

Hornsea Project Three
Offshore Wind Farm



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Preliminary Environmental Information Report:
Chapter 7 – Traffic and Transport

Date: July 2017

Environmental Impact Assessment
Preliminary Environmental Information Report

Volume 3
Chapter 7 – Traffic and Transport

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Glossary

Term	Definition
Abnormal Indivisible Loads	Loads or vehicles that exceed maximum vehicle weight, axle weight or dimensions as set out in the Road Vehicles (Construction and Use) Regulations 1986 as amended.
Code of Construction Practice (CoCP)	A document detailing the overarching principles of construction, contractor protocols, construction-related environmental management measures, pollution prevention measures, the selection of appropriate construction techniques and monitoring processes
Construction Traffic Management Plan (CTMP)	A plan managing all construction traffic, including protocols for delivery of Abnormal Indivisible Loads to site, personnel travel, measures for road cleaning and sustainable site travel measures.
Cumulative effects	The combined effect of Hornsea Project Three 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 Three.
Design Envelope	A description of the range of possible elements that make up the Hornsea Project Three design options under consideration, as set out in detail in the project description. This envelope is used to define Hornsea Project Three for Environmental Impact Assessment (EIA) purposes when the exact engineering parameters are not yet known. This is also often referred to as the "Rochdale Envelope" approach.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
DONG Energy Hornsea Project Three (UK) Ltd	The company promoting the development of the Hornsea Project Three offshore wind farm. DONG Energy Hornsea Project Three (UK) Ltd is owned by DONG Energy Power (UK) Limited, who is owned by DONG Energy Vind A/S, who is owned by DONG Energy VE A/S, who is owned by DONG Energy Wind Power A/S, who is owned by DONG Energy Wind Power Holding A/S, and who is owned by DONG Energy A/S.
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria.
EIA Directive	European Union Directive 85/337/EEC, as amended by Directives 97/11/EC, 2003/35/EC and 2009/31/EC and then codified by Directive 2011/92/EU of 13 December 2011 (as amended in 2014 by Directive 2014/52/EU).
EIA Regulations	The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended).
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 Impact Assessment (EIA) Report.
Environmental Impact Assessment (EIA) Report	A document reporting the findings of the EIA and produced in accordance with the EIA Directive as transposed into UK law by the EIA Regulations.
Export cable route (ECR) corridor	The specific corridor of seabed (seaward of Mean High Water Springs (MHWS)) and land (landward of MHWS) from the Hornsea Project Three array area to the Norwich Main National Grid substation, within which the export cables will be located. The final ECR corridor will be located within the ECR corridor search area and will be defined via a site selection process considering technical, physical and environmental constraints.

Term	Definition
Former Hornsea Zone	The Hornsea Zone was one of nine offshore wind generation zones around the UK coast identified by The Crown Estate (TCE) during its third round of offshore wind licensing. In March 2016, the Hornsea Zone Development Agreement was terminated and project specific agreements, Agreement for Leases (AFLs), were agreed with The Crown Estate for Hornsea Project One, Hornsea Project Two, Hornsea Project Three and Hornsea Project Four. The Hornsea Zone has therefore been dissolved and is referred to throughout the Hornsea Project Three Scoping Report as the former Hornsea Zone.
High Voltage Alternating Current (HVAC)	High voltage alternating current is the bulk transmission of electricity by alternating current (AC), whereby the flow of electric charge periodically reverses direction.
High Voltage Direct Current (HVDC)	High voltage direct current is the bulk transmission of electricity by direct current (DC), whereby the flow of electric charge is in one direction.
Impact	Change that is caused by an action; for example, land clearing (action) during construction which results in habitat loss (impact).
Inter-related effects	Multiple effects on the same receptor arising from Hornsea Project Three. These occur either where a series of the same effect acts on a receptor over time to produce a potential additive effect or where a number of separate effects, such as noise and habitat loss, affect a single receptor, for example marine mammals.
Landfall Area	The area between (MHWS) and (MLWS) in which all of the export cables will be landed and is the transitional area between the offshore export cabling and the onshore export cabling.
Magnitude	A combination of the extent, duration, frequency and reversibility of an impact.
Measures adopted as part of the project	Enhancement, mitigation or monitoring commitment (which may include process or design measures) intended to avoid, reduce and where possible, remedy significant adverse impacts of a development.
NATA/WebTAG Methodology	A standard national approach to undertaking assessments of major transport infrastructure projects.
National Policy Statement (NPS)	A document setting out national policy against which proposals for NSIPs will be assessed and decided upon.
Nationally Significant Infrastructure Project (NSIP)	Large scale development including power generating stations which requires development consent under the Planning Act 2008. An offshore wind farm project with a capacity of more than 100 MW constitutes an NSIP.
Norwich Main National Grid Substation	The existing National Grid Norwich Main substation which Hornsea Project Three will ultimately connect to.
Pedestrian Amenity	The convenience or comfort of movement on foot.
Planning Inspectorate (PINS)	The executive agency of the Department for Communities and Local Government responsible for operating the planning process for NSIPs on behalf of the Secretary of State.
Project Description	A summary of the engineering design elements of Hornsea Project Three.
Sensitivity	The extent to which a receptor can accept a change, of a particular type and scale
Serious personal injury accident	An accident leading to serious injuries requiring hospital treatment.
Severance	Real or perceived difficulties moving between one part of a community to another.
Significance	The significance of an effect combines the evaluation of the magnitude of an impact and the sensitivity of the receptor.

Term	Definition
Slight accident	An accident leading to slight injuries which are defined as cuts, bruises or sprains requiring roadside attention but not normally requiring admission to hospital.
TRACK Analysis	Computer modelling of area taken up by a moving vehicle.
Transboundary	Crossing into other European Economic Association (EEA) States.
Transport Assessment	A transport assessment is a comprehensive and systematic process that sets out transport issues relating to a proposed development. It identifies what measures will be taken to deal with the anticipated transport impacts of the scheme and to improve accessibility and safety for all modes of travel, particularly for alternatives to the car such as walking, cycling and public transport.
Trip Assignment	The routes that vehicles take between a site and other areas.
Trip Distribution	The proportion of vehicle trips between a site and other areas.
Vehicle Trip Distribution	The number of vehicle movements into and out of a development.
Zone Development Agreement	A contractual arrangement for a Round 3 wind farm development zone, between a developer and TCE and, in the context of this document, the Agreement between The Crown Estate and SMart Wind Limited dated 22 December 2009.

Acronyms	Description
LTP	Local Transport Plan
MCCs	Manual Classified Count
MD	Main Distributor
MHWS	Mean High Water Spring
NCC	Norfolk County Council
NCN	National Cycle Network
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
PINS	Planning Inspectorate
PEIR	Preliminary Environmental Information Report
PIA	Personal Injury Accident
TT	Trenchless Technology
TEMPRO	Trip End Model Presentation Programme
WebTAG	Web Transport Analysis Guidance

Acronyms

Acronyms	Description
AADT	Annual Average Daily Traffic
ATC	Automatic Traffic Counter
CoCP	Code of Construction Practice
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
ES	Environmental Statement
ECR	Export cable route
HE	Highways England
HGV	Heavy Goods Vehicle
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IPC	Infrastructure Planning Commission

Units

Unit	Description
GW	Gigawatt (power)
kW	Kilowatt (power)
m	Metre (distance)
km	Kilometre (distance)
m ²	Metres squared (area)
mph	Miles per hour (speed)
t	Tonne (weight)
ft	Feet (distance)
"	Inches (distance)

7. Traffic and Transport

7.1 Introduction

7.1.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents initial traffic and transport considerations of the Hornsea Project Three offshore wind farm (hereafter referred to as Hornsea Three). Specifically, this chapter considers the initial traffic and transport considerations of Hornsea Three landward of Mean High Water Spring (MHWS) during its construction, operation and maintenance, and decommissioning phases. The chapter sets out the description of the road network, with potential access routes to the onshore cable corridor and the number of HGV movements which are anticipated to be generated by Hornsea Three.

7.1.1.2 Following the submission of the PEIR, a consultation period will follow from which comments on the onshore cable corridor and potential access routes will be received and then reviewed in advance of their detailed consideration and determination. When the detailed consideration of access routes and access points is undertaken, the comments from the PEIR can be taken on board and help to inform their determination. This creates a phased approach to the assessment whereby the PEIR forms a meaningful phase of the assessment process by allowing consultation on the access options, with appropriate information on associated vehicle movements provided, in advance of them being determined. Following the PEIR, the receipt and review of comments and the determination of access routes and access points, a detailed impact assessment will then be undertaken for sections of the highway network which have the potential to be impacted upon by the construction of the onshore cable corridor in accordance with the methodology set out in Section 7.8.

7.2 Purpose of this chapter

7.2.1.1 The primary purpose of the Environmental Statement is to support the Development Consent Order (DCO) application for Hornsea Three under the Planning Act 2008 (the 2008 Act). This PEIR constitutes the Preliminary Environmental Information for Hornsea Three and sets out the findings of the EIA to date to support pre-application consultation activities required under the 2008 Act. The EIA will be finalised following completion of pre-application consultation and the Environmental Statement will accompany the application to PINS for Development Consent.

7.2.1.2 The PEIR will form the basis for Phase 2 Consultation which will commence on 27 July and conclude on 20 September 2017. At this point, comments received on the PEIR will be reviewed and incorporated (where appropriate) into the Environmental Statement, which will be submitted in support of the application for Development Consent scheduled for the second quarter of 2018. In particular, this PEIR chapter:

- Presents the existing environmental baseline established from desk studies, and consultation;
- Presents the initial traffic and transport considerations for Hornsea Three, based on the information gathered and the analysis and assessments undertaken to date;
- Identifies any assumptions and limitations encountered in compiling the environmental information;
- Highlight any necessary monitoring and/or mitigation measures which could prevent, minimise, reduce or offset the possible environmental effects identified in the EIA process;
- Sets out the potential access points and the range of access routes to each; and
- Invites comments on each access route option to inform the route selection and assessment process.

7.2.1.3 The Traffic and Transport chapter in the Environmental Statement will be supplemented with a Transport Assessment. A 'skeleton' Transport Assessment is prepared at volume 6, annex 7.1: Transport Assessment, which sets out details on its proposed content.

7.2.1.4 The construction phase will generate the greatest number of vehicle movements as the transportation of materials for the haul road and removal of excess spoil from trenching will incur the greatest number of HGV and staff movements. It is this phase that this chapter focusses on principally but not exclusively. The level of vehicles generated during the operational and maintenance phase will be very low and irregular, only a few vehicle movements per week, whilst those during the decommissioning phase will be lower than those the construction phase. Although the baseline position may change from the construction to decommissioning phases, the net result of this is that the construction impact is higher. The assessments undertaken for the construction assessment will therefore cover the decommissioning phase together with the measures identified.

7.2.1.5 The final chapter submitted as part of the Environmental Statement with the DCO Application will set out the proposed access routes and access points to the cable corridor and demonstrate their suitability. It will set out future baseline traffic scenarios using traffic surveys which will have been undertaken and it will assess the effects of the construction traffic upon driver delay; severance; pedestrian delay; pedestrian amenity; accidents and road safety; and hazardous, dangerous and abnormal indivisible loads.

7.3 Study area

7.3.1.1 The onshore aspects of Hornsea Three consists of the installation of an onshore cable of approximately 55 km, which would make landfall at Weybourne, and connect to the proposed onshore HVDC convertor/HVAC substation located to the south west of Norwich via a HVAC Booster Station located to the north of Saxthorpe. A detailed description of the project is provided in volume 1, chapter 3: Project Description.

7.3.1.2 In the scoping report prepared for Hornsea Three, key constraints pertaining to the onshore environment were described over a broad study area in Norfolk. Information providing the broad context for the assessment of effects on transport has been drawn from across the onshore study area identified in the Scoping Report.

7.3.1.3 The broad study area has now been refined following a more detailed analysis of the local road layouts and the scope of the Traffic and Transport study area now covers all of the key commuter roads in the area, including the A47, A11, A140, A146 and A148 as well as the key surrounding roads used by background traffic and expected to be used by construction vehicles. The study area extends from the A148 at Fakenham to the A149 at Cromer, following the A1067 and A140 to the south to the Norwich ring road and has been discussed and agreed with the Local Highway Authority.

7.3.1.4 The access roads and links within the study area are shown on Figure 7.1, presented in volume 6, annex 7.1. The study area in relation to transport includes all highways, rights of way, private accesses and railways in the vicinity of the onshore cable corridor search area, HVAC booster station and the onshore HVDC converter/HVAC substation that are anticipated to be used by construction, operational and decommissioning traffic. The study area also includes parts of the wider transport networks that provide links between the onshore cable corridor and onshore HVDC converter/HVAC substation site and the strategic transport networks, rail terminals and port facilities.

7.4 Planning policy context

7.4.1.1 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), the NPS for Renewable Energy Infrastructure (EN-3) (DECC, 2011b) and the NPS for Electricity Networks Infrastructure (EN-5) (DECC, 2011c).

7.4.1.2 NPS EN-1 includes guidance on what matters are to be considered in the assessment. These are summarised in Table 7.1 below.

Table 7.1: Summary of [NPS EN-1] provisions relevant to this chapter.

Summary of NPS EN-1 provision	How and where considered in the PEIR
Introduction	
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 loads generated during the construction phase will depend on the scale and type of the proposal. (5.13.1).	This chapter of the ES to be submitted with the DCO Application will consider all relevant potential transport impacts during the construction, operational and decommissioning phases of development. The study area has been established through discussions with the relevant Highway Authorities. Noise is considered in volume 3, chapter 8: Noise and Vibration, and Inter-Related Effects are considered in volume 3, chapter 11.
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. (5.13.2).	This chapter of the ES to be submitted with the DCO Application will identify possible transport impacts and ways to mitigate them. The mitigation of these impacts is incorporated into the development proposals.
Applicant's Assessment	
If a project is likely to have significant transport implications, the applicant's Environmental Statement (ES) should include a TA, using the NATA/WebTAG methodology stipulated in Department for Transport (DfT) guidance (DfT, 2007), or any successor to such methodology. Applicants should consult the Highways Agency and Highways Authorities as appropriate on the assessment and mitigation. (5.13.3).	A TA will be prepared and submitted with the DCO Application in accordance with guidance and best practice and its scope will be discussed and agreed with the relevant Highway Authorities including Highways England.
Where appropriate, the applicant should prepare a travel plan including demand management measures to mitigate transport impacts. The applicant should also provide details of proposed measures to improve access by public transport, walking and cycling, to reduce the need for parking associated with the proposal and to mitigate transport impacts. (5.13.4).	Where appropriate it is expected that movement by sustainable means will be facilitated and encouraged. However, it is recognised that the linear nature of the works, the absence of a fixed permanent work site along the onshore cable corridor and the rural nature of much of the onshore cable corridor may make it difficult to implement a standard travel plan for onshore cable corridor working.
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. (5.13.5).	Additional transport infrastructure is limited to the provision of a number of mostly temporary construction accesses along the onshore cable corridor. Accesses will be removed where appropriate and where agreed with landowners and the land reinstated when onshore cable corridor construction is finished. Where accesses are not removed, they will remain in-situ, for example, the access to the onshore HVDC converter/HVAC substation.

