 to date;
 - Identifies any assumptions and limitations encountered in compiling the environmental information; and
 - Highlights any necessary monitoring and/or mitigation measures which could prevent, minimise, reduce or offset the possible environmental effects identified in the EIA process.

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).
- 7.3.1.2 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: NPS EN-1 Assessment Requirements.

Summary of NPS EN-1 provisions	How and where considered in the PEIR
<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 PEIR 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 4, Annex 5.1: Impacts Register.</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 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 the potential for car-share and</p>

Summary of NPS EN-1 provisions	How and where considered in the PEIR
<p><i>need for car parking associated with the proposal and to mitigate transport impacts". (EN-1, paragraph 5.13.4).</i></p>	<p>Heavy Good Vehicle (HGV) controls. An outline Construction Traffic Management Plan (CTMP) will be submitted as part of the outline Code of Construction Practice (CoCP) (Volume F2, Chapter 2) with the DCO application to include travel plan measures, which will be developed in consultation with ERYC and Highways England.</p> <p>Section 7.8 details 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" (EN-1, paragraph 5.13.5).</i></p>	<p>Table 7.28 presents a summary of the significant impacts assessed within this PEIR, mitigation and the residual effects.</p>
<p><i>"A new energy NSIP may give rise to substantial impacts on the surrounding transport infrastructure and the Secretary of State 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 Secretary of State 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". (EN-1, paragraph 5.13.6)</i></p>	<p>Hornsea Four has considered traffic and transport during the route planning and site selection process, as detailed in Volume 4, Annex 3.3: Selection and Refinement of Onshore Infrastructure.</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" (EN-1, paragraph 5.13.7)</i></p>	<p>An outline CTMP (as part of the outline CoCP) (Volume F2, Chapter 2) will be submitted with the DCO application to include travel plan measures, which will be developed in consultation with ERYC and Highways England.</p>

Summary of NPS EN-1 provisions	How and where considered in the PEIR
<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 transport infrastructure to deal with remaining transport impacts" (EN-1, paragraph 5.13.8).</i></p>	
<p><i>"The Secretary of State 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" (EN-1, paragraph 5.13.9).</i></p>	
<p><i>"The Secretary of State 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" (EN-1, paragraph 5.13.11).</i> 	
<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 Secretary of State of any obligations or requirements needed to secure the mitigation" (EN-1, paragraph 5.13.12).</i></p>	

7.3.1.3 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 PEIR
<i>Traffic and Transport</i>	
<p><i>"A new energy NSIP may give rise to substantial impacts on the surrounding transport infrastructure and the Secretary of State 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 Secretary of State should consider requirements to mitigate adverse impacts on transport networks arising from the development, as set out.</i></p>	<p>Commitments (Table 7.11) serve to reduce the overall impact and narrow the assessment to where significant impacts are likely to occur. Section 7.11 provides a summary of the residual traffic and transport impacts of Hornsea</p>

Summary of NPS EN-1 provisions	How and where considered in the PEIR
<i>Applicants may also be willing to enter into planning obligations for funding infrastructure and otherwise mitigating adverse impacts" (EN-1, paragraph 5.13.6).</i>	Four and proposed further mitigation measures.

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 7.28](#) presents a summary of the significant impacts assessed within this PEIR, 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 outline Construction Traffic Management Plan (CTMP) (as part of the outline CoCP) ([Volume F2, Chapter 2](#)) will be submitted with the DCO application to include travel plan measures.

7.3.3 Local Planning Policy

EN-1 states that the Secretary of State 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 Highways England, the traffic and transport network in the traffic and transport study area falls entirely under the jurisdiction of East Riding of Yorkshire County Council (ERYC).

- 7.3.3.1 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. The ERYC is currently (June 2019) reviewing their Local Plan. [Table 7.3](#) provides details of the local planning policy documents and the policies contained within these which are pertinent to traffic and transport.

Table 7.3: Pertinent local planning policies.

Document	Policy / Guidance	How and where considered in the PEIR
<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>

7.3.4 Further Policy and Guidance

The Strategic Road Network and the Delivery of Sustainable Development Guidance

7.3.4.1 The Department for Transport (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 Highways England] 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 Highway England) includes the A63 east towards Hull and west towards the M62. The requirements of Circular 02/2013 are therefore addressed within this PEIR.

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, irrespective of whether the developments are to be subject to EIA.

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 impact 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 Highways England) 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 PEIR 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 conducted through Technical Panel meetings with the ERYC and the Scoping Report (Ørsted, 2018). An overview of the project consultation process is provided within **Volume 1, Chapter 6: Consultation**.

7.4.1.2 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 PEIR. Comments received on impacts that have been scoped out of the Traffic and Transport chapter are covered in **Table 7.10** and **Volume 4, Annex 5.1: Impacts Register**.

Table 7.4: Consultation Responses.

Consultee	Date, Document, Forum	Comment	Where addressed in the PEIR
PINS	23 November 2018 Scoping Opinion Section 4.19	<i>"... 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."</i>	Section 7.11 provides a detailed review of the potential for severance impacts during construction.
		<i>"The study areas for the issues discussed are only partly defined. The study area applied to the assessment should reflect the extent of anticipated impacts and be informed by baseline information and modelling outputs."</i>	The traffic and transport study area which includes proposed access locations and traffic demand. The traffic and transport study area was agreed with ERYC at the second Human Environment Technical Panel on the 1 May 2019 and is shown in Figure 7.1 .
		<i>"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</i>	Section 7.7 provides a detailed review of the baseline relevant to the traffic and transport assessment.

Consultee	Date, Document, Forum	Comment	Where addressed in the PEIR
		<p><i>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."</i></p> <p><i>"Impacts with regard to non-motorised routes are discussed in the Scoping Report 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>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 7.10 considers route sensitivity in the context of all user groups/ modes of travel.</p> <p>An outline CTMP (as part of the outline CoCP) (Volume F2, Chapter 2) will be submitted with the DCO application to include an outline of travel plan measures. Final measures would be agreed with the ERYC through the development of the CTMP.</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.</p> <p>Section 7.10 considers route sensitivity in the context of all user groups/ modes of travel.</p> <p>An outline CTMP (as part of the outline CoCP) (Volume F2, Chapter 2) will be submitted with the DCO application to include an outline of potential traffic management measures. Final measures would be agreed with the ERYC through the development of the CTMP.</p>

Consultee	Date, Document, Forum	Comment	Where addressed in the PEIR
ERYC	22 January 2019 ERYC comments on the Hornsea Four EIA Scoping Report Section Traffic and Transport	The extent and details of the road network scoped in is acceptable as is the method of baseline data collection.	Section 7.5 includes details of the extent of the traffic and transport study area as agreed with the ERYC. Volume 6, 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 the ERYC.
		final measures would however be agreed with the ERYC through the development of the CTMP	
		<i>"Regarding data collection ERYC can make certain data available and this is in hand."</i>	An abnormal load report has been commissioned by Hornsea Four and will be submitted with the DCO Application. A summary is provided in this chapter in Section 7.10.2 .
		<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 and Hull City Council should also be involved."</i>	
		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.	It was agreed with the ERYC at the Second Human Environment Technical Panel Meeting on the 1 May 2009 that the cumulative effect assessment (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. Section 7.12 of the PEIR provides a CEA assessment of these two schemes with Hornsea Four.
ERYC	7 January 2017 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 assessment and the assessment methodology.
ERYC	1 May 2019 Human Environment	Proposed revisions to the traffic and transport study following refinement of the access strategy were shared with ERYC.	Section 7.5 includes details of the extent of the traffic and transport study area as agreed with the ERYC.

Consultee	Date, Document, Forum	Comment	Where addressed in the PEIR
	t Technical Panel	ERYC agreed to the proposed extent of the traffic and transport study area.	
	Meeting 2 – Post Scoping / Pre-PEIR	An agreed approach to data gathering and to factoring baseline traffic flows to future years.	Volume 6, 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 the ERYC.
		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 6, 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 6, Annex 7.1: Traffic and Transport Technical Report .

7.4.2 Hornsea Four Design Evolution – Stakeholder Consultation

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

7.4.2.2 Design amendments of relevance to traffic and transport comprise:

- Landfall – the Hornsea Four PEIR boundary currently comprises two landfall options (shown in [Volume 1, Chapter 4: Project Description, Figure 4.13](#)), which have been assessed in the respective PEIR receptor chapters. A decision on the preferred landfall (A3 or A4) will be made post-PEIR and the Project Description and assessments updated for the ES and DCO for the preferred 40,000 m² compound within the landfall location.
- Construction accesses: Detailed design of roadworks has not been fully developed and assessed at the point of PEIR. [Volume 1, Chapter 4: Project Description, Figure 4.19](#) presents the accesses potentially requiring detailed road junction works and traffic management arrangements in relation to the public highway. The insets labelled “*archive temporary accesses*” have been assessed at PEIR and the inset “*latest temporary accesses*” have been updated to illustrate the potential locations of road works and arrangements. The nature and extent of these will be determined in consultation with ERYC and Highways England.
- OnSS Operation and Maintenance Access - Hornsea Four are currently investigating the possibility of making the temporary construction access off the A1079 a permanent operational access and utilising the operation access from Dunswell and Cottingham for limited construction works associated with HDD from the ECC to the OnSS.
- OnSS Design: The design of the Hornsea Four OnSS mitigation (inclusive of measures set out in [Volume 4, Annex 4.6: Outline Design Vision Statement](#)) will be further evolved based on the results of the PEIR assessments, in addition to stakeholder feedback and suggestions.

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 has been agreed with the ERYC at the second Human Environment Technical Panel on the 1 May 2019.
- 7.5.1.2 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 highway network.
- 7.5.1.3 The traffic and transport study area is illustrated in [Figure 7.1](#) and covers the majority of the eastern region of East Riding of Yorkshire. The traffic and transport study area is divided into 90 separate highway sections known as links, which are defined as sections of road with similar characteristics and traffic flows.

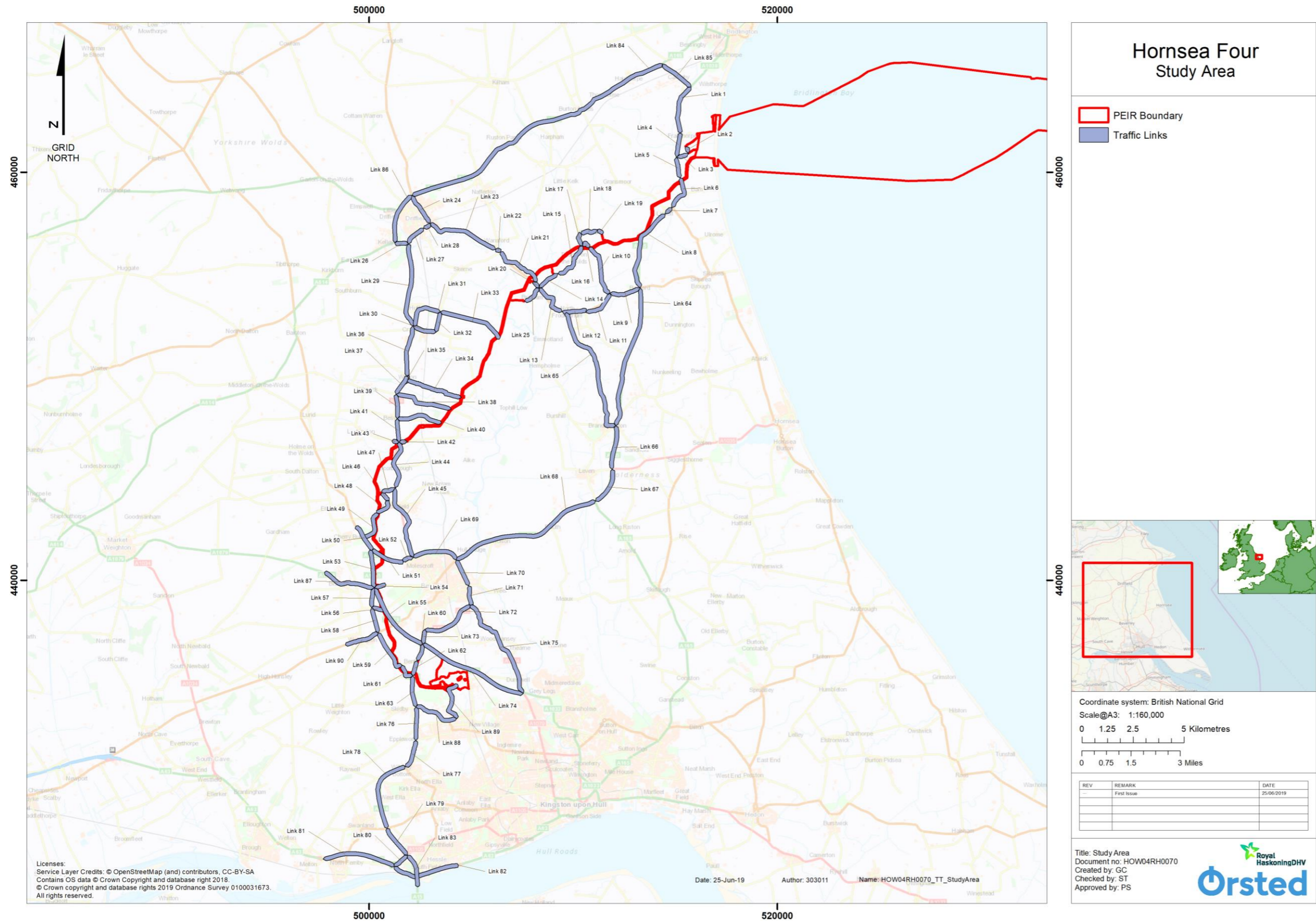


Figure 7.1: Hornsea Four Traffic and Transport Study Area (Not to Scale).

7.6 Methodology to inform baseline

7.6.1 Desktop Study

7.6.1.1 A desk 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.

7.6.1.2 The sources of information shown in [Table 7.5](#) were consulted.

Table 7.5: Key Sources of Traffic and Transport data.

Source	Summary	Coverage of Hornsea Four development area
ERYC 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 recorded by ERYC. 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 (1 January 2014 to 30 April 2019) has been obtained.
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 area covering the latest period available (2017) 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 latest period available (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 surveys were also undertaken, the scope and methodology of which was agreed with the ERYC at the second Human Environment Technical Panel on the 1 May 2019. A summary of surveys is outlined in [Table 7.6](#) and is presented fully in [Volume 6, 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) in the vicinity of the onshore elements of Hornsea Four includes the A164, A614, A1079, A1053, A165 and A1174. The A63 forms part of the Strategic Road (Trunk Road) Network managed by Highways England. 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 31 proposed construction access points for Hornsea Four, construction vehicles would need to utilise the local road network. [Figure 7.3](#) to [Figure 7.10](#) depict 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 31 accesses from the main A road network. A summary of how these 31 access points have been selected is provided in [Volume 4, Annex 3.3: Selection and Refinement of the Onshore Infrastructure](#).

7.7.1.3 Figure 4.19 of [Volume 1, Chapter 4: Project Description](#) presents the accesses potentially requiring detailed road junction works and traffic management arrangements. At the point of PEIR, detailed design of the accesses has not been fully progressed, however, the nature and extent of the access designs will be determined in consultation with the ERYC.