Summary of NPS EN-1 provision	How and where considered in the PEIR
Decision Making	
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. (5.13.6).	This chapter of the ES to be submitted with the DCO Application will identify possible transport impacts resulting from all phases of development and ensure mitigation measures (where relevant / necessary) incorporated into the scheme.
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 TA, 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. (5.13.7).	This chapter of the ES to be submitted with the DCO Application will identify possible transport impacts resulting from all phases of development and any commitments made to implementing appropriate mitigation measures at this stage.
Mitigation	
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. (5.13.8).	The proposed mitigation measures relate to the routing and timing of heavy goods vehicle (HGV) movements and management of construction staff movement and do not require the provision of any new inland transport infrastructure apart from temporary improvements to onshore cable corridor access points.
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. (5.13.9).	As stated above, no new provision of inland transport infrastructure apart from mostly temporary (with some remaining in-situ where appropriate) improvements to onshore cable corridor access points is proposed.
The Secretary of State may attach requirements to a consent where there is likely to be substantial HGV traffic that: <ul style="list-style-type: none"> 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; 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 Ensure satisfactory arrangements for reasonably foreseeable abnormal disruption, in consultation with network providers and the responsible police force. (5.13.11). 	Proposed HGV routes are identified and restrictions on HGV timing are proposed to avoid adverse impact on sensitive receptors, particularly schools. The design of the construction works will avoid the risk of HGV parking on surrounding highway. The transport of abnormal indivisible loads will be subject to necessary studies and is expected to cause minimal disruption. This study will be submitted with the DCO Application. The most likely landing site for abnormal loads will be identified as part of the ongoing studies and will also be set out in the DCO Application.

Summary of NPS EN-1 provision	How and where considered in the PEIR
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. (5.13.12).	The costs of transport mitigation currently envisaged by the applicant will not make the proposal economically unviable.

7.4.1.3 NPS EN-3 also highlights a number of factors relating to the determination of an application and in relation to mitigation. These are summarised in Table 7.2 below.

Table 7.2: Summary of NPS EN-3 policy on decision making relevant to this chapter.

Summary of NPS EN-3 policy on decision making (and mitigation)	How and where considered in the PEIR
Appraisal of Sustainability (AoS)	
Significant negative effects were identified for all three technologies covered by EN-3 for traffic and transport. (1.7.2 bullet point 4). The AoS relates to the NPS policy though and that for the majority of AoS objectives, the strategic effects of offshore wind are considered to be neutral (1.7.2 bullet point 1) and that positive effects are likely on the climate change objective in the medium and long term by supporting the transition to a low carbon economy (1.7.2 bullet point 2).	The ES Chapter to be submitted with the DCO Application will assess the significance of effects of the proposed development on traffic and transport receptors.
Offshore Wind	
The extent to which generic impacts set out in EN-1 are relevant may depend upon the phase of the proposed development being considered. For example, land-based traffic and transport and noise issues may be relevant during the construction and decommissioning periods only, depending upon the specific proposal. (2.6.4).	This has been described and considered within the assessment of Hornsea Three.

7.4.1.4 NPS EN-5, to be read in conjunction with NPS EN-1 deals with electricity network infrastructure including onshore cable corridors and grid connections. No specific policy is set out in relation to transport and traffic.

7.4.1.5 Further advice in relation specifically to the Hornsea Three development has been sought through consultation with the statutory authorities and from the scoping opinion.

7.4.1.6 The Department for Communities and Local Government published the National Planning Policy Framework (NPPF) in March 2012. This sets out the Government's planning policies for England. The NPPF sets out the Government's desire to enable sustainable development. National Planning Statements have been produced by Government for Nationally Significant Infrastructure Projects (NSIPs).

7.4.1.7 Policy and guidance relating to transport impacts associated with the Hornsea Three development is provided in a number of local and national policy and guidance documents as described in Table 7.3.

Table 7.3: Summary of local policy relevant to this chapter.

Summary of Policy/Guidance	How and where considered in the PEIR
North Norfolk District – the Adopted Core Strategy and Development Management Policies Development Plan Documents (DPDs)	
<p>Development will be designed to reduce the need to travel and to maximise the use of sustainable forms of transport appropriate to its particular location. Development proposals will be considered against the following criteria:</p> <ul style="list-style-type: none"> the proposal provides for safe and convenient access on foot, cycle, public and private transport addressing the needs of all, including those with a disability; the proposal is capable of being served by safe access to the highway network without detriment to the amenity or character of the locality; outside designated settlement boundaries the proposal does not involve direct access on to a Principal Route, unless the type of development requires a Principal Route location; the expected nature and volume of traffic generated by the proposal could be accommodated by the existing road network without detriment to the amenity or character of the surrounding area or highway safety; and if the proposal would have significant transport implications, it is accompanied by a transport assessment, the coverage and detail of which reflects the scale of development and the extent of the transport implications, and also, for non-residential schemes, a travel plan. (Policy C5). 	<p>This PEIR sets out potential access routes and access locations. The ES chapter submitted with the DCO Application will set out the proposed access routes and locations and will assess these along with the transport implications against this criteria.</p>
<p>Former railway trackbeds, and other railway land will be protected from development that would be prejudicial to the re-use of railway, or sustainable transport links and facilities in the following locations: Sheringham; Fakenham to the District Council boundary (to the south of Great Ryburgh); and sites currently in use as, or with potential for, rail freight terminal facilities in the following settlements: Cromer Fakenham Great Ryburgh and North Walsham. (Policy CT 7).</p>	<p>This has been described and considered within the assessment of Hornsea Three.</p> <p>It is proposed that the onshore cable corridor would use Trenchless Technology (TT) to enable the construction of the onshore cable corridor around environmentally sensitive areas and key roads. The construction of the onshore cable corridor is temporary and would have no long-term implications on the function of former railway trackbeds. The onshore cable corridor does not impact upon any of those listed in the policy, but does cross Marriotts Way, which follows two disused railway lines, where TT will be used.</p>

Summary of Policy/Guidance	How and where considered in the PEIR
South Norfolk District - Joint Core Strategy for Broadland, Norwich and South Norfolk Local Plan	
<p>The transportation system will be enhanced to develop the role of Norwich as a Regional Transport Node, particularly through the implementation of the Norwich Area Transportation Strategy, and will improve access to rural areas. (Policy 6: Access and Transportation).</p>	<p>It is proposed that traffic management measures will be used on rural roads, with passing places improved or built only where necessary, as will be set out in the ES chapter submitted with the DCO Application. In addition, accesses for the onshore cable corridor may require improvements to the highway network and farm accesses for HGV access, thus improving access to rural areas on a temporary basis during the construction phase and longer term where any improvements are retained.</p>
<p>Improved strategic links to the rest of the region and beyond and access to jobs, services and facilities across the area are also key to the success of this Joint Core Strategy. Good strategic access reduces the perceived isolation of Norfolk. Improvements help stimulate and enhance the local economy and make the area more attractive for inward investment. In some instances, the Joint Core Strategy may be able to deliver improvements, but it is often the case that improvements to infrastructure providing longer distance strategic links have to be delivered by outside agencies such as Network Rail and the Highways Agency. The Joint Core Strategy will ensure that it promotes these improvements by providing a context for them to occur and ensuring their importance is recognised. Any significant negative impacts of transport improvements will need to be addressed by appropriate mitigation measures. (5.46)</p>	<p>The ES chapter submitted with the DCO Application will assess the impact on the strategic road network and propose mitigation measures if any significant negative impacts are predicted.</p>
Broadland District Council Development Management DPD (2015)	
<p>It is important that new development is undertaken in such a way that highway safety, or the operation of the network, is not adversely affected. Proposals for new development will be expected to demonstrate a safe access to the highway and that the local highway network will continue to function for the future. (8.14).</p>	<p>This PEIR sets out potential access routes and access locations. The ES chapter submitted with the DCO Application will propose access routes, locations and management measures such that safe access is achieved and that the local highway network would continue to function. .</p>
<p>The County Council has defined a route hierarchy identifying principal routes that can carry significant amounts of through traffic and these routes are defined on the policies map. The function of these routes must not be impaired by inappropriately located development. New development should be treated such that traffic from the site has a good access to an appropriate route as defined by the County Councils route hierarchy. For example HGV generating development should have good access to a HGV Access Route or higher designation of route within the route hierarchy. (8.15).</p>	<p>The Norfolk County Council route hierarchy has been considered within the assessment of Project Three. The route options available utilise trunk, principal and main distributor roads where practicable with lower classification roads only used on access options to reach each individual access points where there are no other options available.</p>

Summary of Policy/Guidance	How and where considered in the PEIR
<p>In general, new accesses onto or off other principal routes and main distributor routes are only acceptable where they support integrated and sustainable development objectives. Development served by side roads connecting to other defined principal routes must demonstrate that no significant adverse effects will result. With the exception of sites inside defined development areas, accesses will generally only be permitted where it can be demonstrated that the routes ability to perform its function as designated in the route hierarchy would not be impaired. (8.17).</p>	<p>Access taken from main distributor roads will be required; however, TT will be used at these points to allow the road to be utilised without compromising on the routes ability to perform its function.</p> <p>Access to TT compounds and haul road will be short term and continuous.</p> <p>The ES chapter submitted with the DCO Application will assess each access and seek to demonstrate that routes' ability to perform its function as designated in the route hierarchy would not be impaired.</p>

National Planning Policy Framework (2012)

7.4.1.8 With regard to traffic and transport, the NPPF states at Paragraph 32 that “All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:

- the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;
- safe and suitable access to the site can be achieved for all people; and
- improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.’ Paragraph 32).”

7.4.1.9 A Transport Assessment will be submitted to accompany the ES Chapter with the submitted DCO Application and will assess this criteria.

7.4.2 Hornsea Three consultation

7.4.2.1 Table 7.4 below summarises the issues raised relevant to Traffic and Transport which have been identified during consultation activities undertaken to date. Table 7.4 also indicates either how these issues have been addressed within this PEIR or how the Applicant has had regard to them.

Table 7.4: Summary of key consultation issues raised during consultation activities undertaken for Hornsea Three relevant to Traffic and Transport.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this chapter
December 2016	Norfolk County Council	Access to compounds and corridor needs to be appropriate with adequate visibility splays.	All accesses will be designed to accord with current design standards and preliminary design drawings for each will be set out in the ES Chapter to be submitted with the DCO Application.
December 2016	Norfolk County Council	Some of the roads are traffic sensitive and are tourist routes and/or main roads, for which road opening notices are unlikely to be granted or be allowed to be affected during holiday seasons.	This PEIR sets out the available access routes and access locations and invites comments on the use of each.
December 2016	Norfolk County Council	Need to ensure that Abnormal Indivisible Loads are capable of travelling along the access route.	An Abnormal Indivisible Load Study has been commissioned and its findings will be presented within the DCO Application. It is intended to informally consult on its findings and proposed routes with Norfolk County Council and Highways England in advance of the DCO submission.
February 2017	Norfolk County Council	Traffic management measures should be adopted.	A Full Construction Traffic Management Plan (CTMP) will be developed closer to the implementation of the project, when there is greater certainty about parameters of Hornsea Three. This PEIR sets out the range of measures that could be adopted and a draft CTMP will be submitted with the DCO Application.
February 2017	Norfolk County Council	Appointed contractor should be ETON6 (electronic transfer of notifications) compliant to enable permits to be issued by Norfolk County Council.	This will be contained within the Construction Traffic Management Plan.
February 2017	Norfolk County Council	The PEIR assessment scope would include identification of potential access and haul roads for the cable corridor construction and not specific finally chosen access and haul roads, which will allow consultees to feed into the process. The PEIR will set out principles for traffic management measures to control construction vehicles and post-PEIR traffic surveys will be carried out to allow a full EIA to be undertaken leading up to the final DCO application.	This chapter of the PEIR follows this approach.
May 2017	Norfolk County Council	Agreement of traffic survey locations and timings/durations etc.	To be used to inform transport assessment for final DCO application.

7.5 Methodology to inform the baseline

7.5.1 Desktop study

7.5.1.1 Information on Traffic and Transport along the access routes and adjacent roads was collected through a detailed desktop review of existing studies and datasets. These are summarised at Table 7.5 below.

Table 7.5: Summary of key desktop reports.

Data	Source
Identification of sensitive receptors	Search along access routes
Road geometries and layouts	Analysis of access routes
Identification of facilities for sustainable travel	Desktop analysis
Identification of potential route options	Norfolk County Council Route Hierarchy Map

7.5.2 Site specific surveys

7.5.2.1 In order to inform the EIA, site-specific surveys have been undertaken in June 2017, which have been agreed with Norfolk County Council's Highway Authority. A summary of the types of surveys undertaken is outlined in Table 7.6 below.

Table 7.6: Summary of site-specific survey data.

Title	Extent of survey	Overview of survey	Survey contractor	Year	Reference to further information
Traffic Surveys	Along access routes where EIA will be required and where capacity assessments will be undertaken.	Daily traffic flows on key road links will be undertaken by placing Automatic Traffic Counters (ATCs) for two-week periods and daily traffic flows through junctions will be undertaken by undertaking Manual Classified Counts (MCCs). This PEIR will inform the access routes and this will then inform the location of these surveys.	Countsequential.	2017	N/A

Title	Extent of survey	Overview of survey	Survey contractor	Year	Reference to further information
Personal Injury Accident Data	Along access routes where EIA will be required and where road safety is being considered.	Personal Injury Accident data will be purchased from Norfolk County Council for the latest available three year period. This PEIR will inform the access routes and this will then inform the location of the data purchased.	N/A	TBC.	N/A

7.6 Baseline environment

7.6.1.1 The following paragraphs provide an overview of the Strategic Road Network (SRN) and the highway network providing access to the landfall, onshore cable corridor, booster station and onshore HVDC convertor/HVAC substation. These roads are shown on Figure 7.1, presented in volume 6, annex 7.2 along with a detailed description of their geometries and features. For ease of reference each link has been given a link number in annex 7.2 to assist cross referencing with Figure 7.1.

7.6.2 Strategic Road Network

7.6.2.1 The main route into the Traffic and Transport study area from the wider SRN is via the A47 that runs east-west between Kings Lynn and Great Yarmouth. The A47 routes to the south of Norwich.

7.6.2.2 The A47 is primarily a wide single carriageway road between Kings Lynn and Norwich; becoming a dual carriageway from its junction with the Dereham Road/Church Lane roundabout to Blofield, east of Norwich where it returns to a wide single carriageway.

7.6.2.3 The A11 and A1074 route from the A47 via grade-separated junctions, and route to the Norwich ringroad from which the A1067, B1149 and A140 are accessed. The A140 and A1067 are key commuter roads between Norwich and North Norfolk within a highway network that has no trunk roads and few A roads.

Onshore cable corridor

7.6.2.4 The Norfolk County Council Route Hierarchy map, produced by Highway Network Management, illustrates trunk roads and principal roads in addition to Main Distributor (MD), HGV, Tourist and Access roads throughout Norfolk. There are few trunk roads in the area, particularly to the north: most A and B roads route south towards Norwich and there are no motorways within the area.

7.6.2.5 The classification of links which comprise the roads shown on the Norfolk County Council Route Hierarchy map is shown on Figure 7.1, presented in Volume 6, annex 7.1.

7.6.2.6 The onshore cable corridor will be accessed using roads listed on the Route Hierarchy map wherever possible, although some use of narrow single carriageway and single track roads will be necessary to reach some access points.

Access to onshore cable corridor

7.6.2.7 A temporary haul road is expected to be constructed along the full length of the onshore cable corridor to provide for HGV access to undertake trenching works and install the cables. The haul road will route between the two trenches and will enable vehicles to move along the onshore cable corridor route instead of using the road network, therefore minimising disturbance to the local road network whilst construction is ongoing.

7.6.2.8 While a continuous haul road will be constructed along the length of the onshore cable corridor for the duration of construction, access from the highway network is necessary for the transportation of materials for the construction of the haul road. Access points from the road network to the onshore cable route corridor have been identified where roads cross the onshore cable corridor and will be utilised during the construction phase.

7.6.2.9 The onshore cable corridor crosses a number of roads, disused railway lines and active railways. Major transport infrastructure including railways, the A149, A148, A47 and A11 would be crossed using TT. TT might also be used to cross features such as major drains, pipelines and environmentally sensitive areas. At TT locations, temporary construction site accesses are located to ensure that, if necessary, the TT can be installed prior to the main onshore cable corridor.

7.6.2.10 Access to the onshore cable corridor and key transport links are described in 34 individual sections, each generally defined by a point at which features which may require TT from one or both ends of the route section. In most cases a route section will have multiple accesses.

7.6.2.11 The onshore cable corridor with TT and access locations, along with route sections is shown on Figure 7.2, presented in volume 6, annex 7.2.

7.6.2.12 The key roads are identified in the following paragraphs in order to provide an overview of some of the larger roads which will provide access to multiple sections of the onshore cable corridor.

7.6.2.13 Sensitive receptors such as schools, care homes, hospitals and residential areas with poor footway provision have been identified within the vicinity of the onshore cable corridor, shown on Figure 7.3, presented in volume 6, annex 7.3, and highlighted in the paragraphs below.

A149

7.6.2.14 The A149 routes from Kings Lynn to Cromer via Hunstanton, then south and east to Caister-on-Sea. The A149 runs parallel to the coastline and is a key commuter road between the coastal towns, and is identified on the Norfolk Route Hierarchy Map as a '3B3 – Special' road between Cromer and Hunstanton. The A149 provides a potential access route through Sheringham via the A1082, with good forward visibility and few sensitive receptors with the exception of some residential frontages. Sheringham Road/A149 runs underneath the former North Norfolk Railway Line; therefore, a railway bridge crossing over the A149 prevents vehicles over 4.3 m in height from accessing Weybourne from Sheringham via this route.

7.6.2.15 A one-way system on the A149 operates in the centre of Cromer. Vehicles route to the north travelling west to east, then route on the south section of the A149 when travelling east to west. There are several signal controlled crossing points on each section of the A149 to allow pedestrians to safely cross from residential areas to shops and schools. Cars are able to park in bays beside the carriageway, and double yellow lines are located on the A149 as it routes through Cromer.

7.6.2.16 While the A149 is a principal road with good forward visibility and wide carriageway, it routes through the town centre of Cromer, a primarily busy urban area with a residential area, the town centre, shops and schools. Residential frontages and a church access are directly onto the main road.

7.6.2.17 The remainder of the A149 has few sensitive receptors and varies between a 40 mph, 50 mph and national speed limit road.

A148

7.6.2.18 The A148 routes from Kings Lynn to the west, travelling north and east via Fakenham, Holt, Letheringsett and Cromer. The A148 is one of the primary routes through north Norfolk and a key commuter road on a highway network which has no motorway and few principal roads commuting rural communities and coastal towns.

7.6.2.19 The A148 will provide HGV access to narrow single carriageway and single track roads adjacent to the onshore cable corridor between the A148 and Baconsthorpe. South of Baconsthorpe, HGVs can access the onshore cable corridor via the B1149.

A140

7.6.2.20 The A140 routes from the A149 junction south of Cromer, to the B1145 junction south of Aylsham and continues south to the Norwich ring road. As a principal road with wide carriageways and forward visibility, the A140 is a key commuter road into Norwich from North Norfolk.

7.6.2.21 The A140 routes through Roughton, a small village centre with shops and crossings, pub and church. The speed limit is reduced to 30 mph through this section, increasing to the national speed limit to the south of Roughton. Road width and forward visibility are retained on the A140.

7.6.2.22 The A140 between Cromer and Norwich varies between 30 mph, 40 mph and the national speed limit and joins the Norwich ring road at the A1042 junction.

A1067 from Fakenham to Norwich

7.6.2.23 The A1067 routes from the A148 east of Fakenham, to the south and east to the A140 and A1402 junctions in Norwich. There are some sensitive receptors on this route as it routes towards the ring road; however, the footways are wide within the vicinity of these sensitive receptors.

7.6.2.24 The A1067 between Fakenham and Bawdeswell is a principal road with good forward visibility. The A1067 from Bawdeswell to the A140 at the Norwich Ring Road is suitable for HGVs with good forward visibility, suitable carriageway width and already used as a bus route. The speed limit varies between 30 mph, 40 mph, 50 mph and the national speed limit.

B1149 from Holt to A140 junction

7.6.2.25 The B1149 routes from Holt to Saxthorpe and Horsford before joining the A140 north of Norwich. The B1149 links Holt and Corpusty and is accessed from Holt by a roundabout from the A148. The B1149 junction with the A140 is taken via a large three-arm roundabout west of Norwich International Airport.

7.6.2.26 The speed limit varies between 50 mph, 40 mph, 30 mph and the national speed limit, with the speed limit reducing to 30 mph in urban areas.

7.6.2.27 The B1149 intersects with the B1354 at Saxthorpe, and continues south to the A140.

A47

7.6.2.28 The A47 routes through Norfolk from Kings Lynn to Great Yarmouth, routing to the south of Norwich within the vicinity of the onshore cable corridor.

7.6.2.29 The A47 has typical characteristics of a trunk road: a national speed limit wide carriageway with few sensitive receptors within the area. The A47 proves a key route for HGVs routing north and south along the cable access route as HGVs can route around Norwich via the A47 without travelling through the city centre or on minor roads.

7.6.2.30 The B1108, B1172 and A11 have junctions with the A47 to the south west of Norwich and are included in the Traffic and Transport study area.

A11

7.6.2.31 The A11 routes from the A147 junction to the south west of the city centre of Norwich, out to the west towards Hetherset and Wymondham.

7.6.2.32 In general, the A11 has wide carriageways and few sensitive receptors and some residential frontage with good footway provision in the vicinity of dwellings. The A11 forms the Hetherset Bypass which routes to the south of Hetherset.

7.6.2.33 The B1172 routes from the A11 junction with the A47 along the south of Hetherset with a foot and cycle path north of the carriageway.

B1110

7.6.2.34 The B1110 routes north to south from Holt to its junction with the B1146 north of Dereham. While no access points from the onshore cable corridor would be accessed directly from the B1110, the B1110 could serve as a HGV route to Holt and the onshore cable corridor from the A1067, one of the principal roads routing south and east to Norwich.

7.6.2.35 There are few sensitive receptors on the B1110 aside from a small section of the road which routes through Thornage, a residential area with no footways. The remainder of the B1110 within the area has a wide carriageway, few sensitive receptors and good forward visibility. The speed limit varies between 30 mph, 40 mph and the national speed limit.

B1145 from Aylsham to Bawdeswell

7.6.2.36 The B1145 is classified by Norfolk County Council as a 3A2 – MD road and is a key link to the A140 from Bawdeswell, Reepham and Cawston. A four-arm roundabout connects the B1145 to the A140 and Norwich Road. As the B1145 routes east to west, it has a crossroad junction with the B1149 and a priority junction where it meets the A1067.

7.6.2.37 The B1145 provides an access route for HGVs between the onshore cable corridor and the A140, with wide carriageways and street lighting within the vicinity of Aylsham.

7.6.2.38 The B1145 routes through Cawston and Reepham town centre which have some sensitive receptors including shops, narrow footways and shop and residential frontages. The remainder of the B1145 has generally good visibility with the exception of some bends on which visibility is reduced by high hedgerows and buildings. The speed limit varies between 20 mph in Reepham and 30 mph, 40 mph, 50 mph and the national speed limit on the remainder of the route.

B1108 Earlham Road/Watton Road

7.6.2.39 The B1108 Earlham Road/Watton Road routes from the A47, west of Norwich city centre, to Barford approximately 11.5 km from Norwich to the extent of the transport scoping area. The B1108 continues to route through Barford and to the south and west where it joins the A1065 at Bodney.

7.6.2.40 The B1108 is classified as a 3A2 – MD road within the Norfolk County Council Route Hierarchy. On this section of road there is some onstreet parking, with footways and lighting, and some sensitive receptors such as a hospital, church and direct access to residential dwellings.

7.6.2.41 Between the A47 and Barford, the B1108 retains its good forward visibility and width, with good footways either side of the carriageway in residential areas. The B1108 is a key commuter road from the west of Norwich into the city centre and its junction with the A147 via a four-arm roundabout enables access from the B1108 to the city centre.

7.6.3 Tourist Routes

7.6.3.1 The Norfolk County Council Route Hierarchy map outlines several roads which are listed as tourist routes. These sections of the highway network will differ greatly in volumes and profiles of traffic between a typical working day, and during the summer season, particularly when schools close for summer between mid-July and September. Comment is made on the use of these routes in Table 7.140.

7.6.4 Onshore cable corridor sections

7.6.4.1 To assist with the calculation of construction vehicle movements (Section 7.10) and the movement of these to the onshore cable corridor, it has been separated in a number of sections, as shown on Figure 7.2, presented in volume 6, annex 7.2. The potential access routes in each section are summarised in the following paragraphs to clarify the extent of the highway network being considered. Figure 7.2, presented in volume 6, annex 7.2, shows the cable route and proposed access points with TT crossings and the link analysis presented in volume 6, annex 7.2 provides full details.

Landfall to A149 (Route Section 1)

7.6.4.2 From Landfall to the A149 the proposed onshore cable corridor currently has two potential route options; route to the east or west of Weybourne. Route section 1A routes from landfall, west of Weybourne and south to the A149. Route section 1B routes to the east of Weybourne and south to the A149.

7.6.4.3 The A149 routes from the Foxhills camping access through the centre of Weybourne to the point at which the A149 becomes the national speed limit. There are no pedestrian facilities between the camping site and Weybourne, and high hedgerows limit forward visibility on bends. There are many sensitive receptors and a lack of footways to village facilities such as shops, pubs and a church. There is on-street parking and houses back straight onto the road in the village, with poor visibility for several houses with driveways. The speed limit varies between 20 mph and 30 mph.

7.6.4.4 A single track road, Beach Lane, leads from the A149 in the centre of Weybourne to a car park for the Peddars Way and North Norfolk Coastal Path. An additional private road routes from the A149 to the military museum and Norfolk Coast Path.

7.6.4.5 Access A1 and A2 are located on route section 1 as shown on Figure 7.2 Sheet 1, presented in volume 6, annex 7.2.

A149 to railway line (Route Section 2)

7.6.4.6 Single carriageway roads will provide access to the onshore cable corridor between the A149 and the railway line. Two routes have been identified; Sandy Hill Lane and Station Road could provide access to the east, in addition to Holt Road and Holgate Hill to the west.

7.6.4.7 The A149 will provide access to Sections 2A and 2B of the onshore cable corridor. Holt Road and Holgate Hill are narrow single carriageway roads and form Route 2A between the A149 and the railway line. Station Road and the A149 will provide access to Section 2B, and access to section 2C will be taken from Station Road or Holgate Hill.

7.6.4.8 The Church Street T-junction with the A149 has limited visibility to the left due to residential dwellings adjacent to the carriageway. Church Street routes to Holt Road which routes south and has residential frontages with a lack of pedestrian facilities. The speed limit is reduced to 20 mph through Weybourne, to approximately 25 m south of the T junction, at which point the speed limit becomes 30 mph. The remainder of Holt Road and Holgate Hill are narrow single carriageways with no frontage access or sensitive receptors.

7.6.4.9 Accesses A2 and A4 are located on section 2A, with Accesses A1 and A3 on Section 2B and Access A3a located on Section 2C as shown on Figure 7.2 Sheet 1, presented in volume 6, annex 7.2.

Railway line to A148 (Route Section 3)

7.6.4.10 Access to the south of Section 3 of the onshore cable corridor will be taken from the A148. The A148 is a principal road with wide carriageways, good forward visibility and few sensitive receptors. As the A148 routes south of Holt, access to driveways is taken directly from the principal road.

7.6.4.11 The section of road necessary to access the onshore cable corridor is the national speed limit, with good visibility and few sensitive receptors. Access A5 can be used for Section 3 as shown on Figure 7.2 Sheet 1, presented in volume 6, annex 7.2.