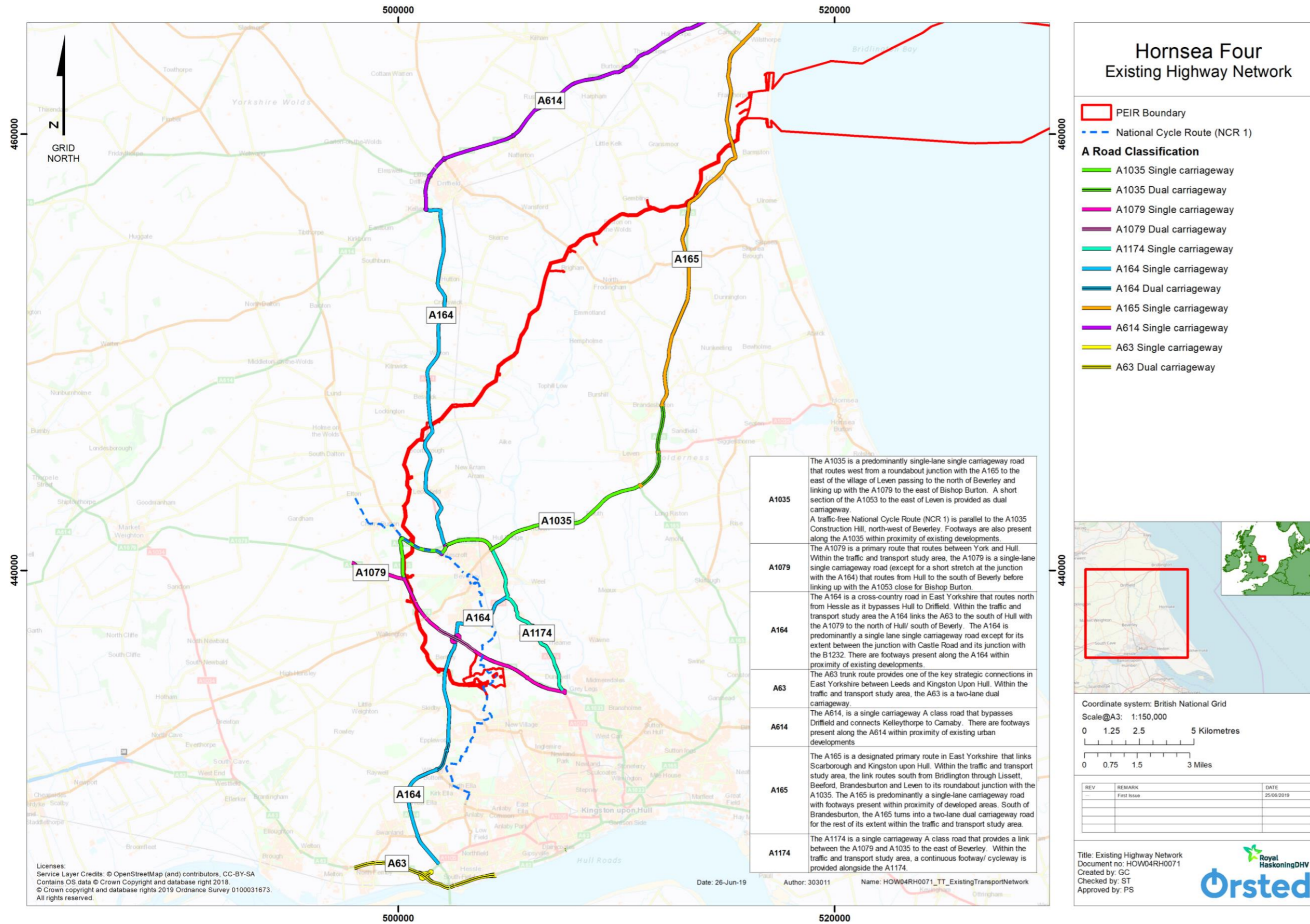


Figure 7.2: Existing Highway Network (Not to Scale).

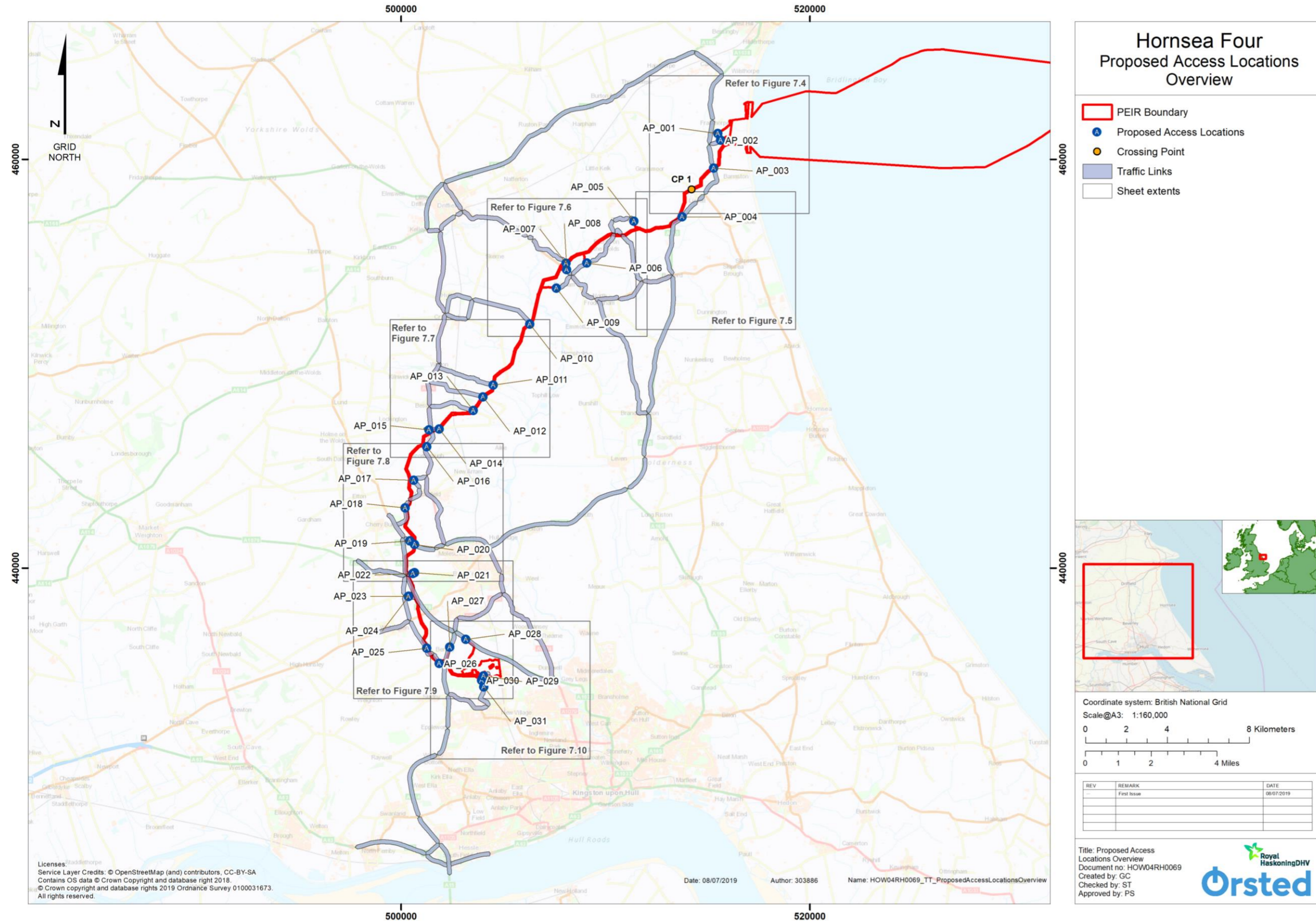


Figure 7.3: Proposed Access Locations – Key Plan (Not to Scale).

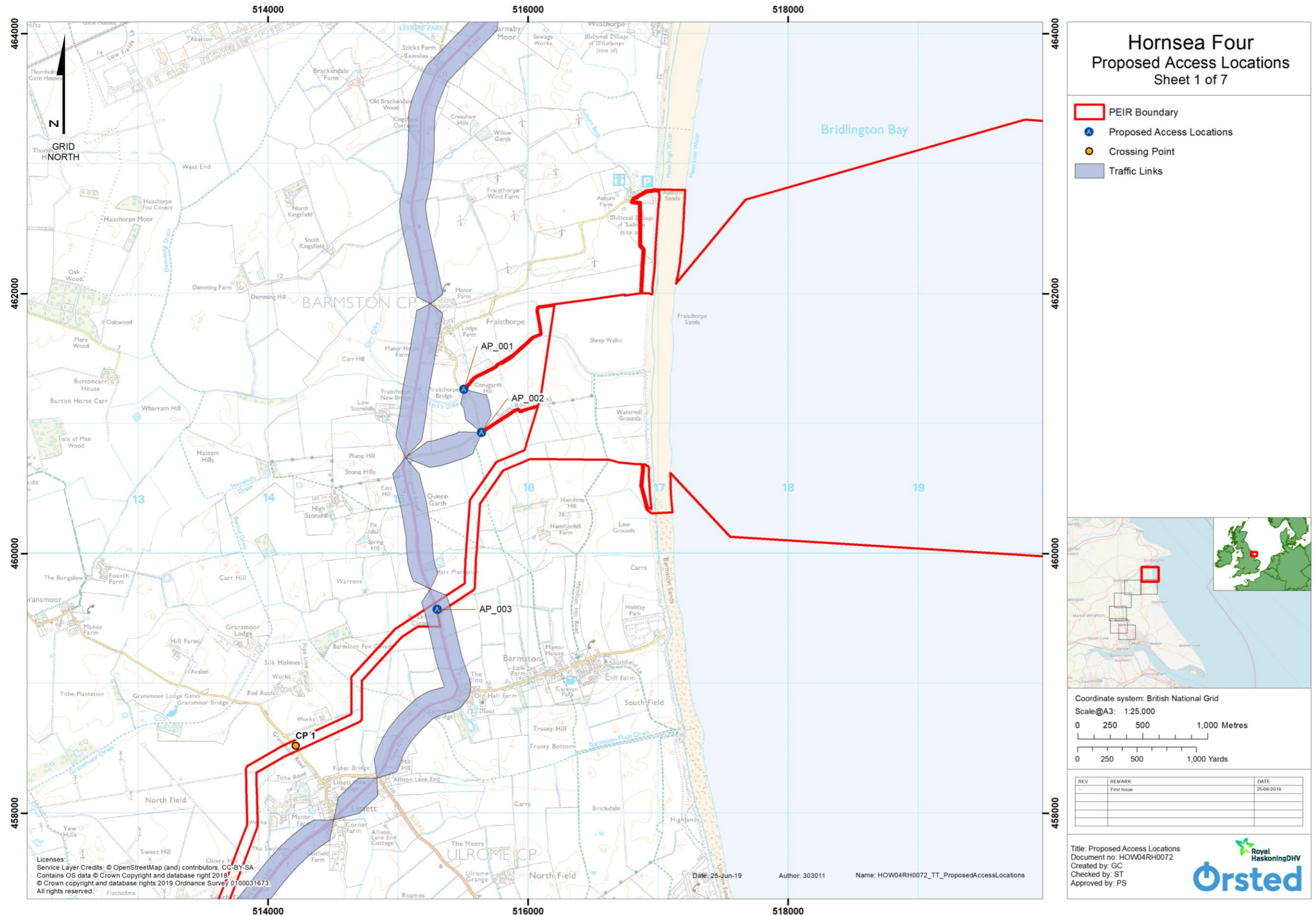


Figure 7.4: Proposed Access Locations – Sheet 1 of 7 (Not to Scale).

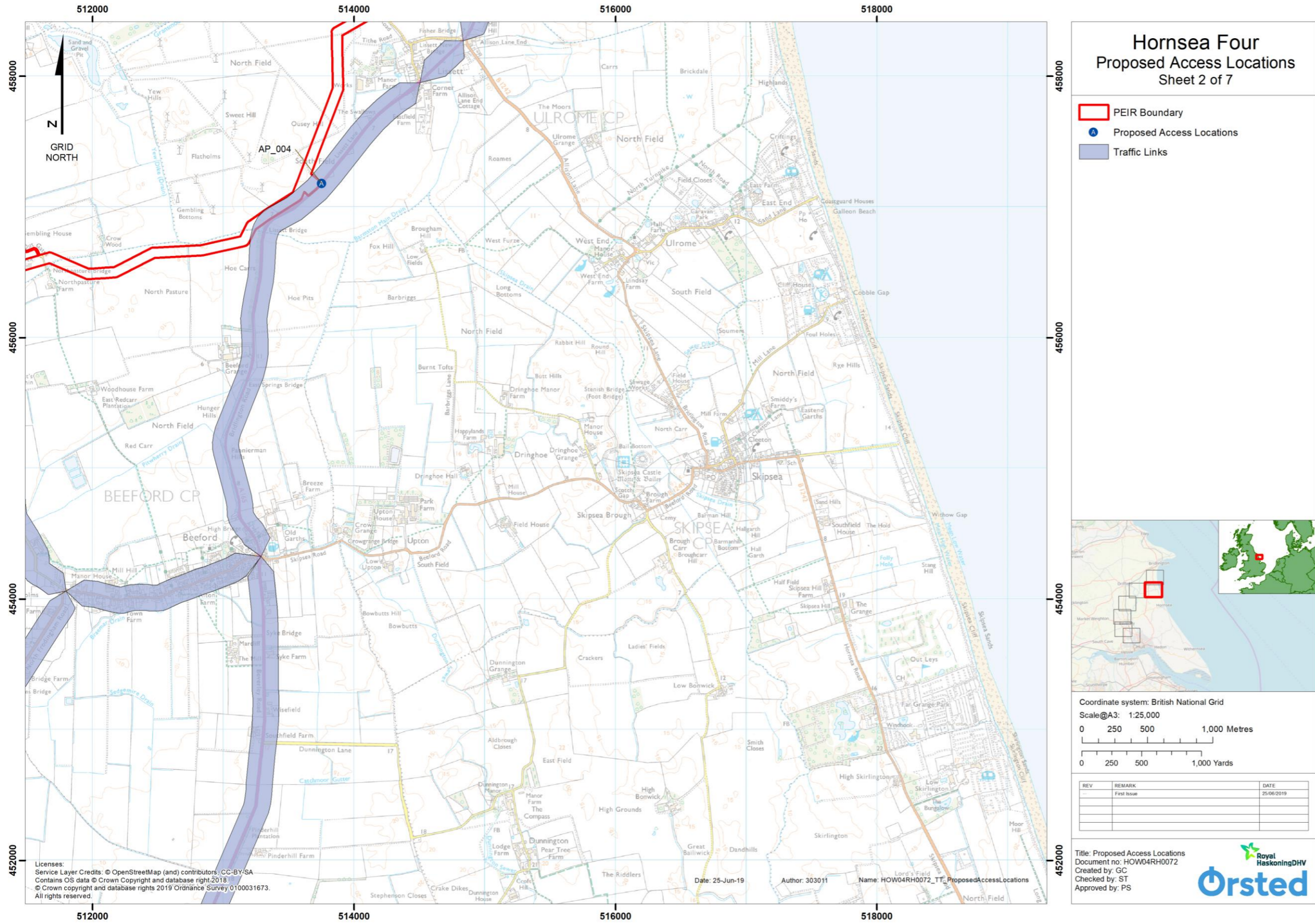


Figure 7.5: Proposed Access Locations – Sheet 2 of 7 (Not to Scale).

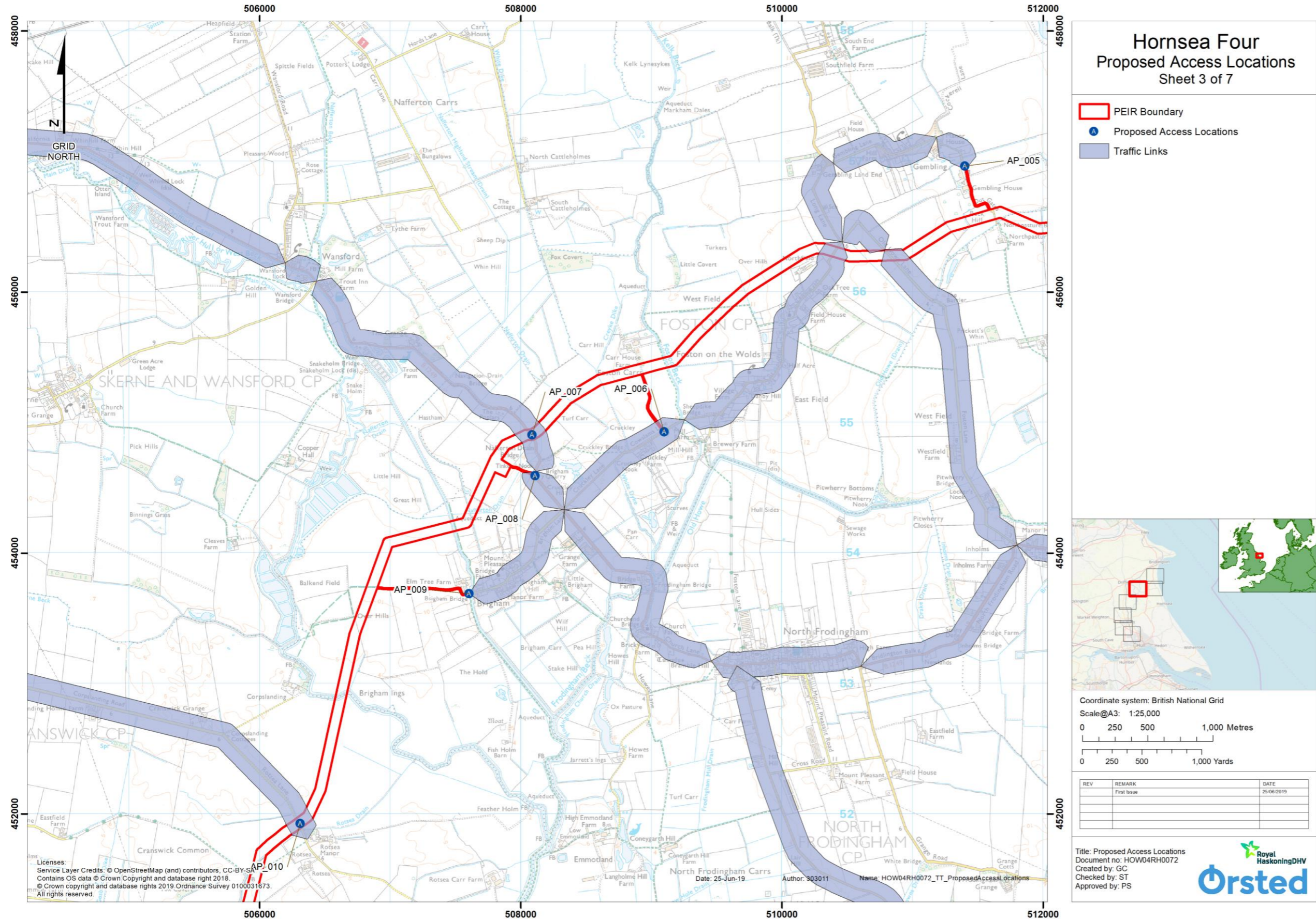


Figure 7.6: Proposed Access Locations – Sheet 3 of 7 (Not to Scale).