7.6.4.12 Alternatively, Warren Road is a private road which routes from Bridge Road to the northeast, and provides access to residential dwellings, Warren Close and agricultural land. Warren Road could provide access to the onshore cable corridor and Access A4a has been created.

A148 to stream at Manor House Road (Route Section 4)

7.6.4.13 Access to Section 4 of the onshore cable corridor will be taken primarily from the A148; however, there are additional access available on this short section of the onshore cable corridor. Manor House Road intersects with the onshore cable corridor and is accessible from the A148 via a give way junction with good visibility. Manor House Road is a narrow single carriageway between the A148 and Access A6 of the onshore cable corridor.

7.6.4.14 Section 4 of the onshore cable corridor terminates at a stream which runs parallel to Manor House Road and Kelling Road. South of the Manor House Road/Kelling Road junction, the roads become single track with limited visibility due to high hedgerows and few passing places.

7.6.4.15 Accesses A5, A6, A7 and A8 are located on Section 4 of the onshore cable corridor as shown on Figure 7.2 Sheet 1, presented in volume 6, annex 7.2.

Stream at Manor House Road to stream adjacent to Baconsthorpe Wood (Route Section 5)

7.6.4.16 Section 5 is approximately 1 km in length and is bound to the north and south by streams which may require TT to cross. There is a primary access to this section via Link 19, which consists of High Kelling Road and Church Road. Both roads are narrow single carriageways and can be accessed from the A148 via Manor House Road and Selbrigg Road.

7.6.4.17 Selbrigg Road is the national speed limit from its T-junction with the A148 to the Hurricane Barn Farm junction, and is part of National Cycle Route 30. Selbrigg Road becomes High Kelling Road and continues as a narrow single carriageway. Two additional access via Manor House Road are located to the north via Manor House Road which is a national speed limit single track road. In total, accesses A7, A8 and A9 are located on Section 5 as shown on Figure 7.2 Sheet 2, presented in volume 6, annex 7.2.

Stream adjacent to Baconsthorpe Wood to B1149 (Route Section 6)

7.6.4.18 Section 6 of the onshore cable corridor is one of the longest, with several accesses along its approximately 6.5 km length. Along this onshore cable corridor section are access points A13, A15, A17, A18, A23 and A25 as shown on Figure 7.2 Sheets 2 and 3, presented in volume 6, annex 7.2. Access to the HVAC booster station will be taken from Access A23 and A25 as shown on Figure 7.2 Sheet 3, presented in volume 6, annex 7.2

7.6.4.19 Access A13 is the northernmost access on this section of the onshore cable corridor, and is reached via Hempstead Road from the A148 at Holt. This section of road is a '3B2 – Access' road as identified on the Norfolk County Council Route Hierarchy map, produced by Highway Network Management.

7.6.4.20 Route Section 6 terminates at the B1149, with access to the south of this route section enabled from this road. There are additional accesses between access A13 and the B1149, primarily reached via single track and narrow single carriageway roads.

7.6.4.21 The onshore cable corridor crosses the B1149 between Holt and Saxthorpe, therefore several onshore cable corridor access points can be reached from the B1149. HGVs can travel west on narrow single carriageway and single track roads perpendicular to the B1149 to obtain access to the onshore cable corridor.

B1149 to stream perpendicular to B1149 and B1354 (Route Section 7)

7.6.4.22 Section 7 of the onshore cable corridor is relatively short at approximately 0.5 km in length. Access will be taken from the B1149. The B1149 is classified as a '3A2 – MD' road with the national speed limit, and intersects with the B1354 at Saxthorpe, and continues south to the A140.

7.6.4.23 The B1149 allows for two-way vehicle movements, but has no footways. The B1149 will provide access to several accesses of the onshore cable corridor via single track and narrow single carriageway roads. Access A25 on the B1149 is the only access point for this route section as shown on Figure 7.2 Sheet 3, presented in volume 6, annex 7.2.

Stream perpendicular to B1149 and B1354, to B1354 (Route Section 8)

7.6.4.24 Section 8 is also relatively short in length and terminates at the B1354. Access points A26 and A27 will be taken from the B1354, which provides opportunity to gain access to the onshore cable corridor to the north for Section 8, and South to Section 9 as shown on Figure 7.2 Sheet 3, presented in volume 6, annex 7.2.

7.6.4.25 The B1354 intersects with the B1149 at Corpusty, approximately one third of the way along the length of the onshore cable corridor. The B1149 routes from the A148 to the far west of the transport scoping area, travelling east through Melton Constable and intersecting with the B1110 at a staggered crossroad junction.

B1354 to River Bure (Route Section 9)

7.6.4.26 Section 9 of the onshore cable corridor is approximately 0.4 km in length and runs from the B1354 to the River Bure which flows between the villages of Saxthorpe and Corpusty. The River Bure has a secondary channel located to the north which is largely vegetation, but could be an overflow channel during flooding.

7.6.4.27 In general, the B1354 has wide carriageways and few sensitive receptors in the vicinity of the transport scoping area. There are some sensitive receptors as the road routes through Melton Constable and Briston in the form of a school with narrow footways adjacent to the carriageway, and on-street parking effectively narrowing carriageway width; however, conditions in the vicinity of the onshore cable corridor are reasonable, with good visibility and negligible sensitive receptors on the national speed limit road. Accesses A26 and A27 will be utilised for Section 9 of the onshore cable corridor as shown on Figure 7.2 Sheet 3, presented in volume 6, annex 7.2.

River Bure to stream at Salle (Route Section 10)

- 7.6.4.28 The onshore cable corridor south of the River Bure, to a small stream at Salle, comprises Section 10 of the onshore cable corridor at approximately 5.5 km in length. There are several accesses along this section with the primary access taken from Heydon Road. Additional access can be reached using single track and narrow single carriageway roads from Saxthorpe, Corpusty and the B1149 which are identified as Links 61 to 75 in the vicinity of Section 10.
- 7.6.4.29 Heydon Road is accessed from the B1149 via a priority junction, and is a '3B2 – Access' road from the B1149 to its junction with a farm access road to the west of Park Lane. From the farm access to Crabtree Lane North, Heydon Road is a national speed limit narrow single carriageway.
- 7.6.4.30 A small stream east of Salle and north of the B1145 marks the end of Section 10 of the onshore cable corridor. Along this section are access points A28, A29, A30, A31, A32 and A33 as shown on Figure 7.2 Sheets 3 and 4, presented in volume 6, annex 7.2.

Stream at Salle to B1145 (Route Section 11)

- 7.6.4.31 Section 11 of the proposed onshore cable corridor will route to the B1145, north and east of Reepham, where the south of the section can be accessed via Access A35.
- 7.6.4.32 An additional access on Link 80 can also be used by staff and HGVs for Access A34. Link 80, consisting of Heydon Road and The Street, is a national speed limit road and the primary route from the B1145 to Salle. Access A35 is taken directly from the B1145.
- 7.6.4.33 The total length of Section 11 is approximately 1.7 km and can be entered using accesses A34 and A35 as shown on Figure 7.2 Sheet 4, presented in volume 6, annex 7.2.

B1145 to Marriott's Way (Route Section 12)

- 7.6.4.34 Section 12 is only 0.6 km in length and routes from the B1145 to Marriott's Way, a 26 mile footpath, bridleway and cycle route along a disused railway line which crosses the onshore cable corridor at several locations. Access will be taken from the B1145 via Access A35 as shown on Figure 7.2 Sheet 4, presented in volume 6, annex 7.2.
- 7.6.4.35 Marriott's Way is a disused railway line; therefore has no vehicular traffic which would be disrupted by the construction of the onshore cable corridor if trenches were to be used for the cable rather than TT. Marriott's Way is listed as a traffic-free cycle route not on the National Cycle Network, footpath, bridleway, and a county wildlife site; therefore TT would be more appropriate for crossing this small part of the onshore cable corridor rather than the use of trenches.

Marriott's Way to Booton Common stream (Route Section 13)

- 7.6.4.36 There are several streams and rivers located adjacent to Reepham and Lenwade; therefore, some sections of the onshore cable corridor are less than 1 km in size with only one access point.

- 7.6.4.37 Section 13 is approximately 0.5 km in length and has a single access point taken from Link 94, The Moor. The Moor is a single track road from Moor Farm in the east, to its junction with Orchard Lane to the west, on which access A36 is located as shown on Figure 7.2 Sheet 5, presented in volume 6, annex 7.2.

Booton Common stream to stream north of St. Michael the Archangel Church (Route Section 14)

- 7.6.4.38 Church Road will be used to reach Route Section 14; however, no roads intersect with the onshore cable corridor on this section and it is proposed that to secure access to A37, access to private farm tracks will be secured as shown on Figure 7.2 Sheet 5, presented in volume 6, annex 7.2. If access to A37 cannot be secured, access to Route Section 14 will be taken from Access A38
- 7.6.4.39 Church Road is a narrow single carriageway and routes between Reepham to the west and the B1149 to the east. Its junction with Norwich Road is a priority junction with a 30 mph speed limit, increasing to the national speed limit approximately 200 m east of the Norwich Road junction.

Stream north of St. Michael The Archangel Church to stream at Alderford Common (Route Section 15)

- 7.6.4.40 Section 15 of the onshore cable corridor is approximately 4.8 km in length and runs from north of Church Lane to Alderford Common. There are six access points across this section of the onshore cable corridor, labelled A38 to A43 as shown on Figure 7.2 Sheet 5, presented in volume 6, annex 7.2.
- 7.6.4.41 A38 is located on Church Road which will also provide indirect access to section 14 of the onshore cable corridor. The onshore cable corridor continues south, broadly following the route of Reepham Road to Alderford and Lenwade. Accesses A39 to A42 will be taken directly from Reepham Road, or from single track roads which route from Reepham Road.
- 7.6.4.42 Access A43 forms the final access for this section of the onshore cable corridor, located on Hall Road between Lenwade and the Reepham Road junction.

Stream at Alderford Common to recreational foot/cycle path car park (Route Section 16)

- 7.6.4.43 The River Wensum routes through Lenwade, with one of its tributaries intersecting with the onshore cable corridor at Alderford Common. Section 16 routes from Alderford Common to Marriotts Way, a cycleway, bridleway and footpath. No vehicular traffic which would be disrupted by the construction of the onshore cable corridor if trenches were to be used for the cable rather than TT; however; there is the possibility that TT would be more appropriate for crossing this small part of the onshore cable corridor rather than the use of trenches.
- 7.6.4.44 There are no roads which cross Section 16; however, a small car park for Marriott's Way is located within the PEIR boundary and could therefore provide access to this section of the onshore cable corridor. Access A44 has been created at this point; however, the location and route will be finalised within the DCO application as shown on Figure 7.2 Sheet 6, presented in volume 6, annex 7.2.

7.6.4.45 Access A44 is accessible from Station Road which routes south from Reepham Road to the A1067. Station Road is the national speed limit between its junctions with Reepham Road and the access road to Marriotts Way, dropping to 30mph between Marriotts Way and the A1067.

7.6.4.46 Access A44 will be accessible from Station Road, which routes from the A1067 in the south to Reepham Road to the north. The junction to the car park from Station Road is taken via a T-junction which is located within a 30 mph zone which becomes the national speed limit immediately north of the Marriott's Way junction.

Recreational foot/cycle path car park to River Wensum (Route Section 17)

7.6.4.47 There are no roads which cross Section 17: however, a small car park for Marriott's Way is located within the PEIR boundary and could therefore provide access to this section of the onshore cable corridor. This has been labelled as Access A44 and forms the start of Route Section 17 and the end of Route Section 16 as shown on Figure 7.2 Sheet 6, presented in volume 6, annex 7.2.

7.6.4.48 Access A44a has been created to the south of Access A44 and will require securing private farm tracks accessible from Station Road. Station Road routes south from Reepham Road to the A1067 and has a 30mph speed limit in place between Marriotts Way and the A1067.

7.6.4.49 Route Section 17 terminates at the River Wensum. The river consists of a primary channel with overflow channels either side. The proximity of the onshore cable corridor to the river, in addition to rural nature of the surrounding landscape, results in a limited highway network from which roads can be used as accesses; therefore access to this section of the cable route will need to be secured from private land.

River Wensum to A1067 (Route Section 18)

7.6.4.50 The River Wensum routes from Lenwade to Norwich and intercepts the onshore cable corridor east of Lenwade and south of Section 17.

7.6.4.51 There are two accesses located on Section 18 as shown on Figure 7.2 Sheet 6, presented in volume 6, annex 7.2; however, both are in close proximity to one another. Access A45 is taken from Link 108, The Street, a small road leading to residential dwellings which routes parallel to the A1067. The Street is a 30 mph road with on-street parking Access A46 is taken directly from the A1067, Link 110. The A1067 is of a good standard and is one of the key commuter roads to Norwich from West Norfolk.

A1067 to stream at Easton (Route Section 19)

7.6.4.52 Section 19, at 6.1 km, is one of the largest sections of the onshore cable corridor as shown on Figure 7.2 Sheets 6 and 7, presented in volume 6, annex 7.2. As the onshore cable corridor routes south towards Norwich, the frequency of streams, major roads and railway increases which provide barriers to the onshore cable corridor which would require TT to complete.

7.6.4.53 Access to the north of this section of the onshore cable corridor will be taken from the A1067 via Access A46. Accesses A47 to A52 are taken from Marl Hill Road, Morton Lane and Ringland Lane south of the A1067.

7.6.4.54 To access the southern half of Section 19, Taverham Road, Honington Lane and Weston Road will be accessed from the A47 in addition to the B1535, allowing HGVs to route to accesses A53 to A55. Construction traffic will route from the A1067 and the A47 and will not route through Weston Longville

Stream at Easton to A47 (Route Section 20)

7.6.4.55 The A47 is one of two trunk roads within the transport study area, and crosses the onshore cable corridor north of Easton. Creating accesses onto trunk roads is typically avoided; however, there is a small access located to the west of the onshore cable corridor which routes into adjacent farmland. This could be utilised and negate having to construct an additional access. In addition, a small layby is located to the south of the main carriageway which HGVs could access.

7.6.4.56 Access point A56 has been created on the A47. An existing bellmouth access on the A47 routes north and provides access to farmland which will be used for the onshore cable corridor section 20 as shown on Figure 7.2 Sheet 7, presented in volume 6, annex 7.2.