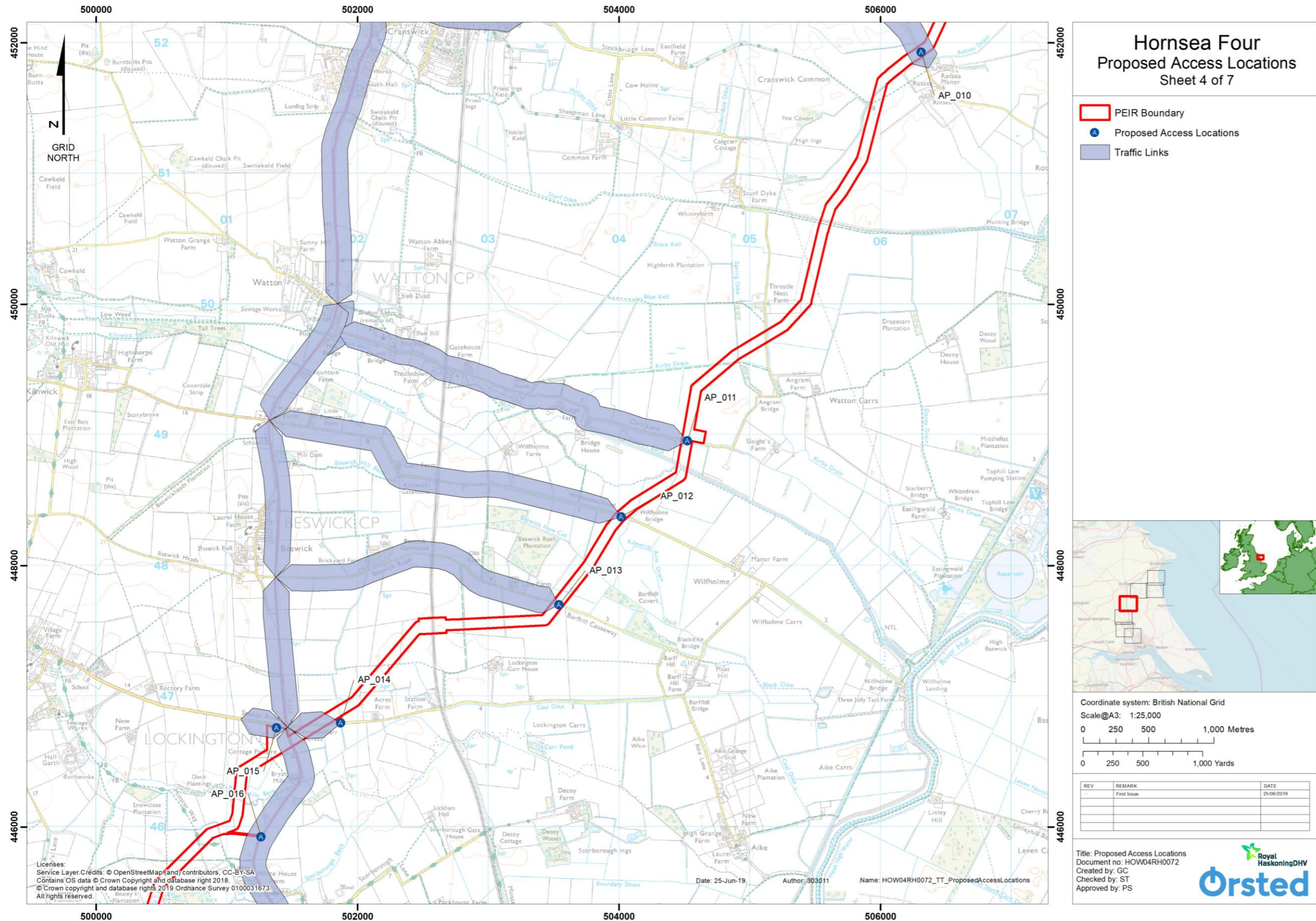


Figure 7.7: Proposed Access Locations – Sheet 4 of 7 (Not to Scale).

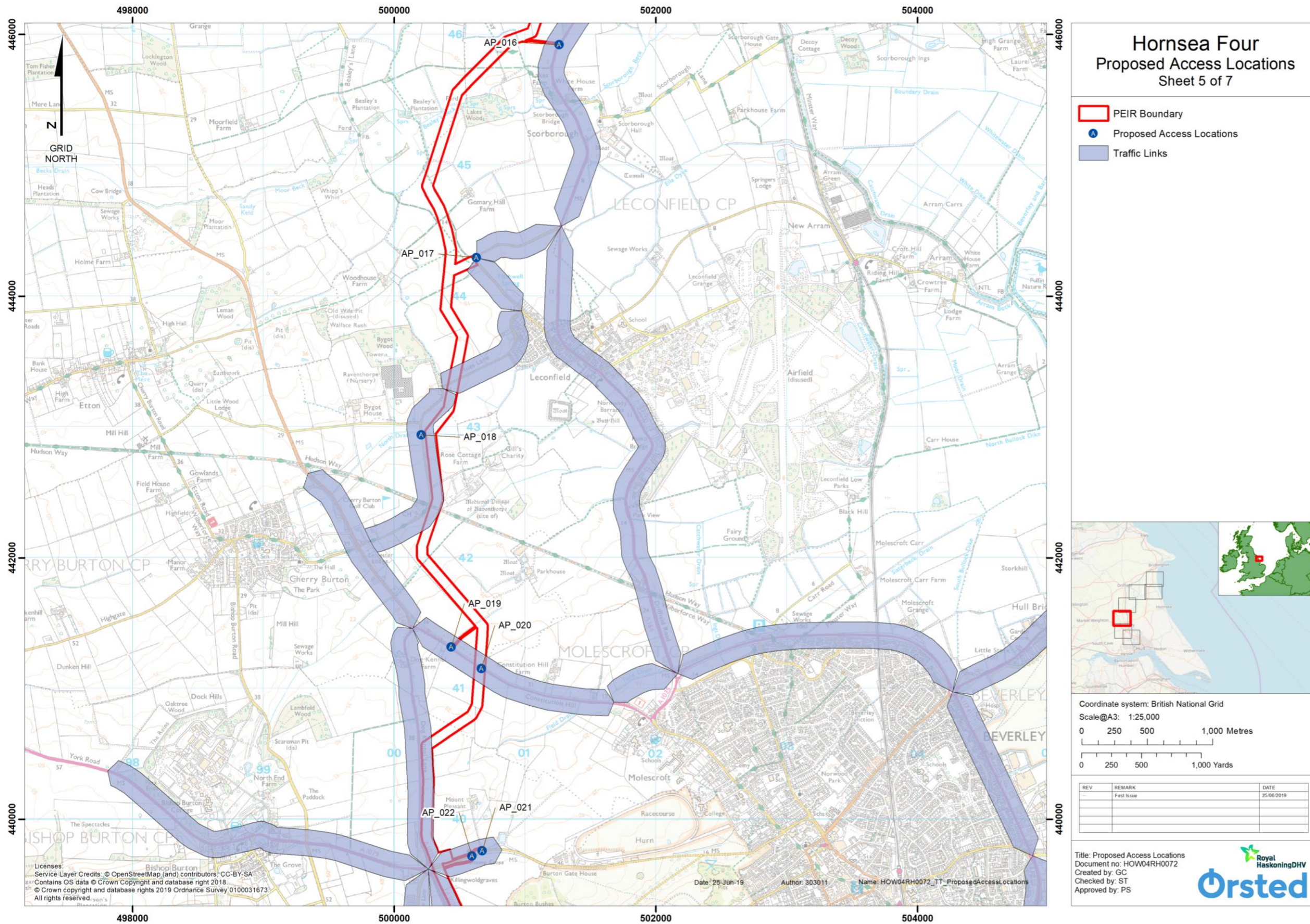


Figure 7.8: Proposed Access Locations – Sheet 5 of 7 (Not to Scale).

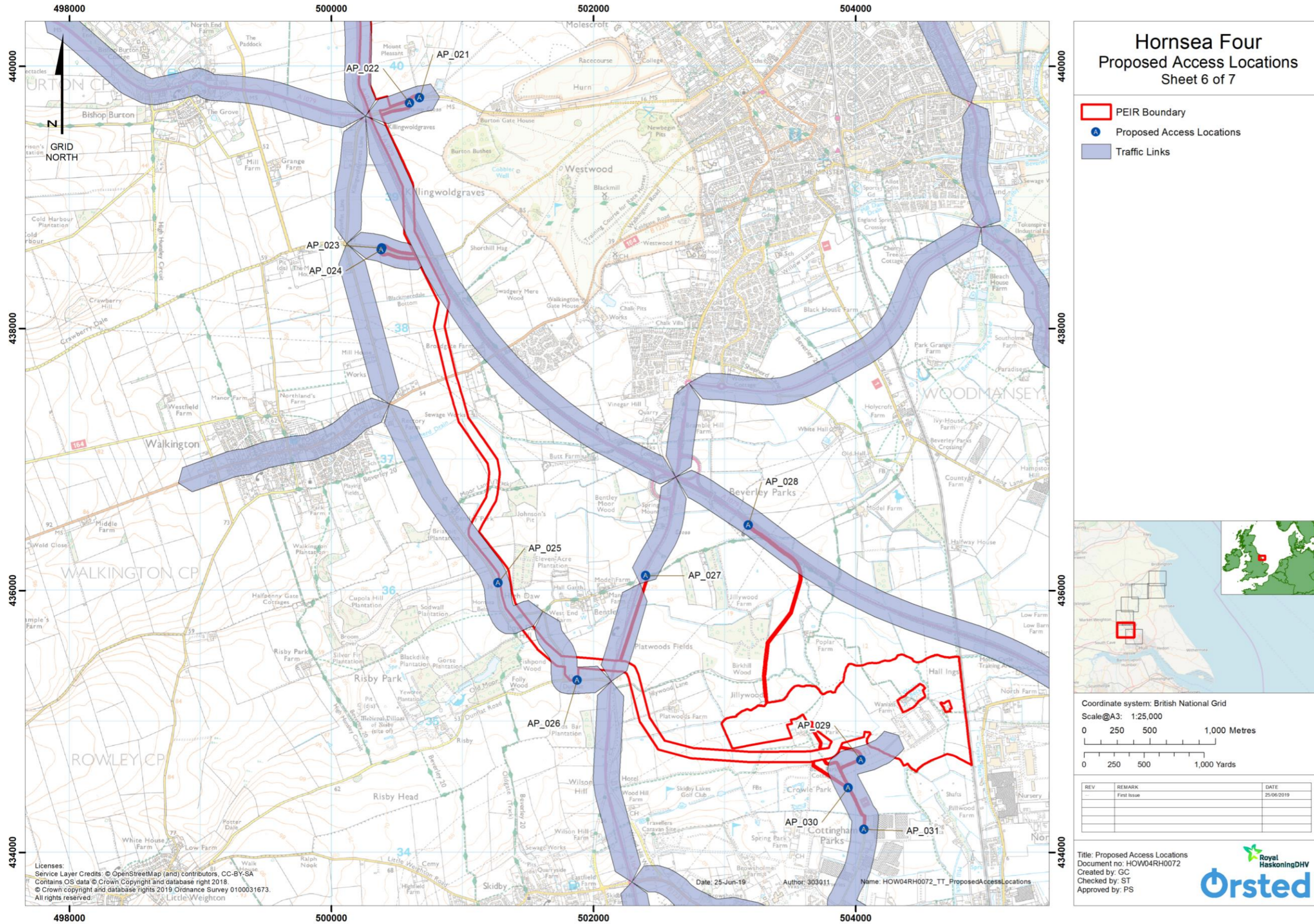


Figure 7.9: Proposed Access Locations – Sheet 6 of 7 (Not to Scale).

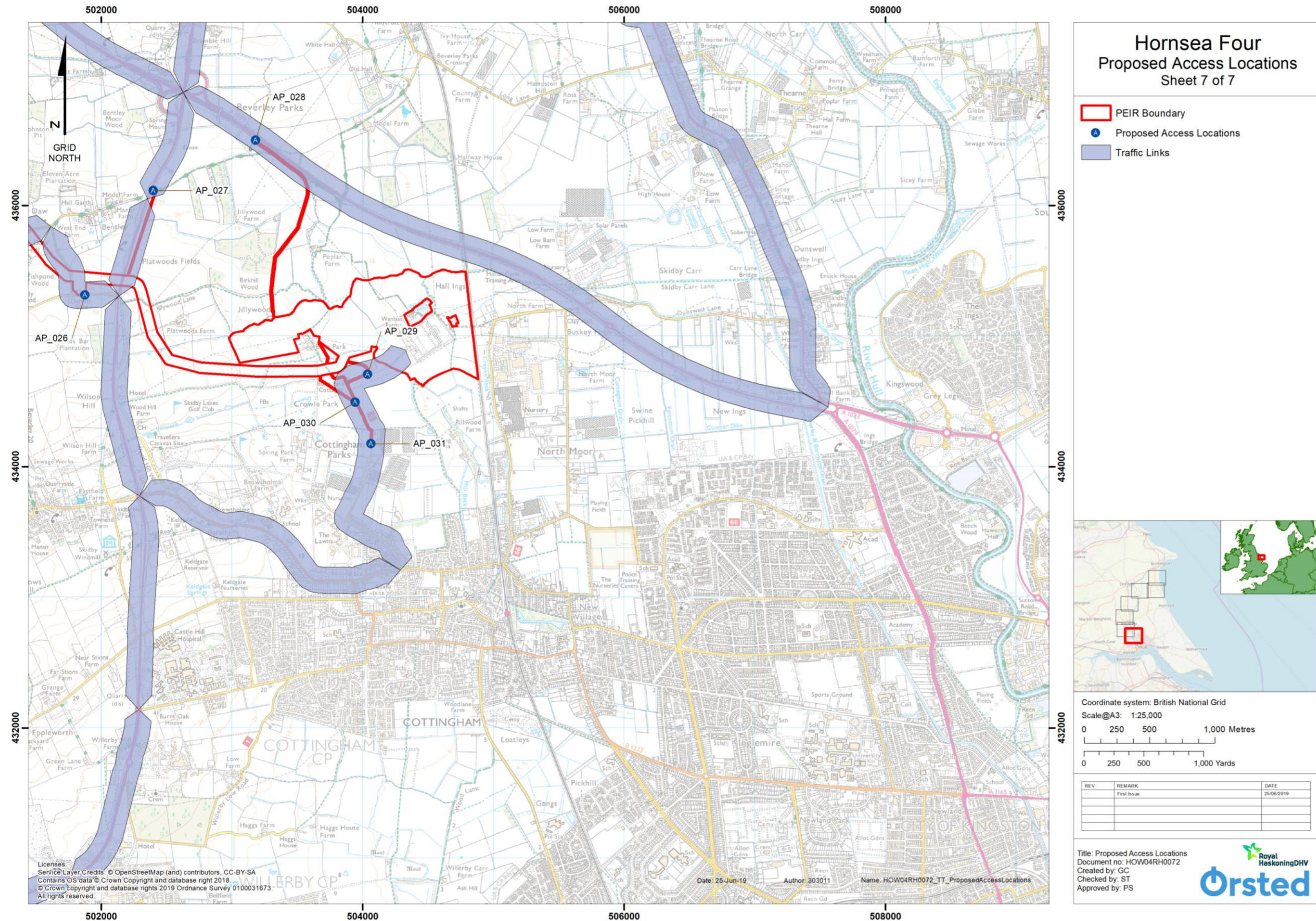


Figure 7.10: Proposed Access Locations – Sheet 7 of 7 (Not to Scale).

Table 7.7: Description of Local Access Routes.

Access ID	Route description	Link description
Access 1, 2	Access 1 and 2 are 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 1 and 2 is via an unclassified road. The road is a single lane road with no passing places. There are no footways along this route.
Access 3, 4	Access 3 and 4 would be accessed direct from the A165.	
Access 5	Access 5 is located to the east of the Hamlet of Gembling. All HGV traffic would travel to access 5 from the A165 via Beeford before heading north on Foston Lane towards Gembling.	The route from the A165 to access 5 is via the B1249 and unclassified roads. The B1249 is a single carriageway road with footways within proximity of Beeford. The unclassified roads are single lane roads and with the exception of Long Lane, no footways are provided. There are some passing places present on Foston Lane, Old Howe Lane and Long Lane.
Access 6	Access 6 is located to the south-west of Foston on the Wolds on Cowslan Lane. At the junction with the B1249 two routes have been considered for HGV traffic to approach access 6. 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 6 is westbound on the B1249 via North Frodingham. Along this route, the B1249 is a single carriageway road with footways within proximity of developments. Alternatively, the route from the A614 to access 6 is southbound on the B1249 via Driffield. Similarly, the B1249 along this route is a single-lane single carriageway road with a footway provided along at least one side of the road through the settlements.
Access 7, 8	Access 7 and 8 are located off the B1249. Vehicles from these accesses would follow the same route as that described for access 6.	For both routes, direct vehicular access would be provided via Cruckley Lane. Cruckley Lane is an unclassified single carriageway road no footways or passing places.
Access 9	Access 9 is located off Brigham Lane that links to the B1249. At the B1249 vehicles would follow the same route as that described for access 6.	The route from the B1249 to access 9 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.
Access 10	Access 10 is located off Rotsea Lane to the east of Hutton Cranswick. From the A164, vehicles would travel via Hutton Cranswick to Meggison's Turnpike before travelling along Rotsea Lane to access 10.	The route from the A164 passes through Hutton Cranswick before turning on to Meggison's Turnpike and then Corpslanding Road/ Rotsea Lane. 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

Access ID	Route description	Link description
		Cycle Route (NCR 1) runs via Main Street, Station Road and Meggison's Turnpike.
Access 11	Access 11 is 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 11.	The route from the A164 to access 11 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 church. No footways are provided for the remainder of the route.
Access 12	Access 12 is 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 12 is via Wilfholme Road. Wilfholme Road is a single lane road with passing places. There are no footways present along this route.
Access 13	Access 13 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 13 is via Beswick Road. Beswick Road is a single lane road with no passing places. There are no footways present along this route.
Access 14	Access 14 is located off Station Road east of the A164 and south of Beswick. All traffic would turn east off the A164 directly onto Station Road.	The route from the A164 to access 14 is via Station Road. Station Road is a single lane road with passing places. There are no footways present along this route.
Access 15	Access 15 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 15 is via Station Road. Station Road is a narrow single carriageway with a footway on the northern side of the road.
Access 16	Access 16 would be accessed direct from the A164.	
Access 17	Access 17 is located off an unnamed road to the north of Leconfield. All traffic would turn off the A164 directly onto the unnamed road.	The route from the A164 to access 17 is via an unclassified road. The road is a single carriage road with no footways.
Access 18	Access 18 is located off Miles Lane to the west of Leconfield. All traffic would travel to access 18 from the A1035 via the B1248 before heading north-east on Miles Lane.	The route from the A1035 to access 18 is via the B1248 and Miles Lane. The B1248 is a single carriageway road with a footway and cycleway (National Cycle Route 1) that runs parallel to the road. From the B1248, the route continues as Miles Lane, a single carriageway road with no footways.
Access 19, 20	Access 19 and 20 would be accessed direct from the A1035.	
Access 21, 22	Access 21 and 22 would be accessed direct from the A1174.	
Access 23, 24	Access 23 and 24 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 23 and 24.	The route from the A1079 to access 23 and 24 is via unclassified roads. The roads are single carriageway roads with no footways.

Access ID	Route description	Link description
Access 25, 26	Access 25 and 26 are located off Copleflat Lane to the south of Walkington. All traffic would turn off the A164 to an unnamed road before travelling north towards Copleflat Lane.	The route from the A164 to access 25 is via unclassified roads. The roads are single carriageway roads and no footways are provided.
Access 27	Access 27 would be accessed direct from the A164.	
Access 28	Access 28 would be accessed direct from the A1079.	
Access 29, 30 & 31	Access 29, 30 and 31 are located off Park Lane to the north of Cottingham. All traffic would travel to the accesses from the A164 via the B1233 towards Cottingham.	The route from the A164 to the accesses is via the B1233 and unclassified roads. The B1233 is a single carriageway road with footways and cycleways. From the B1233, the route continues north as Park Lane. The first part of Park Lane is a single carriageway road with footways, however, as Park Lane heads north of the main built up area of Cottingham the road narrows to a single lane with passing places. An on-road National Cycle Route (NCR 1) runs parallel to the route from the West End Road roundabout to the accesses.

7.7.2 Traffic Flow Data

7.7.2.1 Traffic flow data for all 90 links within the traffic and transport study area has been informed by traffic counts. [Volume 6, 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 road safety impact, it is necessary to establish a 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 most recently available period (1 January 2014 to 30 April 2019) inclusive.

7.7.3.2 In consultation with the ERYC (at the second Human Environment Technical Panel on the 1 May 2019) it was agreed 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 collisions rates (number of collisions per length of road) 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 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. The following formula has been utilised to calculate the collision rate, where 1,945 is the sample size in number of days over which the collision data has been sourced.

$$\text{Collision Rate} = \frac{\text{Number of recorded PICs (per road)} \times 1 \text{ billion}}{1,945 \times \text{Annual Average Daily Traffic} \times \text{length of road}}$$

7.7.3.4 A summary of the results of the analysis is presented in [Table 7.8](#).

Table 7.8: Baseline PIC Analysis.

Links	Link description	No. of PICs and Severity				Collision Rates	
		Total	Fatal	Serious *	Slight **	National Average	Calculated
1, 4, 5, 6, 7, 8	A165 from Moor Ln to Beeford	34	1	5	28	254	236
2, 3	Unnamed road south of Fraisthorpe	0	0	0	0	439	0
9	B1249 through Beeford	2	0	0	2	439	465
10, 16	Foston Lane / Old Howe Lane	0	0	0	0	439	0
11, 12	B1249 from Beeford through North Frodingham	2	0	0	2	439	149
13, 23, 22, 21, 20	B1249 from Driffield to Brigham	18	1	3	14	439	422
14, 15	Cruckley Lane / Cowslam Lane / Sheepdike Lane	0	0	0	0	439	0
17, 18, 19	Long Lane / Gambling Lane / Out Gates	0	0	0	0	439	0
24	B1249 Wansford Road / Scarborough Road	15	0	3	12	752	1,621
25	Brigham Lane	0	0	0	0	439	0
26, 29, 36, 37, 39, 41, 44, 45	A614 from Kelleythorpe to Leconfield	43	1	11	31	254	232
27, 28	Anderson Street / River Head / Beverly Road	10	0	3	7	752	553
30	Station Road / Main Street through Hutton Cranswick	0	0	0	0	439	0

Links	Link description	No. of PICs and Severity				Collision Rates	
		Total	Fatal	Serious *	Slight **	National Average	Calculated
31	Corpslanding Road / Howl Lane / Church Street / Hutton Road	0	0	0	0	439	0
32	Maeggison's Turnpike	1	0	1	0	439	346
33	Corpslanding Road / Rotsea Lane	0	0	0	0	439	0
34, 35	Carr Lane / Church Lane	0	0	0	0	439	0
38	Wilholme Road	0	0	0	0	439	0
40	Beswick Road / Barfhill Causeway	0	0	0	0	439	0
42	Station Road east of A164	0	0	0	0	439	0
43	Station Road west of A164	1	0	0	1	439	8,958
46, 47	Old Road west of Leconfield / unnamed road west of junction with A164	2	0	0	2	439	413
48, 49	Miles Lane	9	0	2	7	439	821
50	B1248 north of the A1035	12	0	3	9	439	612
51, 52	A1035 Constitution Hill / Beverley Northern Bypass	3	0	1	2	254	108
53	A1035 Dog Kennel Lane	13	1	1	11	254	542
54	A1174 east of the A1035	2	0	1	1	254	589
55	A1079, A1174 and A164	12	1	2	9	254	134
56	Newbald Road	2	0	1	1	439	3,318
57, 58, 59, 61	Killingwoldgraves Lane / Copleflat Lane	15	0	7	8	439	942
60, 62, 63, 76, 77, 78, 79, 83	A164 from A1079 / A15 Humber Bridge / unnamed road south of Copleflat Lane	107	2	10	95	254	244
65	Main Street / Froddingham Road, Brandesburton to North Froddingham	12	0	1	11	439	819
64, 66, 67	A165 from Beeford to A1035	29	1	6	22	254	166

Links	Link description	No. of PICs and Severity				Collision Rates	
		Total	Fatal	Serious *	Slight **	National Average	Calculated
68	A1035, A165 to A1174	46	0	8	38	254	244
69	A1035 Grange Way, north of Beverley	8	0	1	7	254	239
70, 71	A1174 Swinemoor Lane / Hull Road	25	0	4	21	799	563
72	A164 Minster Way	5	0	2	3	254	151
73	A164, Minster Way to A1079	9	0	0	9	799	459
74	A1079, A164 to A1033	13	1	0	12	254	104
75	A1174 Beverly Road / Hull Road	46	1	7	38	799	468
80	A15 Boothferry Road	25	0	2	23	254	343
81	A63 west of A15	38	0	6	32	254	166
82	A63 Clive Sullivan Way	49	1	5	43	799	185
84, 86	A614 from Caraby to Kellythorpe	53	2	17	34	254	93
85	Bridlington Bay Road, A614 to A165	10	0	3	7	439	489
87	A1079 through Bishop Burton	11	0	2	9	254	333
88	B1233 Harland Way / Northgate	21	0	3	18	752	690
89	Park Lane	2	0	2	0	752	742
90	B1230 through Walkington	2	0	0	2	439	329

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.

7.7.3.5 It is evident from [Table 7.8](#) that links 9, 24, 43, 48, 49, 50, 53, 54, 56, 57, 58, 59, 61, 65, 80, 85 and 87 have a collision rate that is higher than the national average for a comparable road type and may be particularly sensitive to changes in traffic flow / type.

7.7.3.6 It is noteworthy that despite links 9, 43, 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.

7.7.3.7 A review of the collisions along links (Links 9, 43, 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.

7.7.3.8 The remaining links (links 24, 48, 49, 50, 53, 57, 58, 59, 61, 65, 80, 85 and 87) 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 At the second Human Environment Technical Panel on the 1 May 2019, the ERYC identified junctions that they considered are currently operating close to or above capacity and would therefore potentially be sensitive to the changes in traffic. These junctions are detailed within [Table 7.9](#) (and depicted graphically on [Figure 7.11](#)). Further assessment of these junctions is provided in [Section 7.11](#).

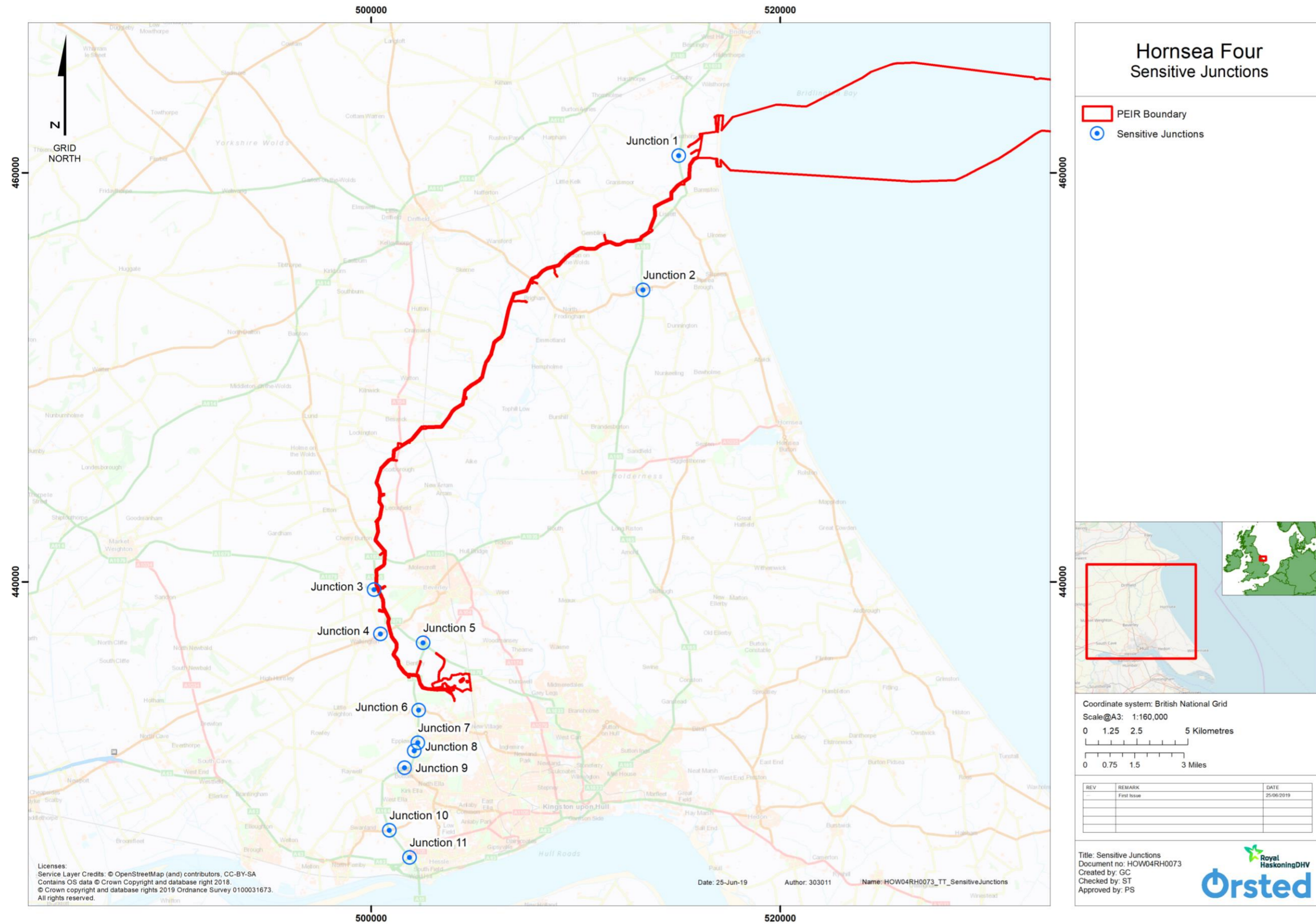


Figure 7.1.1: Sensitive Junctions (Not to Scale).

Table 7.9: 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 cross roads 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

7.7.5 Predicted future baseline

7.7.5.1 It is considered the earliest date construction could commence would be 2023. A baseline year for background traffic growth of 2023 has therefore been adopted in order to consider the greatest potential for change. 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. This assumed construction start date has been used for the traffic and transport assessment presented in this PEIR.

7.7.5.2 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 6, 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.

7.7.6 Assumptions and Data Limitations

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. However, DfT's traffic counts for individual road links are estimates, as they are not always based on up-to-date counts made at these locations. Where other more up-to-date sources of traffic data have been available, such as the commissioned classified Automatic Traffic Counts (ATCs), these have been used instead.