A47 to River Yare (Route Section 21)

7.6.4.57 To the south of the main carriageway on the A47 is a layby from which an access point could be created which will not route directly onto the main carriageway. If an access point cannot be utilised from the A47, an additional access could be utilised from Dereham Road. A small overgrown track from Dereham Road to the layby on the A47 crosses the onshore cable corridor and could be utilised by construction vehicles to allow for TT to be used underneath the A47. The onshore cable corridor routes from the A47 to the south and east, broadly parallel to the A47 as it routes south of Norwich. There are four access points between the A47 and the River Yare (Accesses A57 to A60) over a length of approximately 2.9 km as shown on Figure 7.2 Sheet 7, presented in volume 6, annex 7.2.

7.6.4.58 The northernmost access is taken from Dereham Road and Church Lane, accessible from the A47 via a four-arm roundabout. The A47 goes from a single to dual carriageway from this roundabout to the east of Norwich.

River Yare to B1108 (Route Section 22)

7.6.4.59 Section 22 of the onshore cable corridor has two access points, A61 and A62 as shown on Figure 7.2 Sheet 7, presented in volume 6, annex 7.2, taken from Bawburgh Road and the B1108/Watton Road.

7.6.4.60 The B1108, a '3A2 – MD' road, has a 50 mph speed limit within the vicinity of the onshore cable corridor and a new access will be created onto it with the necessary geometric design to provide safe access to the onshore cable corridor.

7.6.4.61 Bawburgh Road is accessed from the B1108 via a staggered crossroads with Hall Road and is the national speed limit from the B1108 to the onshore cable corridor. There is a weight restriction of 7.5 t except for loading on the narrows single carriageway with limited visibility.

B1108 to stream (Route Section 23)

7.6.4.62 A small tributary from the River Yare routes south of the B1108 to the west of Hethersett. The stream crosses the onshore cable corridor at two locations. Access to the north of the stream will be taken from the B1108; this section is approximately 100 m in length and access A62 from the B1108 is the only access point as shown on Figure 7.2 Sheet 7, presented in volume 6, annex 7.2. The B1108, a '3A2 – MD' road, has a 50 mph speed limit within the vicinity of the onshore cable corridor; a new access will be created with the necessary geometric design to provide safe access to the onshore cable corridor.

Stream to stream west of Rectory Lane (Route Section 24)

7.6.4.63 The small tributary from the River Yare routes south of the B1108 and crosses the onshore cable corridor at two locations. Section 24 is located between the two points at which the stream crosses the onshore cable corridor, and there are no roads which cross the onshore cable corridor on Section 24.

7.6.4.64 Access, A63, has been created as a means of accessing this section of the onshore cable corridor as shown on Figure 7.2 Sheet 8, presented in volume 6, annex 7.2. It is expected that access will be taken from Rectory Lane and then across private land and this will be discussed with landowners to identify a preferred option prior to the DCO Application.

7.6.4.65 It is proposed that TT is used to cross both tributaries as this generates the maximum number of HGV movements for assessment purposes; however, there is possibility that trenching may be used on this section of the onshore cable corridor. In this case, access can be obtained from Access A62 routeing south of the B1108.

Stream west of Rectory Lane to stream east of Burnthouse Lane (Route Section 25)

7.6.4.66 Section 25 routes south of Little Melton to a small stream adjacent to Burnthouse Lane, and is approximately 1.7 km in length. There are four access points which are taken from Rectory Lane and Great Melton Road, Burnthouse Lane and Little Melton Road; A64, A65, A66 and A67 as shown on Figure 7.2 Sheet 8, presented in volume 6, annex 7.2.

7.6.4.67 Rectory Lane is a national speed limit single track with access taken from a priority junction from the B1108. Rectory Lane and Great Milton Road provide access to accesses A64 and A65.

7.6.4.68 Burnthouse Lane is accessed from the B1172 via Colney Lane and Back Lane. Colney Lane is a national speed limit '3B1 – HGV' road with access taken by a priority junction from the B1108.

Stream east of Burnthouse Lane to B1172 (Route Section 26)

7.6.4.69 Section 26 is approximately 1.3 km in length and routes to the B1172. Accesses A68 and A69, taken from Colney Lane and the B1172, could be utilised during construction of this section of the onshore cable corridor as shown on Figure 7.2 Sheet 8, presented in volume 6, annex 7.2.

7.6.4.70 Colney Lane is a national speed limit '3B1 – HGV' road with access taken by a priority junction from the B1172.

B1172 to stream east of Station Lane (Route Section 27)

7.6.4.71 The B1172 is a '3A2 – MD' road and runs parallel to the A11 from the A47. The onshore cable corridor routes south of the B1172 to a small stream which flows east to the River Yare. The distance between the B1172 and the stream to the south is approximately 200 m, with access to this section of road being taken from the B1172 via access A69. Access from A69 to the north can be taken from an existing farm access as shown on Figure 7.2 Sheet 8, presented in volume 6, annex 7.2.

Stream east of Station Lane to A11 (Route Section 28)

7.6.4.72 Station Lane routes north to south from the B1172 to the A11, parallel to the onshore cable corridor and could be used for access to Section 28 of the onshore cable corridor as shown on Figure 7.2 Sheet 8, presented in volume 6, annex 7.2.

A11 to Railway Line (Route Section 29)

7.6.4.73 The A11 is one of two trunk roads within the transport scoping area, and a key commuter road into Norwich.

7.6.4.74 Access A70 is located on the A11 to the south east of Hethersett. The A11 could provide access to the cable corridor between the A11 and the railway line approximately 100 m to the south as shown on Figure 7.2 Sheet 8, presented in volume 6, annex 7.2. The A11 is a national speed limit road with a kerbed central reservation. Alternatively, Station Lane to the west of the onshore cable corridor can be used to access farmland between the south of the A11 and the railway line.

Railway line to stream through woodland (Route Section 30)

7.6.4.75 Section 30 routes from the railway line, south and east towards Intwood, south of the A47. Accesses A71 and A72 are located on this section of the onshore cable corridor as shown on Figure 7.2 Sheet 8, presented in volume 6, annex 7.2.

7.6.4.76 The onshore cable corridor crosses a stream at Intwood Lane, with road signs stating that the road is prone to flooding with a Ford sign north of where the stream flows underneath Intwood Road. The stream passes through a small area of woodland within the onshore cable corridor search area .

Stream through Spruce's Plantation to Stream West of Intwood (Route Section 31)

7.6.4.77 Spruce's Plantation is a small area of woodland surrounding a stream which flows into the River Yare. It flows to an additional stream perpendicular to Spruce's Plantation and both streams cross the onshore cable corridor. Intwood Road and Intwood Lane cross these streams: both roads have Ford warning signs near the points in which the streams route under the road.

7.6.4.78 Access A73 has been created for this section of the onshore cable corridor, as shown on Figure 7.2 Sheet 8, presented in volume 6, annex 7.2, and the highway network utilised by this access point will be finalised using the comments received from this PEIR. If a private access is required then this will be discussed with landowners in advance of the DCO Application.

Stream West of Intwood to B1113 (Route Section 32)

7.6.4.79 Intwood Lane routes between the B1113 and a stream to the west. The cable will route through farmland from the stream to the B1113, with Intwood Lane being the only road which crosses the onshore cable corridor on this section.

7.6.4.80 As shown on Figure 7.2 Sheet 9, presented in volume 6, annex 7.2, access A74 has been created, taken from Intwood Lane whilst access A75 is located on the B1113.

B1113 to HVDC convertor/HVAC substation (Route Section 33)

7.6.4.81 The onshore HDVC Convertor/HVAC Substation will be located south of the A47 and east of the B1113. Access to this section of the onshore cable corridor will be taken from the B1113 via access point A75 and will end at the boundary of the proposed onshore HDVC Convertor/HVAC Substation as shown on Figure 7.2 Sheet 9, presented in volume 6, annex 7.2.

HVDC convertor/HVAC substation to end of PEIR corridor (Route Section 34)

7.6.4.82 The B1113 between the A140 and Swardeston is a national speed limit '3A2 – MD' road with good visibility. Mangreen Lane is a single track national speed limit road which is accessed from the B1113 via a priority junction. Access A76 is taken from Mangreen lane as shown on Figure 7.2 Sheet 9, presented in volume 6, annex 7.2.

7.6.4.83 Route Section 34 is located between the proposed onshore HDVC Convertor/HVAC Substation, and the end of the PEIR corridor. The cable will route from the onshore HDVC Convertor/HVAC Substation to the existing electrical substation west of the A140.

Summary of Accesses

7.6.4.84 The above route sections have set out potential access locations, some of which would be onto the public highway and some of which would be onto private land. For ease of reference, those that are onto private land are listed in volume 6, annex 7.5: Identification of Potential Accesses onto Private Land.

7.6.5 Existing Vehicle Restrictions

7.6.5.1 Figure 7.1, presented in volume 6, annex 7.1, shows the cable route and proposed access points, with Links on potential routes within the Traffic and Transport study area. There are restrictions on the passage of HGVs over 7.5 t on the following locations on the proposed access routes.

- Link 105: Hall Road to Reepham Road junction;
- Link 119: Marl Hill Road and Ringland Lane from A1067 to onshore cable corridor;
- Link 165: Bawburgh Road from onshore cable corridor to B1108;
- Link 166: Stocks Hill from link 163/164 to B1108;
- Link 172: Cantley Lane from Station Lane to A47/A11; and
- Link 181: Gowthorpe Lane.

7.6.5.2 In addition, there are signs on the road network stating that the following routes are not suitable for HGVs:

- Links 6 to 9: Sandy Hill Lane;
- Link 87: B1145 in Reepham; and
- Link 100: Ketts Lane.

7.6.5.3 The above links pass through or lead up to built-up areas with residential properties or other sensitive areas or are narrow in width for accommodating two-way HGV movements. Some of the above links may have to be used to access TT works in advance of the main onshore cable corridor works if there were no other access options.

7.6.6 Compound Areas

7.6.6.1 There will be several compound areas located along the onshore cable corridor with approximate spacings of 2 km. The compounds will be located within the onshore cable corridor and will be accessed using the access points or the haul road which will be constructed along the length of the onshore cable corridor.

7.6.6.2 There is one large compound that is located away from the corridor. Compound 1 (for ease of reference within this chapter) is located south of the A1067, south of Weston Longville and will be accessible from the A47 via Wood Lane. The compound is located to the south of Weston Longville; construction vehicles will route to the compound via the B1535 onto the airfield avoiding the village of Weston Longville.

7.6.6.3 Figure 7.1, presented in volume 6, annex 7.1, shows the cable route, compound areas and proposed access points.

7.6.7 Cable Access Routes

7.6.7.1 Access points for the construction of the onshore cable corridor have been grouped together to identify the roads from which entry points for the onshore cable corridor may be accessed. There are several route options for each onshore cable corridor access point; therefore, the onshore cable corridor has been grouped into smaller sections based on the potential access roads.

7.6.7.2 The remainder of the cable access route runs broadly parallel to the B1149 south from Holt to Reepham and Cawston; then routes to the south and west of Norwich. The route runs perpendicular to many principal roads which run from west to east Norfolk into Norwich; HGVs will route along trunk and principal roads where possible.

7.6.7.3 HGVs associated with the construction of the onshore cable corridor will route along roads such as the A140 and A47. These roads are not located within the vicinity of the onshore cable corridor routes itself, but provide an additional means of transporting HGVs to the north and south of Norfolk while minimising the impact of traffic generated by the cable construction route, by avoiding narrow carriageways and village centres with sensitive receptors or poor pedestrian provision.

Accesses and Links

7.6.7.4 67 access points to the onshore cable corridor have been identified, in addition to accesses for the compound, landfall, HVAC booster station and HVAC convertor/HVAC substation. The links on routes that could potentially be used for the onshore cable corridor access points are identified below and listed for each access, as discussed in 7.6.4. The links have been summarised at volume 6, annex 7.3: Description of Network.

7.6.7.5 The route options listed for each access set out the potential routeing options for HGVs from the trunk road network to the access. During the consultation period, the public, local highway authority and additional stakeholders are able to comment on the potential routeing for the accesses.

Landfall

7.6.7.6 The access points for landfall will be taken from the A149. The potential route options are set out in tables 7.7 to 7.10 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A1

7.6.7.7 Access A1 is located on the A149 at Weybourne. The potential route options are set out in tables 7.11 to 7.12 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A2

7.6.7.8 Access A2 is also located on the A149. The route options are set out in tables 7.13 to 7.14 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A3

7.6.7.9 Access A3 is located on Station Road, from Sandy Hill Lane between the A149 and A148. The route options are set out in tables 7.15 to 7.16 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A3a

7.6.7.10 Access A3a is located between Spring Beck and the North Norfolk Railway line. There are no roads along this section of the cable route which could provide access; therefore, the highway network necessary to access this section of the cable route will follow those necessary for accesses A3 and A4. A temporary access road will be constructed between Holgate Hill and the North Norfolk Railway across farmland; however, this will be discussed with landowners and confirmed within the DCO Application.

Access A4

7.6.7.11 Access A4 is located on Holgate Hill, to the south west of Weybourne. Holgate Hill routes between the A149 and A148, with the route options for this access are set out in tables 7.17 to 7.20 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A4a

7.6.7.12 For access A4a, it is proposed that access to this section of the cable route will be taken from Warren Road; however, the location and route will be finalised within the DCO Application.