7.8 Project basis for assessment

7.8.1 Impact register and impacts “scoped out”

7.8.1.1 Based on the EIA scoping report, baseline environment, the project description outlined in [Volume 1, Chapter 4: Project Description](#) and the Commitments in [Volume 4, Annex 5.2: Commitments Register](#), a number of impacts are proposed to be “scoped out” of the PEIR assessment for traffic and transport. These impacts are outlined, together with a justification for scoping them out, in a [Table 7.10](#). Further detail is provided in [Volume 4, Annex 5.1: Impacts Register](#).

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

Table 7.10: Traffic and Transport Impact Register.

Project activity and impact	Likely significance of effect	Approach to assessment	Justification
Impact from transport of offshore project components on the road network: Construction Phase (TT-C-1)	Not Significant	Scoped Out	<p>Agreement with ERYC at the second Human Environment Technical Panel on the 1 May 2019 that the movement of offshore components can be scoped out.</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</p>

Project activity and impact	Likely significance of effect	Approach to assessment	Justification
			be subject to separate consent(s) such as a planning permission or a Harbour Revision Order.
Impact from traffic on pedestrian delay and amenity (TT-C-7)	Not Significant	Scoped Out	Agreement 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 .
Impacts from traffic generation: Operation (TT-O-10)	Not Significant	Scoped Out	Agreement from PINS during EIA Scoping (23 November 2018 Scoping Opinion Section 4.19) and with ERYC at the first Human Environment Technical Panel meeting on 7 January 2019 that operational impacts can be scoped out. 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 in Volume 1, Chapter 4: Project Description .
Impacts from traffic generation: Decommissioning (TT-D-11)	Not Significant	Scoped Out	Agreement from PINS during EIA Scoping (23 November 2018 Scoping Opinion Section 4.19) that decommissioning impacts can be scoped out.

Notes:

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

Red – Potential impact is scoped out with no consensus between PINS and Hornsea Four at EIA Scoping.

7.8.2 Commitments

7.8.2.1 Hornsea Four has adopted several commitments (primary design principles inherent as part of the project). These include; installation techniques and engineering designs/modifications as part of the pre-application phase, to avoid a number of impacts or to reduce impacts as far as possible. Further Commitments (tertiary mitigation such as adoption of best practice guidance) are embedded as an inherent aspect of the EIA process (see [Volume 4, Annex 5.2: Commitment Register](#)).

7.8.2.2 The commitments adopted by Hornsea Four and embedded into the EIA in relation to traffic and transport at PEIR are presented in [Table 7.11](#).

Table 7.11: Relevant Traffic and Transport Commitments.

Commitment ID	Measure Proposed	How the measure will be secured
Co1	<p>Primary: All main rivers, Internal Drainage Board (IDB) maintained drains, main roads and railways will be crossed by HDD or other trenchless technology as set out in the Onshore Crossing Schedule. Where HDD technologies are not practical, the crossing of ordinary watercourses may be undertaken by open cut methods. In such cases, temporary measures will be employed to maintain flow of water along the watercourse.</p>	DCO Requirement 16 (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 normal working hours. We will inform ERYC in writing.</p>	DCO Requirement 16 (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 17 (Construction traffic management plan)
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 16 (CoCP)
Co144	<p>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:</p> <ul style="list-style-type: none"> • Managing the numbers and routeing of HGVs during the construction phase; • Managing the movement of employee traffic during the construction phase; • Details of localised road improvements necessary to facilitate safe use of the existing road network; and 	DCO Requirement 17 (Construction traffic management plan)

Commitment ID	Measure Proposed	How the measure will be secured
	<ul style="list-style-type: none"> Detail of measures to manage the safe passage of HGV traffic via the local highway network. 	
Co150	Primary: A new access will be taken directly from the A1079, to route construction traffic away from Cottingham and Dunswell.	DCO Requirement 17 (Construction traffic management plan)
Co171	Secondary: HGVs will avoid travel through Foston on the Wolds.	DCO Requirement 17 (Construction traffic management plan)

7.9 Maximum Design Scenario

- 7.9.1.1 A number of Maximum Design Scenarios (MDSs) have been used as a basis for the impact assessment on traffic and transport. In line with the Project Design Envelope ([Volume 1, Chapter 5: EIA Methodology](#)), the maximum design parameters and minimum realistic duration of works associated with Hornsea Four have been considered as the MDS in terms of potential impacts to traffic and transport (a minimum duration for individual construction activities result in the highest traffic demand due to the intensity of activities). This includes all onshore infrastructure that Hornsea Four would require for connection to the National Grid Electricity Transmission (NGET) substation.
- 7.9.1.2 Traffic demand has been forecasted 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 31 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 6, Annex 7.1: Traffic and Transport Technical Report. Table 7.12](#) provides a brief summary of the realistic MDS parameters of the onshore infrastructure that are relevant to potential impacts on traffic and transport during construction Hornsea Four. Please refer to [Volume 1, Chapter 4: Project Description](#) for more detail regarding specific activities, and their durations within the construction phase.

Table 7.12: 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	Construction commencement year: 2023 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 • Logistics compounds: Number: 8, Size: 140x140 m, Duration: 36 months • ECC: Length: 40 km (approximate), Width: 80m, Area: 3,200,000 m² • Cable circuits (HVAC system): Number: 6 • Cable trench: Depth: 1.5 m, Width at base: 1.5m, Width at surface: 5m • Haul Road: Number: 1, Width: 6m (with 7 m passing places), Length: 40km, Depth: 1m • Temporary access roads: Number: 24, Width: 6 m (with 7 m passing places), Total combined length (excluding existing paved sections): 10km, Depth: average of 0.5m • Joint Bays: Number: 240, Depth 2.5m, Area: 225m² per Joint Bay, Joint Bay compounds: 240 40x40m compounds • Link Boxes: Number: 240, Depth: 2m, Area: 9m² per Link Box 	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 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"> HDDs: Number: 112, HDD compounds (entry and exit): 56 70x70m compounds <p>Onshore Substation and Energy Balancing Infrastructure:</p> <ul style="list-style-type: none"> Construction duration: 36 months Temporary access road: Number: 1, Length: 1,600 m, Width: 15m (8m road, 7m 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: 1.5m Length: 2,100m, Width: 60 m <p>Associated Peak Movements and Routing:</p> <ul style="list-style-type: none"> Peak HGV movements: 1,097 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 the A164 towards Hull and the M62. Peak LCV movements: Total movements capped at 368 	<p>Agreement with the ERYC at the Technical Panel meeting on the 1 May 2019 that all HGV traffic has been assumed to have an origin on the A164 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>Severance</p> <p>The MDS would result in the highest numbers of vehicle movements across the highway network.</p>
Pedestrian Amenity (TT-C-7)			<p>Pedestrian Amenity</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>two-way LCV movements per day. Due to the difficulty of forecasting a detailed construction programme, a MDS of 98 two-way LGV movements has been assigned to each access at one time. However, movements have been capped on individual road link to 368 per day to ensure impacts are realistic on main A roads.</p> <ul style="list-style-type: none"> All employees are assumed to drive themselves to work, with no sharing, bus, walking or cycling. 	<p>Accidents and Roads Safety</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: 32,700kg 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 24m. <p>Onshore Substation and Energy Balancing Infrastructure:</p> <p>Transformers:</p> <ul style="list-style-type: none"> Number: 6, Weight: 387,000kg, Height: 5.0m, Length: 11.65m, Width: 4.2m. To be transported by a specialist abnormal load vehicle of approximately 93m in length. 	<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>
<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 (Ørsted, 2018). All variations to the traffic and transport methodology have been agreed in consultation with ERYC at Technical Panel meetings and are included in the methodology set out in this section.

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 the 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 local 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) has 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 accidents 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 close to or 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 development proposals, the road safety assessment also considers the potential for introduction of new risks associated with the formation of new junctions.

Abnormal Loads (TT-C-9)

7.10.2.17 The importing of large Abnormal Indivisible Loads (AILs) 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 AIL study has been undertaken by ALE (heavy transportation and lifting contractors) to inform the management measures required to deliver AILs to the Onshore substation for Hornsea Four.

7.10.2.18 The AIL 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 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 Marfleet Avenue, before continuing west along Ings Road, Cavendish Road and Sutton Road to the junction with the A1033. The AIL vehicle would then follow the A1033 before continuing on to the A1079 to reach the OnSS access from the A1079.

7.10.2.19 The AIL study highlights that both routes would require local accommodation works (removal of signs, railings, pruning of trees and contraflow manoeuvres, etc.). Route 1 would also require an overall marginal reduction in the height of the load to be feasible, Route 2 requires no further amendments. Further assessment would be undertaken by the Applicant to confirm the feasibility of Route 1 for the DCO Submission.

7.10.2.20 Further consultation with the relevant highway authorities is currently ongoing to establish the load bearing capacity of the existing highway structures to accommodate the loads. This assessment will be provided within the DCO submission.

7.10.2.21 To ensure that delays are managed and co-ordinated, prior to the movement of any ALL 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 ensure the timing of ALL 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 7.13](#) provides broad definitions of the different sensitivity levels (derived from GEART) which have been applied to the assessment.

Table 7.13: 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-mortised 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) 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 the ERYC 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 7.14](#).

7.10.3.6 [Table 7.14](#) 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 7.14: 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 7.15](#). Where a range of significance of effect is presented in [Table 7.15](#), 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 minor or less have been concluded to be not significant in terms of the EIA Regulations.

Table 7.15 Matrix used for the assessment of the significance of the effect.

		Magnitude of Impact/Degree of Change			
		Negligible	Minor	Moderate	Major
Value, Importance, Sensitivity	Low	Not Significant	Not Significant or Minor (Not Significant)	Minor (Not Significant)	Minor (Not Significant) or Moderate (Significant)
	Medium	Not Significant	Minor (Not Significant)	Moderate (Significant)	Moderate (Significant) or Major (Significant)
	High	Not Significant	Minor (Not Significant) or Moderate (Significant)	Moderate (Significant) or Major (Significant)	Major (Significant) or Substantial (Significant)
	Very High	Not Significant	Moderate (Significant) or Major (Significant)	Major (Significant) or Substantial (Significant)	Substantial (Significant)

7.10.4 Sensitivity of receptors

7.10.4.1 **Table 7.13** 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 90 links within the study area have been assigned a sensitivity. **Table 7.16** details the routes and the rationale for the applied link sensitivity with **Figure 7.12** illustrating these routes graphically.

Table 7.16: 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	Unnamed Road running south of Fraisthorpe	Low	Unclassified road with no frontage development
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

Link ID	Link description	Link sensitivity	Rationale for link sensitivity
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)
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	Long Lane	High	A primary school is located on this link with no footway to the north of the school
18	Gambling Lane	High	The hamlet of Gembling is located along the link, no footways are provided to link properties
19	Out Gates	High	The hamlet of Gembling is located along the link, no footways are provided to link properties
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

Link ID	Link description	Link sensitivity	Rationale for link sensitivity
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, 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

Link ID	Link description	Link sensitivity	Rationale for link sensitivity
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
56	Newbald Road	Low	Unclassified road with no frontage development
57	Killingwoldgraves Lane / Copleflat Lane	Low	Unclassified road with sporadic frontage development
58	Copleflat Lane south of Newbald Road	Low	Unclassified road with sporadic frontage development
59	Copleflat 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 Copleflat Lane to junction with A164	Low	Unclassified road with no frontage development
62	A164 south of Copleflat 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 / Frodingham Road, Brandesburton to North Frodingham	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

Link ID	Link description	Link sensitivity	Rationale for link sensitivity
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
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 it 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 it passes through a number of small communities where residential properties and public houses are accessed direct from the road
88	B1233 Harland Way / Northgate	High	Provides direct access to a number of receptors including a school, residential properties, and university campus
89	Park Lane	High	Provides access to residential properties with no footway and cycleway number 1 runs on-road
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

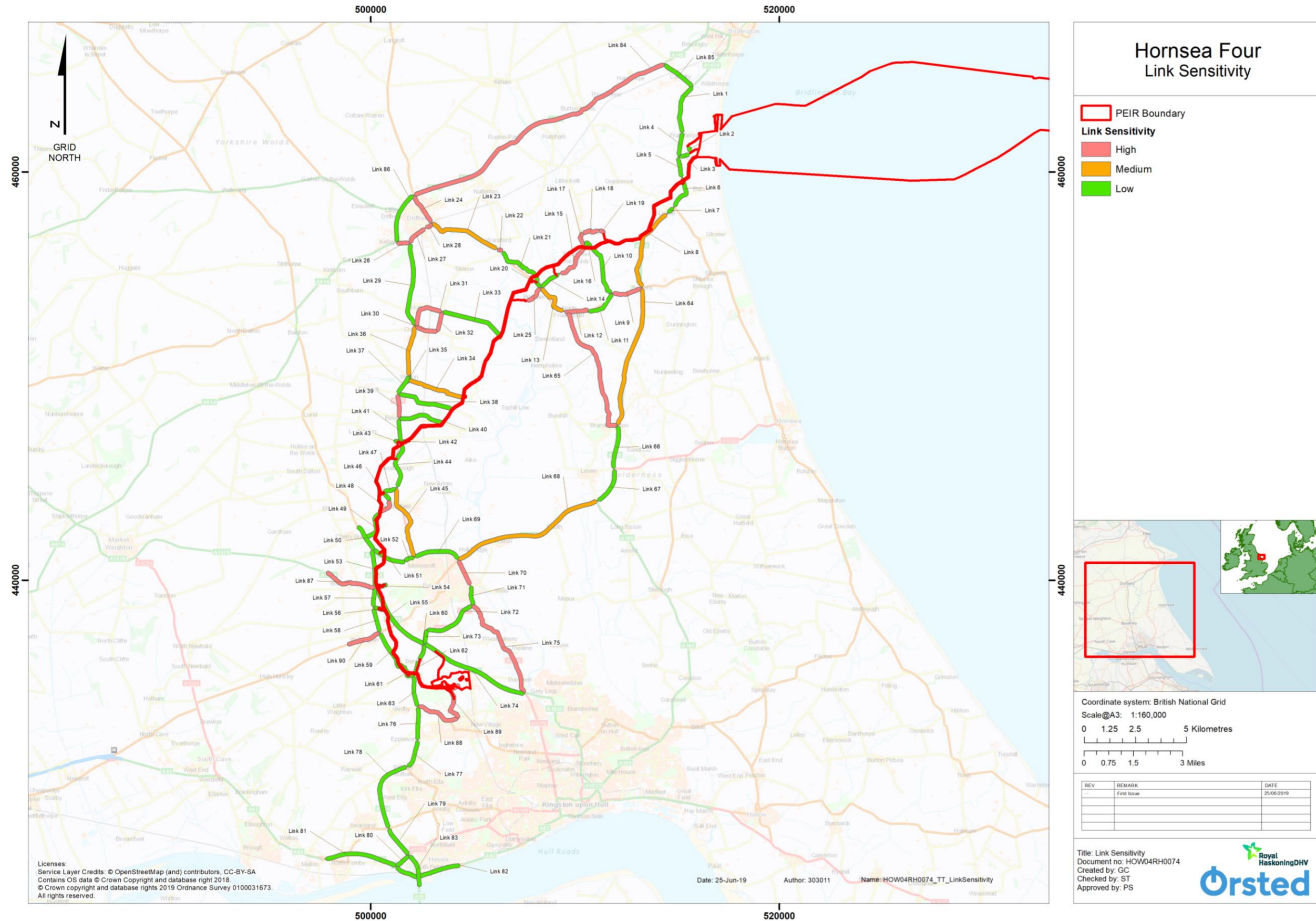


Figure 7.12: Traffic and Transport Link Sensitivity (Not to Scale).

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 7.12](#) along with the maximum design scenario against which each construction phase impact has been assessed.
- 7.11.1.2 A screening process has been undertaken for the study area to identify routes that are likely to have changes in traffic flows greater than GEART (Rule 1 and Rule 2) and therefore require further impact assessment. Links that are screened out of the assessment are highlighted blue within [Table 7.17](#).
- 7.11.1.3 A description of the potential effect on traffic and transport receptors caused by each identified impact is given below.
- 7.11.1.4 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 6, 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

- 7.11.1.5 [Table 7.17](#) summarises the assigned daily peak two-way vehicle movements (i.e. arrivals and departures) of all materials, personnel and plant during the peak in-combination month when distributed across the highway network.
- 7.11.1.6 [Table 7.17](#) also provides a comparison of the peak daily construction flows with the forecast background daily traffic flows in 2023 and identifies the screened links. In addition to providing peak construction flows on each link [Table 7.17](#) also includes details of average construction flows.
- 7.11.1.7 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 7.17](#).
- 7.11.1.8 It is noted from [Table 7.17](#) that 65 of the 90 links are above the GEART screening thresholds and taken forward for assessment. The remaining links (1, 4, 27 - 29, 31, 36, 46, 48, 50, 58, 59, 65, 68, 69, 74, 75, 81 – 88) are below GEART screening thresholds and are therefore not considered further in the assessment of severance and pedestrian amenity effects.