Access A5

7.6.7.13 Access A5 is taken from the A148, with the route options for this access set out in tables 7.21 to 7.22 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A6

7.6.7.14 Access A6 is taken from Manor House Road, with the route options for this access are set out in table 7.23 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A7

7.6.7.15 Access A7 is also taken from Manor House Road, with the route options for this access set out in tables 7.24 to 7.25 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A8

7.6.7.16 Access A8 is also taken from Manor House Road, with the route options for this access set out in tables 7.26 to 7.27 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A9

7.6.7.17 Access A9 is located on High Kelling Road. The route options for this access are set out in tables 7.28 to 7.31 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A13

7.6.7.18 Access A13 is located on The Street/Hempstead Road, accessible from the A148 at Holt. The route options for this access are set out in tables 7.32 to 7.33 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A15

7.6.7.19 Access A15 is taken from School Lane. The route options for this access are set out in tables 7.34 to 7.37 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A17

7.6.7.20 Access A17 is taken from Hole Farm Road. The route options for this access are set out in tables 7.38 to 7.41 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A18

7.6.7.21 Access A18 is taken from Plumstead Road, with the route options to the access set out in tables 7.42 to 7.43 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A23

7.6.7.22 Access A23 is taken from Sweetbriar Lane, accessed from the B1149. The potential routes to this access are set out in tables 7.44 to 7.45 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access 25

7.6.7.23 Access 25 is located on the B1149 north of Saxthorpe and Corpusty. The potential route options to this access are set out in tables 7.46 to 7.47 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A26

7.6.7.24 Access 26 is located on the B1354, to the north of Corpusty and Saxthorpe. The potential route options to this access are set out in tables 7.48 to 7.49 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A27

7.6.7.25 Access A27 is situated to the east of Access A26. The potential route options to this access are set out in tables 7.50 to 7.51 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A28

7.6.7.26 Access A28 is situated on Town Close Lane, west of Saxthorpe and Corpusty. The potential route options to this access are set out in tables 7.52 to 7.57 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A29

7.6.7.27 Access A29 is located on Wood Dalling Road, south of Corpusty and Saxthorpe. The potential route options to this access are set out in tables 7.58 to 7.59 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A30

7.6.7.28 Access A30 is located on Blackwater Lane, and the potential route options are set out in tables 7.60 to 7.63 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A31

7.6.7.29 Access A31, located on Heydon Lane, has the route options set out in tables 7.64 to 7.65 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A32

7.6.7.30 Access A32 is located on Heydon Road, from the B1149. The potential route options to this access are set out in tables 7.66 to 7.67 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A33

7.6.7.31 Access A33, taken from a road from Heydon Road to Fieldhouse Farm, has the route options set out in tables 7.68 to 7.69 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A34

7.6.7.32 Access A34 is taken from The Street, north of the B1145. The route options are set out in tables 7.70 to 7.71 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A35

7.6.7.33 Access A35 is taken from the B1145, north of Reepham. The route options are set out in tables 7.72 to 7.73 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A36

7.6.7.34 To the north east of Reepham is Access 36, taken from The Moor. The potential route options to this access are set out in tables 7.74 to 7.77 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A37

7.6.7.35 Access A37 requires a haul road between two sections of the onshore cable corridor which will require TT to cross, with no roads which cross the onshore cable corridor in this section..

7.6.7.36 It is proposed that to secure access to A37, access to private farm tracks will be secured. If access to A37 cannot be secured, access to Route Section 14 will be taken from Access A38. The highway network utilised in accessing A37 will be similar to the highway network used for Access A38. A37 has been created but the location and route will be finalised within the DCO Application

Access A38

7.6.7.37 Access A38 is located on Church Road to the east of Reepham. The potential route options to this access are set out in tables 7.78 to 7.79 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A39

7.6.7.38 Access A39 is reached from The Grove to the south east of Reepham. The potential route options to this access are set out in tables 7.80 to 7.81 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A40

7.6.7.39 Access A40, located on Reepham Road, has the route options set out in tables 7.82 to 7.84 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A41

7.6.7.40 Access A41, located on Church Road, has the route options set out in tables 7.85 to 7.187in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A42

7.6.7.41 As the onshore cable corridor routes south towards the A1067, A47 and A11, using the A140 to the east as a means of access becomes unfeasible given its distance from the lower half of the onshore cable corridor. The remaining accesses may have fewer route options as the onshore cable corridor crosses roads directly on, or adjacent to, the trunk road network.

7.6.7.42 Access A42 is located on Church Farm Lane, north of Alderford. The route option is set out in table 7.88 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A43

7.6.7.43 Access A43 is taken from Hall Road, north east of Lenwade. The route is set out in table 7.89 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A44

7.6.7.44 Access A44 is taken from a small track from Station Road, to the north of Attlebridge. The route is set out in table 7.90 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A44a

7.6.7.45 Access A44a has been created to the south of Access A44 and will require securing private farm tracks accessible from Station Road. Station Road routes south from Reepham Road to the A1067 and has a 30mph speed limit in place between Marriotts Way and the A1067. A44a has been created but the location and route will be finalised within the DCO Application

Access A45

7.6.7.46 Access A45, from The Street, is immediately north of the A1067 as set out in table 7.91 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A46

7.6.7.47 Access A46 is taken from the A1067. The route is set out in tables 7.92 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A47

7.6.7.48 Access A47 of the onshore cable corridor is located on Marl Hill. The route is set out in table 7.93 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A48

7.6.7.49 Access A48 is reached from Morton Lane, south of Marl Hill. The route is set out in table 7.94 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A49

7.6.7.50 Access A49 is also reached from Morton Lane, south of Marl Hill. The route is set out in table 7.95 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A50

7.6.7.51 Access A50 is also reached from Morton Lane, south of Marl Hill. The route is set out in table 7.96 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A51

7.6.7.52 Access A51 is also accessed from Morton Lane, south of Marl Hill. The route is set out in table 7.97 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A52

7.6.7.53 Access A52 is also reached from Morton Lane. The route is set out in table 7.98 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A53

7.6.7.54 Access A53 is taken from Weston Road. The route options are set out in tables 7.99 to 7.100 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A54

7.6.7.55 Access A54 is taken from Taverham Road. The two route options for this access are set out in tables 7.101 to 7.102 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access 55

7.6.7.56 Access 55 is taken from Weston Road. The route options are set out in tables 7.103 to 7.104 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A56

7.6.7.57 Access 56 is currently proposed and is located on the A47, in the event that appropriate junction geometries for an access from the trunk road could be achieved, as set out in table 7.105 in volume 6, annex 7.6: Summary of Potential Construction Access Points.. An existing bellmouth access on the A47 routes north and provides access to farmland which will be used for the onshore cable corridor section 20. If access from the trunk road network for the onshore cable corridor cannot be achieved to a safe and suitable standard, this access will be removed.

Access A57

7.6.7.58 Access A57 is reached from the A47 via Church Lane. The route option is set out in table 7.106 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access 58

7.6.7.59 Access 58 is located on Broom Lane, accessed from Marlingford Road. The route option is set out in table 7.107 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A59

7.6.7.60 Access A59, north of Marlingford, is accessed from Easton Road via Marlingford Road. The links that comprise this route are set out in table 7.108 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access 60

7.6.7.61 Access A60 is accessed from Bawburgh Road. The links that comprise this route are set out in tables 7.109 to 7.111 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A61

7.6.7.62 Access A61 is taken from Bawburgh Road, to the west of Bawburgh and the A47. The individual links that encompass this route are set out in tables 7.112 to 7.113 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access 62

7.6.7.63 Access A62 is located on the B1108. The individual links that encompass this route are set out in tables 7.114 to 7.115 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A63

7.6.7.64 Access A63 requires a haul road between two sections of the onshore cable corridor which will require TT to cross, with no roads which cross the onshore cable corridor in this section. A63 has been created but the location and route will be finalised within the DCO Application. The highway network utilised in accessing A37 will be similar to the highway network used for Access A62 and A64.

Access A64

7.6.7.65 Access A64 is taken from Rectory Lane, south of the B1108. The individual links that encompass this route are set out in tables 7.116 to 7.117 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A65

7.6.7.66 Access A65 is also taken from Rectory Lane, south of the B1108. The individual links that encompass this route are set out in tables 7.118 to 7.119 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A66

7.6.7.67 Access A66 is taken from Little Melton Road via Burnthouse Lane. The individual links that make up this route are set out in table 7.120 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A67

7.6.7.68 Access A67 is taken from Burnthouse Lane. The individual links that make up this route are set out in table 7.121 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A68

7.6.7.69 Access A68 lies on Colney Lane, and the individual links that encompass this route are set out in table 7.122 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A69

7.6.7.70 Access A69 is located on the B1172, east of Hethersett and north of the A11. Details of the links that would be utilised by this access point are set out in table 7.123 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A70

7.6.7.71 Access A70 has been created on the A11 in the event that appropriate junction geometries for an access from a trunk road could be achieved, as set out in table 7.124 in volume 6, annex 7.6: Summary of Potential Construction Access Points. If access from the trunk road network is not permitted for the onshore cable corridor, this access will be removed.

7.6.7.72 The A11 could provide access to the cable corridor between the A11 and the railway line. Alternatively, access to this section of the cable route could be taken from Station Lane, south of the A11 and north of the railway line. Access via farm tracks would be discussed with landowners prior to the DCO Application.

Access A71

7.6.7.73 Access A71 is located on Cantley lane, south of the A11 and west of the A47. Details of the links that would be utilised by this access point are set out in tables 7.125 to 7.126 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A72

7.6.7.74 Access A72, located on Intwood Road, would utilise the links set out in table 7.127 in volume 6, annex 7.6: Summary of Potential Construction Access Points:

Access A73

7.6.7.75 Access A73 has been created to the south of Access A72 and will require use of private farm tracks, which would be discussed with landowners prior to the DCO Application. A73 will require a haul road between two sections of the onshore cable corridor which will require TT to cross, with no roads which cross the onshore cable corridor in this section. The location and route will be finalised within the DCO Application, with the highway network utilised in accessing A73 being similar to the highway network used for Access A72 and A74.

Access A74

7.6.7.76 Access A74 is taken from Intwood Lane and would utilise the links set out in table 7.128 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A75

7.6.7.77 Access A75 is located on the B1113 and would utilise the links set out in table 7.129 to 7.130 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Access A76

7.6.7.78 Access A76, accessible from Mangreen Lane, marks the final access point of the onshore cable corridor and routes between the proposed HDVC convertor/HVAC substation, and the existing substation. The route options are set out in tables 7.131 to 7.132 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

HVDC Convertor/HVAC Substation

7.6.7.79 The HVDC convertor/HVAC substation is located adjacent to the B1113 and will utilise Access A75.

Compound C1

7.6.7.80 Compound C1 is not located within the PEIR corridor, therefore will not utilise any of the access points listed above. The links necessary to accesses Compound C1 are set out in table 7.133 in volume 6, annex 7.6: Summary of Potential Construction Access Points.

Summary

7.6.7.81 The route options listed above seek to incorporate and utilise trunk roads, principal roads, and roads listed as Access, MD or HGV roads on the Norfolk County Council Route Hierarchy map, produced by Highway Network Management. However; there are few trunk roads in the area, particularly to the north: most A and B roads route south towards Norwich and there are no motorways within the area. The A47 and A11 are the two trunk roads within the area; therefore all construction traffic routes from the edge of the trunk road network within the area, to each individual access.

7.6.8 Sustainable Travel

Public Transport Services

7.6.8.1 Details of bus services accessible from bus stops located within 2 km of the cable corridor are summarised in Table 7.134.

Table 7.134 Local Bus Services (as of March 2017).

Stop	Service	Route	Frequency (Monday to Friday)	Frequency (Saturday)	First Service	Last Service
Church, Weybourne	Coast-hopper	Wells-next-to-Sea - Weybourne - Sheringham - Cromer	Hourly	Hourly	08:31	17:01
High Kelling, A148	5	North Walsham - Mundesley - Cromer - Holt	30 minutes	30 minutes	07:00	17:41
	19	Cromer - Weybourne - Holt	10:12 Monday, Wednesday and Friday (Return 12:25)			
	44	Sheringham - High Kelling - Holt	30 minutes	30 minutes	10:07	23:55
The Street, Hempstead	8	Aldborough - Baconsthorpe - Holt	Friday 09:15 (Return 12:15)			
	16	Cromer - Baconsthorpe - Holt	Tuesday and Thursday 10:12 (Return 12:25)			
	17	Holt - Baconsthorpe - Sheringham - West Runton	Thursday 09:15 (Return 12:10)			
	NS2	Matlaske - Baconsthorpe - Norwich	Wednesday 09:20 (Return 13:45)			
Green, Edgefield	8	Aldborough - Baconsthorpe - Holt	Friday 09:15 (Return 12:15)			
	42	Norwich - Reepham - Edgefield - Holt	Mon - Sat 06:45 (Return 17:38)			
Croft Lane, Saxthorpe	42	Norwich - Reepham - Edgefield - Holt	Mon - Sat 06:45 (Return 17:38)			
	45	Norwich - Corpusty - Holt	3 per day (2 on Wednesdays)	1 per day	09:50	17:35
	45A	Norwich - Felthorpe - Reepham - Holt	Monday to Friday 16:20, Saturday 17:35			
	45B	Holt - Corpusty - Norwich	Wednesday 09:30 (Return 13:05) Saturday 08:45 (Return 13:40)			
Heydon Road	24	Fakenham - Reepham - Norwich	Tuesday 09:05 (Return 13:15)			
	42	Norwich - Reepham - Edgefield - Holt	Mon - Sat 06:45 (Return 17:38)			
	43	Reepham - Aylsham - Norwich	Every 2 hours	3 per day	09:30	16:30
	45A	Norwich - Felthorpe - Holt	Monday to Friday 16:20, Saturday 17:35			
	80	Aylsham - Reepham - Dereham	Friday 09:30 (Return 13:50)			
	98	Cawston - Reepham - Fulmodeston - Fakenham	Thursday 09:10 (Return 13:15)			

Stop	Service	Route	Frequency (Monday to Friday)	Frequency (Saturday)	First Service	Last Service
Hall Road, Alderford	24	Fakenham - Reepham - Norwich	Tuesday 09:05 (Return 13:15)			
Fakenham Road, Morton on the Hill	X29	Fakenham - Foulsham - Norwich	Hourly	Hourly	06:30	17:40
Des Amis, Easton	4	Norwich - Easton - Dereham - Swanton Morley	Hourly	Hourly	07:15	18:15
Kings Head, Bawburgh	15	Shipdham - Hardingham - Norwich	Wednesday 09:10 (Return 13:05)			
	806	Bawburgh - Wymondham	Friday 09:20 (Return 12:10)			
Colney Lane, Hetherset	6	Norwich - Hetherset - Wymondham - Watton	Hourly	Hourly	08:15	18:15
	6A	Norwich - Hetherset - Attleborough	Two services daily (16:45 and 19:10)			
	9A	Norwich - Cringleford - Hetherset	Monday to Friday 08:05 (Return 15:00/16:00)			
	14/15/15A	Thorpe St Andrew - Norwich - Hetherset - Wymondham	Every 15 minutes	Every 15 minutes	06:38	18:40
	13A/13B/13C	Norwich - Hetherset	One morning and 4 evening services daily (07:10, 19:20, 20:20, 21:45, 22:45)			
	Short Lane, Main Road	10A	East Harling - Swardeston - Norwich	2 services Monday to Friday 06:48 and 09:15 (Return 13:20, 16:10 and 17:45)		
37/38		Norwich - Mulbarton - Long Stratton	Half Hourly	Half Hourly	07:21	18:02
Hall, Dunston	1	Diss - Aslacton - Norwich	4 services per day		07:05	13:30
	2	Long Stratton - Norwich	Every 2 hours	5 per day	07:17	21:00
	38	Norwich - Mulbarton	Half Hourly	Half Hourly	10:06	17:48
	40	Diss - Harleston - Norwich	Saturday 08:30 (Return 15:05)			
	83	Harleston - Pulham - Norwich	5 per day	4 per day	06:55	17:05

Cycle Infrastructure

7.6.8.2 The onshore cable corridor is located within a section of Norfolk which consists primarily of agricultural land, with few heavily urbanised areas; however, several residential areas lie within 5 km of the onshore cable corridor. Route 1 of the National Cycle Network (NCN) routes through Reepham and along a traffic-free former railway line, routeing south through Norwich. Route 30 of the NCN routes through Cromer and west to Holt, crossing Route 33 south of Cromer which routes to Reepham. There therefore exists potential for construction workers to cycle to work.