Table 7.17: Existing and proposed daily traffic flows.

Link	Link description	Link sensitivity	Background 2023 flows (24Hr AAWT)		Peak two-way Construction vehicle movements		Average 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	12,136	298	48	0	24	0	0.4%	0.0%
2	Unnamed Road running south of Fraisthorpe	Low	501	3	311	115	114	19	62.2%	3399.8%
3	Unnamed Road from its junction with A165 south of Fraisthorpe	Low	501	3	339	151	130	39	67.7%	4469.0%
4	A165 to the west of Fraisthorpe	Low	12,136	298	48	0	24	0	0.4%	0.0%
5	A165 south of Fraisthorpe	Low	12,136	298	379	151	150	39	3.1%	50.8%
6	A165 west of Barmston	Low	11,446	444	524	203	216	60	4.6%	45.6%
7	A165 east of Lissett	Low	9,725	308	520	203	214	60	5.3%	65.7%
8	A165 south of Lissett to Beeford	High	9,725	308	616	248	453	85	6.3%	80.5%
9	B1249 through Beeford	High	2,555	53	490	122	296	60	19.2%	230.1%
10	Foston Lane / Old Howe Lane	Low	316	9	387	19	246	10	122.3%	207.9%
11	B1249 between Beeford and North Frodingham	Low	4,384	82	103	103	50	50	2.4%	125.4%
12	B1249 through North Frodingham	High	4,384	82	103	103	50	50	2.4%	125.4%
13	B1249 Church Lane	Medium	4,384	82	103	103	50	50	2.4%	125.4%
14	Cruckley Lane / Cowslam Lane	Low	547	8	404	36	209	20	73.9%	458.3%
15	Sheepdike Lane through Foston on the Wolds	High	547	8	368	0	189	0	67.3%	0.0%
16	Old Howe Lane	Low	316	9	387	19	246	10	122.3%	207.9%
17	Long Lane	High	316	9	117	19	58	10	36.9%	207.9%
18	Gambling Lane	High	316	9	117	19	58	10	36.9%	207.9%
19	Out Gates	High	316	9	117	19	58	10	36.9%	207.9%
20	B1249 north of Brigham Lane	Low	4,384	82	301	103	146	50	6.9%	125.4%
21	B1249 south of Wansford	Low	4,384	82	206	103	99	50	4.7%	125.4%
22	B1249 through Wansford	High	4,384	82	109	103	52	50	2.5%	125.4%
23	B1249 Wansford to Driffield	Medium	5,832	92	109	103	52	50	1.9%	113.0%
24	B1249 Wansford Road / Scarborough Road	High	5,832	92	109	103	52	50	1.9%	113.0%

Hornsea 4



Link	Link description	Link sensitivity	Background 2023 flows (24Hr AAWT)		Peak two-way Construction vehicle movements		Average two-way Construction vehicle movements		Peak percentage Increase	
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
25	Brigham Lane	High	547	8	119	21	59	12	21.8%	271.6%
26	A164 south of Driffield	High	11,087	539	180	103	87	50	1.6%	19.2%
27	Beverley Road from A164 to River Head	High	11,384	206	0	0	0	0	0.0%	0.0%
28	Anderson Street / River Head	High	11,384	206	0	0	0	0	0.0%	0.0%
29	A164 between Driffield and Hutton Cranswick	Low	11,087	539	180	103	87	50	1.6%	19.2%
30	Station Road / Main Street through Hutton Cranswick	High	2,498	35	144	46	73	25	5.7%	130.3%
31	Corpslanding Road / Howl Lane / Church Street / Hutton Road	High	555	8	0	0	0	0	0.0%	0.0%
32	Maeggison's Turnpike	High	2,498	35	144	46	73	25	5.7%	130.3%
33	Corpslanding Road / Rotsea Lane	Low	555	8	144	46	73	25	25.9%	577.1%
34	Carr Lane / Church Lane east of Watton	Medium	308	18	148	50	68	20	47.9%	275.0%
35	Church Lane east of Watton	Low	308	18	148	50	68	20	47.9%	275.0%
36	A164, Hutton Cranswick to Watton	Medium	11,234	546	503	149	247	75	4.5%	27.3%
37	A614, Watton to Wilfholme Road	Low	11,234	546	454	199	219	95	4.0%	36.4%
38	Wilfholme Road	Low	80	0	106	8	52	4	132.2%	*
39	A164, Wilfholme Road to Beswick	High	10,205	251	552	207	267	99	5.4%	82.5%
40	Beswick Road / Barfhill Causeway	Low	37	0	109	11	54	6	291.6%	*
41	A164, Beswick Road to Station Road	Low	10,205	251	546	218	265	105	5.4%	86.7%
42	Station Road east of A164	Low	313	9	130	32	65	18	41.6%	356.4%
43	Station Road west of A164	Low	677	5	138	40	63	15	20.4%	892.2%
44	A164 south of Station Road	Low	10,205	251	672	304	513	145	6.6%	121.0%
45	A164 north of Leconfield	Medium	8,438	410	520	364	247	172	6.2%	88.8%
46	Old Road west of Leconfield	Low	3,936	19	368	0	315	0	9.3%	0.0%
47	Unnamed Road west of junction with A164 to Old Road	Low	3,936	19	428	60	303	26	10.9%	314.8%
48	Miles Lane west of Leconfield	High	3,936	19	368	0	303	0	9.3%	0.0%

Link	Link description	Link sensitivity	Background 2023 flows (24Hr AAWT)		Peak two-way Construction vehicle movements		Average two-way Construction vehicle movements		Peak percentage Increase	
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
49	Miles Lane east of B1248	Low	3,936	19	381	13	375	7	9.7%	69.9%
50	B1248 north of the A1035	Low	13,735	310	381	13	361	7	2.8%	4.3%
51	A1035 Constitution Hill	Low	11,741	1,100	763	395	556	188	6.5%	35.9%
52	Beverley Northern Bypass	Low	11,741	1,100	732	364	514	172	6.2%	33.1%
53	A1035 Dog Kennel Lane	Low	16,462	1,081	776	408	564	196	4.7%	37.8%
54	A1174 east of the A1035	Low	6,586	58	274	51	129	21	4.2%	88.6%
55	A1079, A1174 and A164	Low	22,803	1,321	854	486	599	231	3.7%	36.8%
56	Newbald Road	Low	1,750	1	223	27	110	15	12.7%	2376.2%
57	Killingwoldgraves Lane / Copleflat Lane	Low	3,291	75	395	27	383	15	12.0%	36.0%
58	Copleflat Lane south of Newbald Road	Low	3,291	75	368	0	368	0	11.2%	0.0%
59	Copleflat Lane south of Walkington	Low	3,291	75	301	20	148	11	9.1%	27.0%
60	A164 south of A1079	Low	36,649	1,458	1,406	1,038	833	465	3.8%	71.2%
61	Unnamed Road south of Copleflat Lane to junction with A164	Low	2,513	25	354	56	169	24	14.1%	227.0%
62	A164 south of Copleflat Lane	Low	36,649	1,458	1,406	1,038	763	465	3.8%	71.2%
63	A164 north of Skidby	Low	35,220	1,401	1,462	1,094	827	489	4.2%	78.1%
64	A165 Beeford to Brandesburton	High	9,519	607	738	370	513	145	7.8%	61.1%
65	Main Street / Frodingham Road, Brandesburton to North Frodingham	High	2,098	18	0	0	0	0	0.0%	0.0%
66	A165, Brandesburton to Leven	Low	19,147	1,148	738	370	513	145	3.9%	32.3%
67	A165, B1244 to A1035	Low	19,147	1,148	738	370	513	145	3.9%	32.3%
68	A1035, A165 to A1174	Medium	22,295	1,337	738	370	513	145	3.3%	27.7%
69	A1035 Grange Way, north of Beverley	Low	13,118	1,229	368	0	356	0	2.8%	0.0%
70	A1174 Swinemoor Lane	High	17,887	924	699	370	305	145	3.9%	40.1%
71	A1174 Hull Road	Low	16,156	835	699	370	305	145	4.3%	44.4%
72	A164 Minster Way	Low	10,761	516	561	370	237	145	5.2%	71.8%
73	A164, Minster Way to A1079	Low	24,555	977	977	630	438	269	4.0%	64.5%

Link	Link description	Link sensitivity	Background 2023 flows (24Hr AAWT)		Peak two-way Construction vehicle movements		Average two-way Construction vehicle movements		Peak percentage Increase	
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
74	A1079, A164 to A1033	Low	21,496	1,197	627	259	410	124	2.9%	21.7%
75	A1174 Beverly Road / Hull Road	High	16,772	904	18	0	9	0	0.1%	0.0%
76	A164, B1233 to Castle Road	Low	36,649	1,458	1,356	1,097	616	490	3.7%	75.2%
77	A164, Castle Road to B1232	Low	36,649	1,458	1,465	1,097	707	490	4.0%	75.2%
78	A164 south of B1232	Low	19,466	1,043	1,460	1,097	666	490	7.5%	105.2%
79	A164 south of B1231	Low	19,466	1,043	1,455	1,097	664	490	7.5%	105.2%
80	A15 Boothferry Road	Low	30,551	2,424	1,097	1,097	490	490	3.6%	45.3%
81	A63 west of A15	Low	56,817	7,367	1,097	1,097	490	490	1.9%	14.9%
82	A63 Clive Sullivan Way	Low	72,675	7,610	1,097	1,097	490	490	1.5%	14.4%
83	A15 Humber Bridge	Low	26,573	1,962	347	0	169	0	1.3%	0.0%
84	A614 north of Driffield	High	12,274	642	102	0	50	0	0.8%	0.0%
85	Bridlington Bay Road, A614 to A165	Low	9,167	811	48	0	24	0	0.5%	0.0%
86	A614 east of Driffield	Low	13,311	1,006	218	103	105	50	1.6%	10.3%
87	A1079 through Bishop Burton	High	11,681	767	302	0	147	0	2.6%	0.0%
88	B1233 Harland Way / Northgate	High	12,932	151	297	3	144	1	2.3%	1.8%
89	Park Lane	High	1,254	24	297	3	144	1	23.7%	11.3%
90	B1230 through Walkington	High	3,291	75	368	0	368	0	11.2%	0.0%

Notes

* Links where no baseline HGV movements are recorded so the addition of HGV traffic results in an infinite percentage increase

Links screened out of assessment, below GEART screening thresholds

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

7.11.1.9 The GEART screening thresholds do not apply to this effect as the potential impact is defined as significant when the highway network surrounding the development under consideration is at or close to capacity.

Magnitude of impact

The most sensitive time for driver delay would be if the daytime construction shift starts/ finishes at the same time as the morning or evening network peak. During these periods, construction employees would be arriving or departing their place of work and HGVs would be commencing/ returning from making deliveries. To assess if this has the potential for significant impacts the traffic generation associated with all construction employees departing work and peak hourly HGV demand (daily HGV demand profiled across ten hours) has been considered.

7.11.1.10 This peak hour demand has been assigned to the junctions identified as potentially being susceptible to increases in traffic flow by the ERYC. **Table 7.18** details the resultant traffic flows arriving at the junctions during a peak hour. **Table 7.18** also includes details of background traffic flows on the main road and the associated percentage change in total traffic flows.

Table 7.18: Peak hour construction traffic flows through sensitive junctions.

Junction notation	Location	Peak hour background flows		Peak, peak hour construction vehicle movements (HGVs)	Percentage increase
		am peak	pm peak		
Junction 1	Junction of the A165 and unnamed road to the village of Fraisthorpe	930	937	104 (15)	11%
Junction 2	Junction of the A165 / B1249 at Beeford	704	805	221 (37)	27%
Junction 3	Junction of the A1079 / A1174 west of Beverley	1,725	1,742	233 (49)	13%
Junction 4	Junction of the B1230 and Copleflat Lane to the east of Walkington	470	516	186 (2)	36%
Junction 5	A164 / A1079 (Jocks Lodge)	2,625	2,789	288 (104)	10%
Junction 6	Junction of the A164, Main St and Harland Way	2,712	2,863	279 (110)	10%
Junction 7	Junction of the A164 and Castle Road	2,712	2,863	218 (110)	8%
Junction 8	Junction of the A164 and Willerby Court	2,712	2,863	218 (110)	8%
Junction 9	Junction of the A164, Albion Ln and the B1232	2,712	2,863	218 (110)	8%
Junction 10	Junction of the A164, Tranby Ln and B1231	1,441	1,521	198 (110)	13%
Junction 11	Junction of the A164, A15 and A1105	2,261	2,387	197 (110)	8%

7.11.1.11 The peak increase in total flows through the sensitive junctions is between 104 and 288 vehicle movements per hour. The impact is predicted to be of regional spatial extent, medium term duration, continuous and fully reversible. It is predicted that the impact will affect the receptor directly. It is considered that the forecast increase in all vehicle movements through the sensitive junctions could be significant in the context of the existing traffic levels, the magnitude of effect is therefore, considered to be **moderate**.

Sensitivity of the receptor

7.11.1.12 Each of the 11 junctions has been identified by ERYC as potentially sensitive to changes in traffic. The sensitivity of the 11 junctions are therefore considered to be **high**.

Significance of the effect

7.11.1.13 Overall, based upon the junction throughput presented ([Table 7.18](#)) it is predicted that the sensitivity of the junctions is **high**, and the magnitude is initially assessed as **moderate**. The effect is of **moderate adverse** significance, which is significant in EIA terms.

7.11.1.14 As agreed at the second Human Environment Technical Panel on the 1 May 2019, further detailed junction modelling will be undertaken to establish the capacity of the existing junctions to accommodate Hornsea Four's traffic, and therefore refine the magnitude of change assessment and mitigate accordingly. This detailed assessment will be presented within the Environmental Statement that accompanies the DCO submission.

Further mitigation

7.11.1.15 Where detailed modelling indicates that significant effects could be experienced, further mitigation measures would be proposed to ensure that the residual effect is not significant in EIA terms. These mitigation measures, if deemed necessary and appropriate will be adopted by Hornsea Four as a Commitment within the register in [Volume 4, Annex 5.2](#), and included in the outline CTMP (Co144). These potential mitigation measures could include:

- Junction capacity improvements, e.g. junction widening, provision of traffic signals, etc;
- Travel planning for employees, e.g. promoting car-sharing; or
- Committing to limiting Hornsea Four's traffic movements during network peak hours.

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

7.11.1.16 The GEART screening thresholds do not apply to this effect as the potential impact is defined as significant when the highway network is of substandard width to prevent two HGVs from passing.

Magnitude of impact

7.11.1.17 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 5.5m wide).

7.11.1.18 **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
		LCVs	HGVs		
2	Single lane road, no passing places ~3m wide	98	12	The existing road is not wide enough for two vehicles to pass and no passing places are provided.	Major
3		94	15		
10, 16	Single lane road, informal passing places ~4m wide	184	2	The existing road incorporates informal passing places to allow LCVs to pass. However, the passing places would not allow two HGVs to pass.	Moderate
15	Narrow two lane with pinch points ~5m wide	184	0	The existing road is generally wide enough for two LCVs to pass and no HGVs are proposed to travel via this link.	Negligible
17	Narrow two lane with pinch points ~5m wide	49	2	The existing road is generally wide enough for two LCVs to pass. However, two HGVs meeting may experience difficulty attempting to pass each other.	Moderate
18	Single lane road, informal passing places ~4m wide			The existing road incorporates passing places to allow LCVs to pass. However, the passing places would not allow two HGVs to pass.	Moderate
19	Single lane road, no passing places ~3m wide			The existing road is not wide enough for two vehicles to pass and no passing places are provided.	Major
25	Single lane road, formal and informal	49	2	The existing road incorporates passing places to allow LCVs 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
		LCVs	HGVs		
	passing places ~4m wide				
32	Narrow two lane with pinch points ~5m wide	49	5	The existing road is generally wide enough for two LCVs to pass. However, two HGVs meeting may experience difficulty attempting to pass each other.	Moderate
33	Single lane road, formal passing places ~3m wide	49	5	The existing road incorporates passing places to allow two LCVs to pass. However, the passing places would not allow two HGVs to pass.	Moderate
34	Single lane road, formal passing places ~4m wide	49	5		Moderate
38	Single lane road, no passing places ~3m 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 ~3m wide	49	1		Major
42	Single lane road, formal passing places ~4m wide	49	3	The existing road incorporates passing places to allow two LCVs to pass. However, the passing places would not allow two HGVs to pass.	Moderate
89	Single lane road, formal passing places ~4m wide	147	1	The existing road incorporates passing places to allow LCVs and HGVs to pass.	Negligible

Sensitivity of the receptor

7.11.1.19 Each of the 16 links has been identified as being of substandard width. The sensitivity of the links is therefore, considered to be **high**.

Significance of the effect

7.11.1.20 **Table 7.20** provides a summary of the sensitivity of each receptor, the magnitude of impact and overall significant 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
2, 3	Major	High	Major Adverse	An increase of up to 15 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		Not Significant	No HGVs are forecast to travel along this link.	Not significant
17	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
18	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
19	Major		Major 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
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 five 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 five 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 five 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	Major Adverse	An increase of one 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	

Link	Magnitude	Sensitivity	Significance	Rationale for significance	Significant in EIA terms
40	Major		Major Adverse	An increase of one 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 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
89	Negligible		Not Significant	An increase of one HGV per hour attempting to travel via a road of substandard width could occasionally lead to conflict between HGVs attempting to pass each other. However, passing places are currently provided that allow a HGV to pass an oncoming vehicle.	Not significant

Further mitigation (Driver delay - Local roads)

7.11.1.21 **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 would however 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
2 3	Potential to widen the existing junction of link 2, if deemed necessary, with the A165 to allow two HGV to pass and provide new passing places along links 2 and 3 to allow LCVs and HGVs to pass.
17, 32	Two LCVs can currently pass along these links, 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.
10, 16, 18	Two LCVs can only pass through the use of informal passing places; therefore, the existing passing places could be formalised. An escort vehicle could be used to guide HGVs along the link.
19, 38, 40	New passing places could be provided to allow LCVs to pass, if deemed necessary. An escort vehicle could be used to guide HGVs along the link.
25, 33, 34, 42	Two LCVs can pass using passing places, therefore, an escort vehicle could be used to guide HGVs along the link

Notes

Mitigation measures that require works outside of the Hornsea Four redline boundary have not been detailed at this point of the application. The requirements for additional areas of the existing highway network to be included within the Hornsea Four redline boundary will be agreed through consultation with relevant stakeholders.

7.11.1.22 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 **negligible**. The residual effect is therefore not significant in EIA terms.

Severance (TT-C-6)

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

Magnitude of impact

7.11.1.24 **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
10, 16, 38, 40	Local	The peak daily change in total traffic flow is greater than 90%	Major
2, 3, 14, 15,	Local	The peak daily change in total traffic flow is between 60 and 90%	Moderate
17, 18, 19, 34, 35, 42	Local	The peak daily change in total traffic flow is between 30 and 60%	Minor
5, 6, 7, 8, 26, 37, 39, 41, 44, 45, 51 – 55, 60, 62 – 64, 66, 67, 70 – 73, 76 - 80	Regional	The peak daily change in total traffic flow is less than 30%	Negligible
9, 11, 12, 13, 20 – 25, 30, 32, 33, 43, 47, 49, 56, 57, 61, 89, 90	Local		

Sensitivity of the receptor

7.11.1.25 The sensitivity of each highway link is detailed in **Table 7.17** and **Figure 7.12**.

Significance of the effect

7.11.1.26 **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 impacts.

Link	Magnitude	Sensitivity	Significance	Rationale for significance	Significant in EIA terms
10, 16, 38, 40	Major	Low	Minor Adverse	The sensitivity of 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
2, 3, 14	Moderate	Low	Minor Adverse	The sensitivity of 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
15	Moderate	High	Moderate Adverse	The sensitivity of link is assessed as high noting that there are a number of residential properties along this link and that the link also lacks footways along its full length and where footways are provided they tend to be narrow.	Significant
17, 18, 19	Minor	High	Moderate Adverse	Link 17 has a primary school located on it and there are no footway links to Gembling suggesting there is the potential for residents and children to have to walk along the road.	Significant
34		Medium	Minor Adverse	The sensitivity of links 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
35, 42		Low	Not Significant	The sensitivity of links is assessed as low sensitivity noting that there is no or sporadic development along these links and no footways suggesting there would be limited pedestrian activity.	Not significant
5 – 9, 11 – 13, 20 – 26, 30, 32, 33, 37, 39, 41, 43 – 45, 47, 49, 51 – 57, 60 – 64, 66, 67, 70 – 73, 76 – 80, 89, 90	Negligible	Low – High	Not Significant	The sensitivity of links varies between low and high, however, the magnitude of change would be negligible.	Not significant

Further mitigation

7.11.1.27 The following further mitigation measures would be applied to reduce the potentially significant severance impacts upon link 15. Link 15 comprises of the Sheepdike Lane through the community of Foston on the Wolds and is identified as a highly sensitive receptor as the village has a number of sections where there are no footways or very narrow footways. **Table 7.17** identifies that there could be an additional 368 LCV movements through the village associated with construction workers travelling to the accesses 6, 7, 8 and 9 (equivalent to 184 arrivals in the morning and 184 departures in the evening).

7.11.1.28 To reduce the impacts of LCV movements through Foston on the Wolds it would be proposed to reduce overall employee movements. This could be achieved through a range of measures. These measures would be agreed with the ERYC through the development of the CTMP prior to the commencement of relevant works and could include:

- Requiring all employees drive to a compound/ park and ride site before being transferred by minibus/ crewcab direct to accesses 6, 7, 8 and 9; and
- Reducing employee vehicle numbers through the promotion of carsharing and minibuses to intercept employees.

7.11.1.29 It is assumed that the mitigations measures could reduce the numbers of vehicles by a factor of four (i.e. an average of four people per vehicle) and the resultant number of LCV movements through Foston on the Wolds could be reduced to 92 two-way LCV movements per day (equivalent to 46 arrivals in the morning and 46 departures in the evening). The addition of 92 two-way movements represents an increase in total traffic of 17%, less than the 30% threshold whereby GEART suggests negative impacts may be experienced.

7.11.1.30 With the further mitigation in place overall it is predicted that the sensitivity of link 15 would remain **high** but that the magnitude would be reduced to **negligible**. The residual effect is therefore not significant in EIA terms.

7.11.1.31 A similar mitigation strategy to that proposed for link 15 could also be applied to links 17, 18 and 19. Assuming a similar conservative assumption of four employees per vehicle, the number of LCV movements would be reduced from 98 to 25 two-way LCV movements per day (equivalent to 12 arrivals in the morning and 12 departures in the evening). The addition of 25 two-way movements represents an increase in total traffic of 8%, less than the 30% threshold whereby GEART suggests negative impacts may be experienced.

7.11.1.32 In addition, noting that a primary school is located along link 17 all HGV movements along links 17, 18 and 19 would be scheduled to occur outside of school start and finish times.

7.11.1.33 With the further mitigation in place overall it is predicted that the sensitivity of links 17, 18 and 19 would remain **high** but that the magnitude would be reduced to **negligible**. The residual effect is therefore not significant in EIA terms.

Pedestrian Amenity (TT-C-7)

7.11.1.34 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

7.11.1.35 **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
17, 18, 19 10, 16, 38, 40	Minor	The peak daily change in total traffic flow or HGV component is greater than 100%, however, Table 7.17 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.
25, 30, 32 34 14, 33, 35, 42, 43, 47, 56, 61	Moderate	The peak daily change in total traffic flow or HGV component is greater than 100%, Table 7.17 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.
9, 12, 22, 24 13, 23 2, 3, 11, 20, 21, 44, 78, 79	Major	The peak daily change in total traffic flow or HGV component is greater than 100% and Table 7.17 details that the peak increase HGV traffic along these links would be greater than 100 two-way HGV movements per day, equivalent to five deliveries per hour.
8, 15, 26, 39, 45, 64, 70, 89, 90 5, 6, 7, 8, 15, 37, 41, 49, 51 – 55, 57, 60, 62 – 63, 66, 67, 71 – 73, 76, 77, 80	Negligible	The peak daily change in total traffic flow or HGV component is less than 100%

Sensitivity of the receptor

7.11.1.36 The sensitivity of each highway link is detailed in **Table 7.17** and **Figure 7.12**.

Significance of the effect

7.11.1.37 **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 impacts.

Link	Magnitude	Sensitivity	Significance	Rationale for significance	Significant in EIA terms?
17, 18, 19	Minor	High	Minor Adverse	The Hornsea Four construction traffic travelling via links 17, 18 and 19 would be utilising access 5 to the south of the Hamlet of Gembling. Link 17 has a primary school located on it and there are no footway links to Gembling suggesting there is the potential for residents and children to have to walk along the road. However, mitigation for severance and driver delay proposes avoiding school start and finish times and escorting all HGVs along these links, as such, considering the proposed mitigation measures, and low overall HGV numbers it is assessed that effect upon pedestrian amenity is of minor adverse significance.	Not significant
10, 16, 38, 40		Low	Not Significant	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	Moderate	High	Moderate Adverse	The hamlet of Brigham is located along the link, no footways are provided to link properties. Noting the concentrations of sensitive receptors, the significance is considered to be moderate.	Significant
30			Major Adverse	There are a number of high sensitive receptors located along this link including a school, shops, play area, railway station and residential properties. National cycle route 1 also travel on road along the link. Noting the concentration of sensitive receptors, the significance is considered to be moderate.	Significant
32			Moderate Adverse	Unclassified road with sporadic frontage development. However, part of the link forms an on-road section of National cycle route 1. Noting the concentrations of sensitive receptors, the significance is considered to be moderate.	Significant
34			Medium	Moderate Adverse	The sensitivity of links is assessed as medium noting that there is only sporadic frontage development along the link and whilst there

Link	Magnitude	Sensitivity	Significance	Rationale for significance	Significant in EIA terms?
				is a small hamlet with a church, these receptors are linked by a footway.	
14, 33, 35, 42, 43, 47, 56, 61		Low	Minor 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
9, 12, 22, 24	Major	High	Major Adverse	It is considered that a major change in traffic flows upon receptors of high sensitivity could lead to major adverse effects.	Significant
13		Medium	Moderate Adverse	There a number of properties along the link as well as a Church with narrow footway to the front. It is considered that a major change in traffic flow could have a moderate adverse effect upon the users of this link.	Significant
23			Moderate Adverse	The link is 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. It is considered that a major change in traffic flow could have a moderate adverse effect upon the users of this link.	Significant
2, 3, 11, 20, 21, 44, 78, 79		Low	Minor 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
15, 26, 39, 45, 70, 89, 90	Negligible	High	Not Significant	The sensitivity of links is assessed as high however the magnitude of change would be negligible.	Not significant
8, 64		Medium	Not Significant	The sensitivity of links is assessed as medium however the magnitude of change would be negligible.	Not significant
5, 6, 7, 15, 37, 41, 49, 51 – 55, 57, 60, 62 – 63, 66, 67, 71 – 73, 76, 77, 80		Low	Not Significant	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

Further mitigation

- 7.11.1.38 Significant effects associated with an increase in construction traffic upon links 9, 12, 13, 22, 23, 24, 25, 30, 32 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.
- 7.11.1.39 Links 9, 12 and 13 form a route to serve accesses 6, 7, 8 and 9 from the A165 via Beeford, North Frodingham and Church End. A second route to serve these accesses has also been assessed and this comprises of links 22, 23 and 24 and would head south on the B1249 from the A614 via Driffield and Wansford. Until a supply chain is established it is not possible to identify which route would be used, as such, a worst-case peak of 103 two-way HGV movements per day has been assigned to each route.
- 7.11.1.40 The traffic derivation (contained in [Volume 6, Annex 7.1: Traffic and Transport Technical Report](#)) assumes that construction activities occur simultaneously at access 6, 7, 8 and 9. In total of the 103 two-way HGV movements, 36 are forecast to travel to and from access 6, seven from access 7, 39 from access 8 and 21 from access 9. It would therefore be proposed that the option would be explored for construction works for these sections to potentially be staggered to avoid an overlap of construction activities, this could therefore reduce the peak two-way HGV movements from 103 to 39.
- 7.11.1.41 In addition, noting that schools are located on links 9 and 24 all movements along these links would be scheduled to occur outside of school start and finish times. With the further mitigation in place overall it is predicted that the sensitivity of links 9, 12, 13, 22, 23 and 24 would remain unchanged at **medium to high** but that the magnitude would be reduced to **minor**. The residual effect is therefore of **minor adverse** significance, which is not significant in EIA terms.
- 7.11.1.42 Links 30 and 32 form a route to serve access 10 via Hutton Cranswick from the A164. In total it is forecasted that up to 46 two-way HGV movements would pass along these links. [Table 7.19](#) (within the driver delay assessment) identifies that link 32 is not wide enough for two vehicles to pass and as such it is proposed that all deliveries could be escorted via this link. To reduce the potential impacts upon pedestrian amenity, mitigation measures will be explored before the DCO submission. An example may comprise all deliveries to access 10 being suspended during school start and finish times, furthermore, as loads could be escorted, drivers could be required to travel at no more than 20 mph. In addition, where no footway exists, and HGVs are passing pedestrians and cyclists in the road, the escort vehicle would stop the HGV as the pedestrian/ cyclist passes.

7.11.1.43 With the further mitigation in place overall it is predicted that the sensitivity of links 30 and 32 would remain **high** but that the magnitude would be reduced to **minor**. The residual effect is therefore considered to be **minor adverse** significance, which is not significant in EIA terms.

7.11.1.44 Links 25 forms a route to serve access 9 via Brigham. In total it is forecast that up to 21 two-way HGV movements would pass along this link. **Table 7.19** (within the driver delay assessment) identifies that link 25 is not wide enough for two vehicles to pass and as such it is proposed that all deliveries could be escorted along this link. To reduce the potential impacts upon pedestrian amenity, mitigation measures would be explored. This could include all deliveries being escorted, drivers required to travel at no more than 20 mph and when passing pedestrians or cyclists in the road, the escort vehicle would stop the HGV as the pedestrian/ cyclist passes.

7.11.1.45 With the further mitigation in place overall it is predicted that the sensitivity of link 25 would remain **high** but that the magnitude is reduced to **minor**. The residual effect is therefore considered to be **minor adverse** significance, which is not significant in EIA terms.

7.11.1.46 Links 34 forms a route to serve access 11 to the east of Watton. In total it is forecasted that up to 50 two-way HGV movements would pass along this link. **Table 7.19** within the driver delay assessment identifies that link 50 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 and therefore a similar mitigation strategy to that proposed for link 25 would be employed for traffic travelling to access 11.

7.11.1.47 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 **minor adverse** significance, which is not significant in EIA terms.

Accidents and Road Safety (TT-C-8)

Magnitude of impact

7.11.1.48 **Table 7.26** provides a summary of links with a collision 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 2023. 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 (Link 24)	1.9%	113.0%	It is considered that the change in HGV traffic of up to 113.0% (equivalent to 1,032 two-way HGV movements per day) could lead to significant effects. However, potential mitigation for pedestrian amenity impacts to reduce HGV movements (outlined in Section 7.11.1) would reduce the peak number of HGV movements via link 24 from 103 to 39. In addition, the further mitigation for pedestrian amenity impacts includes a commitment to scheduling deliveries outside of school start and finish times. The mitigation for pedestrian amenity therefore reduces the percentage increase in HGV traffic from 113% to 42%. A change in HGV traffic up to 42% is considered to result in a moderate magnitude of change.
Miles Lane (Link 48 and 49)	9.7%	69.9%	It is considered that the change in HGV traffic of up to 69.9% could be of moderate significance.
B1248 (Link 50)	2.8%	4.3%	It is considered that a peak change of 2.8% in total traffic and 4.3% in HGV traffic represents a negligible magnitude of change.
A1035 (Link 53)	4.7%	37.8%	It is considered that the change in HGV traffic of up to 37.8% could be of moderate significance.
Killingwoldgraves Lane / Copleflat Lane (Links 57, 58, 59 and 61)	14.1%	227.0%	It is considered that the change in HGV traffic of up to 227.0% could be of major significance.
Main Street / Froddingham Road (Link 65)	0.0%	0.0%	No Hornsea Four construction traffic is projected to travel via link 65, therefore link 65 is not considered further in the assessment of Accidents and Road Safety.
A15 (Link 80)	3.6%	45.3%	It is considered that the change in HGV traffic of up to 45.3% could be of moderate significance.
Brdlington Bay Road (Link 85)	0.5%	0.0%	It is considered that a peak change of 0.5% in total traffic represents a negligible magnitude of change.