Pedestrian Infrastructure

7.6.8.3 2 km is generally recognised as a distance that people would be prepared to walk to work, as set out in the Institution of Highways and Transportation publication 'Providing for Journeys on Foot', 2000. Residential areas in Weybourne, Reepham, Hethersett and Easton are in close proximity to the onshore cable corridor, although footway provision in some areas is poor. It is concluded that there is some potential for construction workers to walk to the onshore cable corridor, although this potential is limited due to the linear nature of the onshore cable route. Construction staff will not be commuting to a fixed location for the duration of the construction project; therefore, the capacity to commute via walking or cycling will vary.

7.6.9 Future baseline scenario

7.6.9.1 An impact assessment has not been undertaken at this stage; therefore, assessments will be undertaken and reported on as part of the ES submitted with the DCO Application to assess the construction impact of the cable route, compounds and electrical substation and convertor station. The impact assessment will entail a future baseline scenario for the future year in which construction has commenced, with the traffic surveys undertaken growthed to forecast traffic conditions on the local highway network during this future year. The construction phase generates the most number of vehicle movements in comparison to the operational and decommissioning phases and so undertaking assessments with a future baseline for this phase covers the other phases.

7.6.9.2 Specific traffic surveys will be undertaken to inform the baseline position for this assessment. These will involve the placement of ATCs and MCCs on areas of the highway network. Annual Average Daily Traffic Flows will also be obtained from the Department of Transport for the A1067, A140, A148 and A149. This will enable a future baseline scenario to be established from which construction traffic will be assessed.

7.6.9.3 To assess road safety along the adjacent highway network, Personal Injury Accident data will be obtained from Norfolk County Council for the latest available three-year period.

7.6.9.4 Future baseline scenarios will be created using these data sets. Traffic growth rates will be applied to the traffic flows and any committed developments added in to create the relevant future baseline scenarios.

7.6.9.5 The traffic generated by the construction of the onshore cable route, HVAC booster station and HVDC convertor / HVAC substation will generate the largest volume of vehicle movements, therefore only this scenario has been assessed. Vehicle movements associated with maintenance of the onshore cable route, HVAC booster station and HVDC convertor / HVAC substation will be negligible in relation to the construction phase, therefore it is not necessary to assess this if a worst case scenario has already been undertaken.

7.6.10 Data limitations

7.6.10.1 The baseline data has been obtained from recognised sources and methodologies, and the data that will be gathered, such as traffic survey, will be obtained by the same means. In this sense, there are only limited limitations to their use. The traffic survey data will be considered representative of current conditions.

7.7 Key parameters for assessment

7.7.1 Maximum design scenario

7.7.1.1 The maximum design scenarios identified in Table 7.135 have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. These scenarios have been selected from the details provided in the project description (volume 1, chapter 3: Project Description). Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the project Design Envelope (e.g. different turbine layout), to that assessed here be taken forward in the final design scheme.

7.7.1.2 There is an inter-relationship with this chapter and the Air Quality and Noise and Vibration chapters in so far as these two chapters consider traffic flows. The traffic flows will be made available and these two chapters will utilise these as part of their assessments and are therefore fully consistent with the above.

7.7.2 Impacts scoped out of the assessment

7.7.2.1 On the basis of the baseline environment and the project description outlined in volume 1, chapter 3: Project Description, a number of impacts are proposed to be scoped out of the assessment Traffic and Transport. These impacts are outlined, together with a justification for scoping them out, in Table 7.136.

7.7.2.2 The level of vehicle generation during the operational and decommissioning phases would be significantly lower than during the construction phase, thus, these impacts have been scoped out of the assessment.

- 7.7.2.3 During the operational phase, the only vehicle movements generated will be maintenance visits, which will be typically one vehicle on an approximate weekly basis. These visits are likely to be made by light vehicles only and would use the existing road network and permanent HVAC booster station and HVDC converter/HVAC substation access constructed as part of Hornsea Three. One vehicle arrival per week is very low and infrequent and is significantly under thresholds on which assessment is required. Even if repair work was required for example to a section of cable, such vehicle movements would be low and would be under the thresholds on which assessment would be required. Therefore, there will be no significant effects resulting from the traffic generated during the operational phase and an assessment of this is scoped out.
- 7.7.2.4 Vehicle movements generated during the decommissioning phase will be lower than those during the construction phase since the removal of materials does not need to be in any order and / or delicately transported and some infrastructure may be retained in-situ. Background traffic flows are generally increasing year on year, therefore, in comparison to the construction phase, the combination of lower Hornsea Three traffic flows against higher baseline traffic flows results in a lower impact. Therefore, the assessments undertaken for the construction assessment will cover the decommissioning phase together with the measures identified. An assessment of the decommissioning phase is therefore scoped out. However, all measures that are identified for the construction phase will also be adopted during the decommissioning phase, thus, for a worst case assessment, it can be determined that the identification of significant effects resulting from traffic generated during the construction phase, would also apply to the decommissioning phase.

Table 7.135: Maximum design scenario considered for the assessment of potential impacts on Traffic and Transport.

Potential impact	Maximum design scenario	Justification
Construction phase		
<p>Landfall</p> <p>The temporary impact of the construction work may affect severance of routes. The temporary impact of the construction work may affect pedestrian delay. The temporary impact of the construction work may affect pedestrian amenity. The temporary impact of the construction work may affect highway capacity. The temporary impact of the construction work may affect accidents and road safety. The temporary impact of hazardous, dangerous and abnormal loads during construction works.</p>	<p>The temporary construction compound has dimensions of 300 m by 200 m at the landfall. Thrust bore crossing method at landfall with pits measuring 5 m x 25 m x 6 m. A reasonable assumption is that 75% of staff assumed to drive themselves to work and no access by public transport. (Additional 25% of staff assumed to car share). The worst case would involve the import and export of all material. The shortest practical duration of works would maximise daily HGV movements. A duration of 300 working days has been assumed.</p>	<p>The use of Thrust Bore, rather than an alternative trenchless technology, represents the highest number of vehicle movements due to the requirement to transport steel shuttering and additional craneage compared with other techniques such as horizontal directional drilling. Larger areas result in larger amounts of material and thus larger numbers of HGV movements. Fewer number of days to transport a given amount of material results in a larger number of daily HGV movements.</p>
<p>Onshore Cable Corridor</p> <p>The temporary impact of the construction work may affect severance of routes. The temporary impact of the construction work may affect pedestrian delay. The temporary impact of the construction work may affect pedestrian amenity. The temporary impact of the construction work may affect highway capacity. The temporary impact of the construction work may affect accidents and road safety. The temporary impact of hazardous, dangerous and abnormal loads during construction works</p>	<p>The route length is approximately 55 km. Duration of construction programme for the compounds is 30 months. A reasonable assumption is that 75% of staff assumed to drive themselves to work and no access by public transport. (Additional 25% of staff assumed to car share). Widest cable trench option - two cable trenches up to 7 m width at surface (6 m at base) and 2 m depth to bottom of trench. Depth of stabilised backfill up to 1.5 m. Up to 330 junction bays and link boxes (separate set for each circuit and average separation distance of 1 km). Closest separation distance between junction bay and link box: 750 m. Area of each junction bay: 225 m² (9 m x 25 m). Total area required for junction bays – 74,250 m² (based on 330 junction bays). Area of each link box: 9 m² (3 m x 3 m). Total area required for link boxes – 2,970 m² (based on 330 link boxes). Up to two temporary haul roads 5 m wide (7 m wide at passing places) constructed using 600 mm crushed aggregate on geotextile. Aggregate and geotextile matting would be removed when construction is complete. Maximum area of construction compounds is 33,000 m². (average area 17,000 m² - benchmarked against Hornsea Two with 10% buffer) located at 2 km intervals. Number of TT crossings: up to 50 (provisional estimate). A TT compound would be provided at both ends of the TT crossing each with a minimum area of 4,900 m² (70 m x 70 m). Area required for junction bay compounds – 40 m x 40 m. 50% of the area of each compound would be surfaced with crushed aggregate. The aggregate would be removed when construction of the project is complete</p>	<p>Maximising the depth and width of stabilised backfill/trenches would maximise HGV movements. Maximising the number of parallel trenches (minimum number of circuits per trench) would maximise HGV movements. The maximum adverse scenario in terms of traffic would be based on the minimum estimate of construction length. Larger areas/volumes result in larger amounts of material and thus larger numbers of HGV movements. Fewer number of days to transport a given amount of material results in a larger number of daily HGV movements.</p>

Potential impact	Maximum design scenario	Justification
<p>Onshore HVDC converter/HVAC substation</p> <p>The temporary impact of the construction work may affect severance of routes. The temporary impact of the construction work may affect pedestrian delay. The temporary impact of the construction work may affect pedestrian amenity. The temporary impact of the construction work may affect highway capacity. The temporary impact of the construction work may affect accidents and road safety. The temporary impact of hazardous, dangerous and abnormal loads during construction works.</p>	<p>Permanent area of site is 100,000 m² plus a temporary works area of 100,000 m². The transmission option with the greatest number of buildings and largest footprint is the HVDC converter station – up to five buildings. The main building (single building scenario) for the HVDC converter station will have a footprint of 11,250 m² (75 m x 150 m). Dimensions for the multiple building scenario would be reduced proportionately but the overall footprint would be the same. Construction of the onshore HVDC converter/HVAC substation would generate the following number of visits (i.e. each consists of two trips (arrival and departure)): Site clearance: 15,000 Foundations/civils: 4,000 Miscellaneous deliveries: HGV (3,500) and truck (1,500) Abnormal loads: 12 Staff: 55,000 (technical) and 80,000 (office) Total daily vehicles (155,000) and HGVs (3,500).</p>	<p>A maximum area/volume of site cleared for works would maximise HGV movements. Larger areas/volumes result in larger amounts of material and thus larger numbers of HGV movements. The maximum adverse scenario in terms of traffic would be based on the minimum estimate of construction length. Fewer number of days to transport a given amount of material results in a larger number of daily HGV movements.</p>
<p>Onshore HVAC booster station</p> <p>The temporary impact of the construction work may affect severance of routes. The temporary impact of the construction work may affect pedestrian delay. The temporary impact of the construction work may affect pedestrian amenity. The temporary impact of the construction work may affect highway capacity. The temporary impact of the construction work may affect accidents and road safety. The temporary impact of hazardous, dangerous and abnormal loads during construction works.</p>	<p>Permanent area of site is 25,000 m² plus a temporary works area up to 25,000 m². Building scenario with the largest footprint - single building with area of 4,500 m² (150 m length and 30 m width) and height up to 12.5 m. All topsoil and subsoil generated from levelling and earthworks would be removed from the site.</p>	<p>A maximum area/volume of site cleared for works would maximise HGV movements. Larger areas/volumes result in larger amounts of material and thus larger numbers of HGV movements. The maximum adverse scenario in terms of traffic would be based on the minimum estimate of construction length. Fewer number of days to transport a given amount of material results in a larger number of daily HGV movements.</p>
<p>Operation phase</p>		
<p>The impacts arising from traffic associated with operation of the onshore cable corridor may affect traffic and transport receptors.</p>	<p>Maintenance visits will be approximately on a weekly basis. These visits are likely to be made by light vehicles only and would use the existing road network and permanent HVDC converter/HVAC substation access constructed as part of Hornsea Three.</p>	<p>Maximising the number of routine inspections and maintenance/repairs/replacements would maximise the number of vehicle movements.</p>
<p>Decommissioning phase</p>		
<p>The temporary impact of the construction work may affect severance of routes. The temporary impact of the construction work may affect pedestrian delay. The temporary impact of the construction work may affect pedestrian amenity. The temporary impact of the construction work may affect highway capacity. The temporary impact of the construction work may affect accidents and road safety. The temporary impact of hazardous, dangerous and abnormal loads during construction works.</p>	<p>Building materials and equipment removed from the onshore HVDC converter/HVAC substation site and HVAC booster station. Onshore cable corridor and its associated infrastructure being removed.</p>	<p>The worst case assumes all buildings, equipment and infrastructure removed from the site by road and therefore the maximum number of traffic movements would be generated.</p>

Table 7.136 Impacts scoped out of the assessment for Traffic and Transport.

Potential impact	Justification
Construction phase	
N/A	N/A
Operation phase	
Assessment of effects	During the operational phase, the only vehicle movements generated will be maintenance visits, which will be on an approximate weekly basis. These visits are likely to be made by light vehicles only and would use the existing road network and permanent HVDC converter/HVAC substation access constructed as part of Hornsea Three. Such movement is very low and infrequent and will be significantly under thresholds on which assessment is required.
Decommissioning phase	
Assessment of effects	Vehicle movements generated during the decommissioning phase will be lower than those during the construction phase and so the assessments undertaken for the construction assessment will cover the decommissioning phase together with the measures identified.

7.8 Impact assessment criteria

7.8.1 Assessment Guidance

7.8.1.1 The assessment within this chapter will be prepared with reference to the ‘Guidelines for the Environmental Assessment of Road Traffic’ (IEMA, 1993) and Volume 11 – Environmental Impact Assessment of the Design Manual for Roads and Bridges (DMRB) (Highways Agency et al, 2008). The significance of transport environmental effects will be assessed by considering the interaction between the magnitude of the impacts and the sensitivity of the receptors in the vicinity of transport corridors. This assessment will compare the future baseline situation in the year of construction with the development, taking into account other schemes that are likely to affect the future baseline condition in the year of construction.