Sensitive Link	Percentage increase		Rationale for Magnitude
	All vehicles	HGVs	
A1079 (Link 87)	2.6%	0.0%	It is considered that a peak change of 2.6% in total traffic represents a negligible magnitude of change.

Sensitivity of the receptor

7.11.1.49 Each of the nine 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

7.11.1.50 Overall, it is predicted that the sensitivity of links 50, 85 and 87 is high and the magnitude is negligible. The effect is therefore not significant in EIA terms.

7.11.1.51 The magnitude of effect for link 24, 48, 49, 53, 58, 59, 61, 80 and 87 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.

Link 24 – B1249

7.11.1.52 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 latest 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.

7.11.1.53 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 user, four involved turning vehicles and cyclists at priority junctions and two involved pedestrians on the main carriageway.

7.11.1.54 It is also noted that the five collisions involving only cars occurred within proximity of priority junctions. Whilst the collisions are not at a specific location, a pattern of collisions along the B1249 within proximity of its priority junctions is identified.

7.11.1.55 No construction traffic is projected to turn from the on to or off the B1249. This routing strategy would be secured through controls and measures (such as direction signing and delivery instructions) embedded within the outline CTMP (Co144).

7.11.1.56 It is therefore considered that an increase in total traffic of 1.9% through these junctions represents a negligible magnitude of effect on a high sensitive receptor. The effect is therefore **not significant** in EIA terms.

Link 48 and 49 – Miles Lane

7.11.1.57 Link 48 and 49 (Miles Lane) is identified as having a collision rate above the national average for comparable roads. A review of the collisions has identified that within the latest 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 link.

7.11.1.58 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 within the vicinity a bend near the junction of Miles Lane and Bygot Wood. A pattern of loss of control collisions is therefore identified.

7.11.1.59 Southwest of Miles Lane, a total of 10 collisions were identified at its crossroad junction with the B1248. 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.

7.11.1.60 Construction traffic travelling via links 48 and 49 would be associated with vehicles accessing, access 18. Access 18 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 9.3%. It is therefore considered that an increase in total traffic of 9.3% through this bend represents a negligible magnitude of effect on a high sensitive receptor. The effect is therefore not significant in EIA terms.

7.11.1.61 Southwest of Miles Lane, a total of 10 collisions were identified at its crossroad junction with the B1248. 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.

7.11.1.62 It is considered that an increase in HGV traffic of up to 69.9% tuning through this junction represents a moderate magnitude of effect on a high sensitive receptor. The effect is of **moderate adverse** significance, which is significant in EIA terms.

Link 53 – A1035

7.11.1.63 Link 53 (the A1035 Dog Kennel Lane) is 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 13 collisions of which, 11 were classified as slight, one serious and one fatal.

7.11.1.64 A fatal collision occurred in December 2016 when a car travelling southbound crossed the carriageway in to the path of an upcoming HGV travelling northbound resulting in a head-on collision.

7.11.1.65 Along the A1035, five collisions occurred within proximity of the roundabout of the A1079, A1035 and A1174, three collisions occurred within proximity of the staggered junctions at Dog Kennel Lane and the other collisions are spread along the link.

7.11.1.66 Of the five collisions around the A1079, A1035 and A1174 roundabout, three were rear end shunt type collisions and two were collisions between vehicles on the roundabout carriageway. The three collisions within proximity of Dog Kennel Lane include two rear end shunt type collisions and a loss of control collision. A pattern of rear end shunt type collisions are identified.

7.11.1.67 Traffic flows along link 53 are forecast to increase by up to 4.7% and HGV flows by 37.8%. Whilst a pattern of rear end shunt type collisions are identified, these types of collisions would not be impacted by vehicle composition and therefore it is more appropriate to focus on total changes in total traffic rather than changes in HGVs.

7.11.1.68 It is considered that an increase in total traffic of 4.7% along link 53 represents a negligible magnitude of effect on a high sensitive receptor. The effect is therefore **not significant** in EIA terms.

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

7.11.1.69 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 latest five-year study period there have been 15 collisions, of which, eight were classified as slight and seven serious.

7.11.1.70 Along the link, six collisions occurred within 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 proximity of the settlement of Bentley.

7.11.1.71 Of the six collisions at the crossroad junction with Newbald Road and Walkington Heads, five were collisions involving vehicles pulling onto the path of oncoming vehicles on the main carriageway and one was due to a vehicle veering into the lane of oncoming traffic. 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 on the main carriageway.

7.11.1.72 There is no similarity between the types of collisions that occurred within proximity of the crossroad junction with Broadgate and East End. A pattern of collisions involving vehicles pulling onto the path of oncoming vehicles on the minor road is identified around the crossroad junction with Newbald Road and Walkington Heads.

7.11.1.73 It is considered that an increase in HGV traffic of up to 227% tuning through this junction represents a major magnitude of effect on a high sensitive receptor. The effect is of **major adverse** significance, which is significant in EIA terms.

Link 80 – A15

7.11.1.74 Link 80 (the A15) is identified as having a collision rate above the national average for comparable roads. A review of the collisions has identified that within the latest five-year study period there have been 25 collisions, of which, 23 were classified as slight and two serious.

7.11.1.75 Of the 25 collisions recorded, nine occurred within proximity of the roundabout junction of Boothferry Road and Ferriby Road and six occurred within proximity of the roundabout with the A164, Boothferry Road and the A15 Humber Bridge. The remaining collisions are spread out across the link and show no pattern.

7.11.1.76 The nine collisions within proximity of the roundabout with Ferriby Road included six collisions between vehicles on the carriageway of the roundabout, two collisions involving vehicles changing lanes when exiting the roundabout and one rear end shunt type collision on the approach to the roundabout. A pattern of collisions between turning vehicles occurring on the carriageway of the Ferriby road roundabout is identified.

7.11.1.77 The six collisions within proximity of the A164 roundabout comprised of five rear end shunt type collisions and one collision due to an animal on the carriageway. A pattern of rear end shunt type collisions occurring on the approach to the A164 roundabout is also identified.

7.11.1.78 Traffic flows along link 80 are forecast to increase by up to 3.6% and HGV flows by 45.3%. Whilst a pattern of rear end shunt and collisions between turning vehicles are identified, these types of collisions would not be impacted by vehicle composition and therefore it is more appropriate to focus on total changes in total traffic rather than changes in HGVs.

7.11.1.79 It is considered that an increase in total traffic of 3.6% along link 80 represents a negligible magnitude of effect on a high sensitive receptor. The effect is therefore **not significant** in EIA terms.

Further mitigation

- 7.11.1.80 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.
- 7.11.1.81 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 commencement of relevant works.
- 7.11.1.82 To reduce the impacts of HGV movements through these it is proposed that a temporary reduction in the existing speed limit could be applied to reduce the speed on all approaches to 30mph. This could be supported by temporary warning signs to advise of turning HGV traffic. In addition, for the duration of the construction phase the Contractor could be required to ensure that existing verges and hedges are well maintained to ensure forward visibility is maintained.
- 7.11.1.83 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.
- 7.11.1.84 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 **minor adverse** significance, which is not significant in EIA terms.
- 7.11.1.85 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.
- 7.11.1.86 Four access design concepts have been developed for Hornsea Four and are detailed within [Volume 6, Annex 7.1: Traffic and Transport Technical Report](#).
- 7.11.1.87 The access outline concepts presented within [Volume 6, Annex 7.1: Traffic and Transport Technical Report](#) will be updated to more detailed location specific layouts to accompany the DCO submission and would also be supported by a Stage 1 Road Safety Audit.
- 7.11.1.88 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.

This signage will encourage drivers to slow in the knowledge that there is a hazard ahead, such as the potential for turning vehicles.

7.11.1.89 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 **minor adverse** significance, which is not significant in EIA terms.

Future monitoring

7.11.1.90 An outline CTMP (as part of the outline CoCP ([Volume F2, Chapter 2](#))) will be submitted in support of the DCO application for Hornsea Four.

7.11.1.91 The outline CTMP would contain a commitment to monitoring and enforcement measures to ensure the project's HGV and employee traffic is within the bounds of the MDS impacts assessed.

7.11.1.92 A final CTMP which accords with the outline CTMP would be submitted to and approved by the ERYC 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 7.10](#).

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 7.10](#).

7.12 Cumulative effect assessment (CEA) (TT-C-12)

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

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 4, Annex 5.5: Onshore Cumulative Effects](#). The full list of projects to be considered within the CEA can be found in [Appendix A](#) of [Volume 4, Annex 5.5](#) and shown in and [Annex 5.6: Location of Onshore Cumulative Schemes](#).

7.12.1.3 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. These discussions identified that of the projects listed within [Appendix A](#) of [Volume 4, Annex 5.5](#) 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.

7.12.1.4 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 7.7.5](#)). The cumulative effect of housing and employment projects is therefore inherent in the traffic and transport impact assessment.

7.12.1.5 The A164/ Jocks Lodge junction improvement scheme is being developed by the ERYC and the current preferred option is based upon providing a new grade separated two bridge roundabout at Jocks Lodge junction and maximum dualling of the A164 between Victoria Road roundabout and Castle Hill roundabout. It is currently expected that construction would commence in 2020 and be complete by 2022/23.

7.12.1.6 The A63 Castle Street highway improvements is being developed by Highways England and would create a new junction by lowering the level of the A63 at Mytongate junction. Ferensway and Commercial Road would cross the A63 creating a split-level junction and between Princes Dock Street and Market Place the eastbound carriageway would be widened to three lanes. It is currently expected that construction would commence in 2020 and be complete by 2024/25.

7.12.1.7 Once the construction of both highway improvement schemes is complete, there would be improvements to highway capacity and safety, as such the potential for cumulative impacts with Hornsea Four would be during the construction phase only.

7.12.1.8 At the time of writing, the level of information provided by the ERYC and Highways England in relation to construction impacts would not be sufficient to undertake a full CIA. However, Hornsea Four is committed to working closely with the ERYC and Highways England to assess potential cumulative impacts once further data becomes available. This approach complies with the EIA Regulations and is consistent with that taken for other applications, where relevant environmental information has become available after the point of the DCO application submission.

7.13 Transboundary effects

7.13.1.1 A screening of transboundary impacts was undertaken and presented in Appendix K of the EIA Scoping Report (Ørsted, 2018). Any impacts on the traffic and transport arising from the construction, operation and maintenance and decommissioning of Hornsea Four will be confined to a localised area of the UK road infrastructure. There is no pathway by which direct or indirect effects arising from Hornsea Four could significantly affect traffic and transport in another member state.

7.13.1.2 As such, the 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 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 7.27](#). 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 [Volume 1 Chapter 5: EIA Methodology](#). The basis for the identification of receptor led effects is the inter-related effects screening report supplied as Annex J to the Hornsea Four Scoping Report (Ørsted, 2018). Where necessary this has been updated in line with project details now available.

7.14.1.3 [Table 7.27](#) presents a summary of the potential inter-related effects that could arise in relation to traffic and transport. [Table 7.27](#) identifies that there would be no Project-lifetime effects and that that receptor led effects would not be significant.

Table 7.27: 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 scoped out of the assessment and therefore Project-lifetime effects are not considered further.			
<i>Receptor-led effects</i>			
Construction	Impact of construction traffic upon tourism activity	Volume 3, 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.	
Construction	Impact of construction	The forecast construction traffic numbers contained within this chapter have been used to inform an assessment of the traffic borne noise	

Project phase(s)	Nature of inter-related effect	Assessment alone	Inter-related effects assessment
	traffic noise upon roadside receptors	impacts contained within Volume 3, Chapter 8: Noise and Vibration . No significant residual noise and vibration effects have been identified.	
Construction	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 Volume 3, Chapter 9: Air Quality . No significant residual air quality effects have been identified.	

7.15 Conclusion and summary

7.15.1.1 This chapter of the PEIR has assessed the potential impact of the onshore development of Hornsea Four on traffic and transport. [Table 7.28](#) presents a summary of the significant impacts assessed within this PEIR, any mitigation and the residual effects.

Table 7.28 Summary of potential impacts assessed for Traffic and Transport.

Impact and Phase	Receptor and value/sensitivity	Magnitude and significance			Mitigation	Residual impact
<i>Construction</i>						
Driver Delay (Capacity) (TT-C-2, TT-C-3, TT-C-4)	Junctions 1 to 11 – High	Magnitude	Significance		Potential mitigation measures for driver delay effects could include: <ul style="list-style-type: none"> Junction capacity improvements; Travel planning for employees; or Committing to avoiding or limiting Hornsea Four’s traffic movements during network peak hours. 	Minor Adverse
		Moderate	Moderate Adverse			
Driver Delay (Local roads) (TT-C-4, TT-C-5)	Links 2, 3, 10, 16, 15 - 19, 25, 32 - 34, 38, 40, 42, 89 – High	Link ID	Magnitude	Significance	Potential mitigation measures for driver delay effects could include: <ul style="list-style-type: none"> Junction widening; Provision of new passing places; Formalisation or widening of existing passing places; and Use of an escort vehicle. 	Minor Adverse
		Link 2, 3	Major	Major Adverse		
		Link 10, 16	Moderate	Moderate Adverse		
		Link 15	Negligible	Not Significant		
		Link 17	Moderate	Moderate Adverse		
		Link 18	Moderate	Moderate Adverse		
		Link 19	Major	Major Adverse		
		Link 25	Moderate	Moderate Adverse		
		Link 32	Moderate	Moderate Adverse		
		Link 33	Moderate	Moderate Adverse		
		Link 34	Moderate	Moderate Adverse		
		Link 38	Major	Major Adverse		
		Link 40	Major	Major Adverse		
Link 42	Moderate	Moderate Adverse				
Link 89	Negligible	Not Significant				
Severance (TT-C-6)		Link ID	Magnitude	Significance		

Impact and Phase	Receptor and value/sensitivity	Magnitude and significance			Mitigation	Residual impact
	All screened links – Minor to High	10, 16, 38, 40	Major	Minor Adverse	Potential mitigation measures for severance effects could include: <ul style="list-style-type: none"> Reducing Hornsea Four’s traffic movements through measures such as car-sharing and park and rides; and Avoiding traffic movements during school start and finish times. 	Minor Adverse
		2, 3, 14	Moderate	Minor Adverse		
		15	Moderate	Moderate Adverse		
		17, 18, 19	Minor	Moderate Adverse		
		34	Minor	Minor Adverse		
		35, 42	Minor	Not Significant		
		5 – 9, 11 – 13, 20 – 26, 30, 32, 33, 37, 39, 41, 43 – 45, 47, 49, 51 – 57, 60 – 64, 66, 67, 70 – 73, 76 – 80, 89, 90	Negligible	Not Significant		
Pedestrian Amenity (TT-C-7)	All screened links – Minor to High	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 traffic movements through measures such as scheduling of construction activities. 	Minor Adverse
		17, 18, 19	Minor	Minor Adverse		
		10, 16, 38, 40		Not Significant		
		25	Moderate	Moderate Adverse		
		30		Major Adverse		
		32		Moderate Adverse		
		34		Moderate Adverse		
		14, 33, 35, 42, 43, 47, 56, 61	Major	Minor Adverse		
		9, 12, 22, 24		Major Adverse		
		13, 23		Moderate Adverse		
		2, 3, 11, 20, 21, 44, 78, 79	Negligible	Minor Adverse		
		8, 64		Not Significant		
		5, 6, 7, 15, 37, 41, 49, 51 – 55, 57, 60, 62 – 63, 66, 67, 71 – 73, 76, 77, 80		Not Significant		
Accidents and Road Safety (TT-C-8)		Magnitude	Significance		n/a	Not Significant
	B1249 (Link 24) / High	Negligible	Not Significant			

Impact and Phase	Receptor and value/sensitivity	Magnitude and significance		Mitigation	Residual impact
	Miles Lane (Link 48 and 49) / High	Moderate	Moderate Adverse	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. 	Minor Adverse
	B1248 (Link 50) / High	Negligible	Not Significant	n/a	Not Significant
	A1035 (Link 53) / High	Negligible	Not Significant	n/a	Not Significant
	Killingwoldgraves Lane / Copleflat Lane (Links 57, 58, 59 and 61) / High	Major	Major Adverse	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. 	Minor Adverse
	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

7.16 References

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