7.8.1.2 Consistent with the IEMA guidelines, the following will be considered in this chapter:

- Driver Delay;
- Severance of Routes;
- Pedestrian Delay;
- Pedestrian amenity;
- Accidents and Road Safety; and
- Hazardous, Dangerous and Abnormal Loads.

7.8.1.3 Noise and Air Quality are considered separately, within volume 6, chapters 8: Noise and Vibration and chapter 9: Air Quality, are based upon traffic flows derived from this Chapter. Public Rights of Way and diversions are considered within volume 6, chapter 6: Land Use, Agriculture and Recreation.

7.8.2 Technical Methodologies

7.8.2.1 The technical methodology for undertaking the assessment of transport impacts will be based upon the IEMA Guidelines for the Environmental Assessment of Road Traffic, as set out above. A Transport Assessment will be prepared in accordance with the guidance contained within the DfT’s Guidance on Transport Assessment, (DfT, 2007).

7.8.2.2 Although this guidance has since been withdrawn, it has not been replaced and in the absence of any such replacement remains the guide referred to by Transport and Highways professionals. The DfT guidance relates, in particular, to the description of existing transport conditions, the assessment of highway safety and public transport services, the identification of traffic growth forecasts, the derivation of generated traffic and the distribution and assignment of traffic.

7.8.2.3 The purpose of this PEIR Chapter is to set out the potential access routes and construction HGV movements to receive comments on these and then enable their assessment. A Transport Assessment will be prepared as part of the DCO Application in accordance with the above DfT guidance and volume 6, annex 7.1: Transport Assessment sets out a skeleton Transport Assessment with details on its proposed content.

7.8.2.4 The assessment of abnormal load movements is informed by the Road Vehicles (Construction and Use) Regulations 1986 (as amended) and the Road Vehicles (Authorisation of Special Types) (General) Order 2003. The ability of vehicles to negotiate links and junctions is assessed using the TRACK computer programme (Savoy Computing Services Ltd, 2012) that models the areas required to allow the passage of vehicles and loads.

7.8.3 Screening Tests

7.8.3.1 In order to establish whether a highway link should be included as part of the detailed environmental assessment the following tests, that are set out in the IEMA Guidelines, are applied:

- Test 1: include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and
- Test 2: include any other specifically sensitive areas where traffic flows will increase by 10% or more.

7.8.3.2 Any link where changes in total traffic flows or HGV flows resulting from the development are predicted to be less than 10% is screened out of the assessment. It should be noted that changes of less than 10% are generally considered to be insignificant given that the daily variations in background traffic flows may fluctuate by this amount. Links where the predicted changes in total traffic flows or HGV flows are between 10% and 30% in the presence of sensitive receptors and where changes in total traffic flows or HGV flows are in excess of 30% are subjected to a more detailed level of assessment in relation to potential transport environmental effects.

7.8.4 Impact Assessment Criteria

7.8.4.1 The criteria for determining the significance of effects is a two stage process that involves defining the sensitivity of the receptors and the magnitude of the impacts. This section describes the criteria to be applied in this chapter to assign values to the sensitivity of receptors and the magnitude of potential impacts. The terms used to define sensitivity and magnitude are based on those used in the DMRB methodology, which is described in further detail in volume 1, chapter 5: Environmental Impact Assessment Methodology.

7.8.4.2 The criteria for defining sensitivity in this chapter are outlined in Table 7.137 below.

Table 7.137: Definition of terms relating to the sensitivity of the receptor.

Sensitivity	Definition used in this chapter
Very High	Very High: Those receptors with greatest sensitivity with site-specific reasons for being particularly sensitive to changes in traffic flow (e.g. community with high incidence of mobility impairment requiring to cross roads to access essential facilities)
High	High: Receptors of high sensitivity to traffic flows (e.g. schools, colleges, playgrounds, accident black spots, urban/residential roads without footways that are used by pedestrians)
Medium	Medium: Traffic flow sensitive receptors including (e.g. congested junctions, doctors surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, un-segregated cycle ways, community centres, parks, recreation facilities, retirement homes)
Low (or lower)	Low: Receptors with some sensitivity to traffic flow (e.g. places of worship, public open space, nature conservation areas, listed buildings, tourist attractions and residential areas with adequate footway provision)
Negligible	Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions

7.8.4.3 The criteria for defining magnitude in this chapter are outlined in Table 7.138 below.

Table 7.138: Definition of terms relating to the magnitude of an impact.

Magnitude of impact	Definition used in this chapter
Major	Substantial or total loss of capability for movement along or across transport corridors, loss of access to key facilities and loss of highway safety. Severe delays to travellers (adverse).
	Large scale improvement in the capability for movement along and across transport corridors, major improvement in access to key facilities, in highway safety and in delays to travellers (beneficial).
Moderate	Moderate loss of capability for movement along or across transport corridors, loss of access to key facilities and loss of highway safety. Severe delays to travellers (adverse).
	Moderate improvement in the capability for movement along and across transport corridors, major improvement in access to key facilities, in highway safety and in delays to travellers (beneficial).
Minor	Some measurable loss of capability for movement along and across transport corridors, some measurable loss of access to key facilities and some measurable loss of highway safety. Some measurable increase in delays to travellers (adverse).
	Some measurable increase in the capability for movement along and across transport corridors, some measurable increase in access to key facilities and some measurable increase in highway safety. Some measurable increase in delays to travellers. Reduced risk of negative impacts occurring (beneficial).

Magnitude of impact	Definition used in this chapter
Negligible	Very minor loss of capability for movement along and across transport corridors, very minor loss of access to key facilities and very minor loss of highway safety. Very minor increase in delays to travellers (adverse).
	Very minor increase in capability for movement along and across transport corridors, very minor increase in access to key facilities and very minor increase in highway safety. Very minor decreases in delays to travellers (beneficial).
No change	No loss of capability for movement along and across transport corridors, no change of access to key facilities and highway safety. No delays to travellers.

7.8.4.4 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 particular method employed for this assessment is presented in Table 7.139. Where a range of significance of effect is presented in Table 7.139, the final assessment for each effect is based upon expert judgement.

7.8.4.5 For the purposes of this assessment, any effects with a significance level of minor or less will be concluded to be not significant in terms of the EIA Regulations.

Table 7.139: Matrix used for the assessment of the significance of the effect.

Sensitivity of receptor	Magnitude of impact					
	No change	Negligible	Minor	Moderate	Major	
Negligible	Negligible	Negligible	Negligible or minor	Negligible or minor	Minor	
Low	Negligible	Negligible or minor	Negligible or minor	Minor	Minor or moderate	
Medium	Negligible	Negligible or minor	Minor	Moderate	Moderate or major	
High	Negligible	Minor	Minor or moderate	Moderate or major	Major or substantial	
Very high	Negligible	Minor	Moderate or major	Major or substantial	Substantial	

7.9 Measures adopted as part of Hornsea Three

7.9.1.1 As part of the project design process, a number of designed-in measures will be proposed to reduce the potential for impacts on Traffic and Transport (see Table 7.140). These measures are considered standard industry practice for this type of development and will be secured as a requirement of the DCO.

Table 7.140: Designed-in measures adopted as part of Hornsea Three.

Measures adopted as part of Hornsea Three	Justification
Suitable HGV routes will be identified.	To avoid adverse effects on communities and road users.
Video condition surveys will be undertaken before the start of works and after the substantial completion of works on minor links used by HGVs to access the onshore cable corridor. Damage to the highway caused by construction traffic will be repaired.	To ensure that construction traffic has no lasting adverse impact on the condition of highways.
A route for abnormal loads will be identified (this will be between the SRN and the HVAC booster station and HVDC converter/HVAC substation). The route timing and method of transport of abnormal loads will be discussed and agreed with Highways England, the police and relevant highways and bridge authorities.	To avoid damage to inappropriate highways, to minimise delays and risks to road users and to avoid adverse impacts on local communities.
Standard construction working hours will be identified. For the onshore cable corridor and substation these are likely to be 07.00 to 18.00 on weekdays and 07.00 to 13.00 on Saturdays and for the HDD at landfall and other sites are proposed to be 24 hours, seven days a week during drilling contingent on ground conditions. Other activities that will require 24 hour operation will be: site security, oil filling of transformers at the HVDC converter/HVAC substation, some work at jointing pits, some TT activities and possible remedial works in response to severe weather events. These will be agreed in consultation with the relevant planning authorities.	It is expected that in some circumstances working hours could be extended when this would reduce the magnitude of environmental impacts of construction (e.g. to increase safety, reduce driver delays, reduce the duration of impacts etc.).
Restrictions on HGV operating hours, along those sections of the highway network that provide access to local schools.	To minimise adverse impacts on local communities and vulnerable highway users.
Restrictions on HGV operating hours and measures to minimise the number of HGV movements through sensitive areas when access to TT sites is essential.	To minimise adverse impacts on local communities and vulnerable highway users.
Wheel washing at all site access points where it is necessary to eliminate the risk of mud and debris on the highway.	To eliminate risks to highway users resulting from mud and debris on the highway.
Measures to minimise dust and dirt associated with the movement of construction vehicles.	To minimise adverse air quality effects (see volume 3, chapter 9: Air Quality).
The provision of appropriate parking facilities for construction workers.	To eliminate risks associated with inappropriate parking.
Traffic management measures at those points where cable trenches are cut across highways or where existing access rights are affected.	To minimise delays to existing highway users and to maintain highway safety.
The diversion of rights of way affected by the construction works with closures only when absolutely necessary (see volume 3, chapter 6: Land Use, Agriculture and Recreation).	Closure of rights of way minimise risks to members of the public resulting from construction works. Diversions minimise delays and inconvenience to pedestrians, cyclists and equestrians.
Monitor load sizes and vehicle usage and, where possible, load consolidation and delivery to construction sites using alternative vehicles. Encouragement to re-use HGVs wherever possible, such as backloading. Where practical, local suppliers will be used to minimise the distance travelled by HGVs.	To minimise the impact on sensitive receptors.
Where possible the appointed contractor should seek to minimise overall vehicle movement generation through measures to encourage and promote sustainable travel and transport, for example by using a minibus to shuttle staff between key pick up locations and the compounds.	To minimise overall emissions and to minimise other traffic and transport impacts.
Local management of vehicle movements to minimise the risks of vehicles meeting each other on narrow sections.	To minimise highway risk and possible delays.
The design of HGV access points, including visibility standards and, where necessary, temporary speed restrictions on the adjacent highway will be agreed with the relevant Highway Authorities.	To maintain highway safety.
At all vehicle accesses where accommodation works are undertaken to allow the movement of vehicles between the onshore cable corridor and the highway the original highway will be reinstated after construction work is completed.	To ensure the ongoing safe and efficient functioning of the highway.
For trenchless crossings, the drilling/auguring compound is anticipated to receive a greater number of HGV movements than that receiving compound. Wherever practical, the drilling/auguring direction will be set so as to minimise the number of HGV movements through sensitive receptors.	To minimise the impact on sensitive receptors.

Measures adopted as part of Hornsea Three	Justification
It is expected that a number of abnormal loads comprising large components such as transformers will be transported to the HVDC converter/HVAC substation site. The haulage contractor appointed to undertake this work will be required to comply with statutory regulations in terms of consulting with Highways England, police and Local Highway Authorities. The notification requirements differ depending on the weight, length and width of the abnormal load.	To minimise disruption and driver delay.
The timing of abnormal load deliveries will be discussed with the relevant highway authorities to minimise delay for other road users and to minimise risk to highway users. The timing of abnormal load deliveries to the HVDC converter/HVAC substation will be discussed to ensure that there is no adverse impact on the access road in terms of delays to vehicles using the site.	To minimise disruption and driver delay.
The routing of abnormal load deliveries will be agreed with the relevant highway authorities. The delivery of abnormal loads would typically be undertaken in convoy and under escort. Where abnormal loads require the full width of the carriageway or for unusual manoeuvres at junctions, appropriate temporary road closures and traffic management will be put in place as appropriate to maintain the safety of other road users.	To minimise disruption and driver delay.
CTMP	A CTMP will form part of the Code of Construction Practice and will be secured through a requirement of the Development Consent Order for the project. Once a main contractor has been appointed the CTMP will be agreed with the relevant planning authorities in consultation with the highway authority and the Highways Agency.
Depending on the times of construction of individual onshore cable corridor sections, HGVs will avoid tourist routes where possible during peak holiday season, the periods of which will be agreed with Norfolk County Council and Highways England.	To seek to minimise any disruption during these periods.

7.9.1.2 Fuller details of the mitigation measures will be set out in the Code of Construction Practice that will form part of the DCO submission.

7.10 Assessment of significance

7.10.1 Construction phase

7.10.1.1 The impacts of the onshore construction of Hornsea Three will be assessed on Traffic and Transport. The environmental impacts arising from the construction of Hornsea Three the Project are listed in Table 7.135 above along with the maximum design scenario against which each construction phase impact will be assessed.

7.10.1.2 The number of HGVs (including Abnormal Indivisible Loads) generated by the construction of each section of the onshore cable corridor, landfall, booster station and convertor/substations is detailed in Table 7.141, based on the assumptions set out in table 7.135. The assumptions listed have been used to calculate HGV movements per onshore cable corridor section. For the purposes of this PEIR and to quantify the number of HGV movements at each access point and on each potential access route, only HGV numbers are considered at this point. Full details of all vehicle movements along each access route, including construction staff, will be set out in the ES Chapter submitted with the DCO Application.

7.10.1.3 A detailed analysis of the calculations used to generate the HGV movements listed in Table 7.141 is shown at volume 6, annex 7.6: Construction Vehicle Trip Generation Assumptions.

Table 7.141: Construction HGV movements generated per onshore cable corridor section.

Section	Description	Total HGV Movements	Maximum Daily HGV Movements	Available Accesses
Landfall	Landfall	7,328	13	A1
				A2
1a	Landfall to A149 (via west)	9,127	133	A2
1b	Landfall to A149 (via east)	9,276	132	A1
2a	A149 to Railway Line	8,824	110	A2
				A4
2b	A149 to Spring Beck	6,822	111	A1
				A3
2c	Spring Beck to Railway Line	6,177	112	A3a
3	Railway Line to A148	17,189	107	A5

Section	Description	Total HGV Movements	Maximum Daily HGV Movements	Available Accesses
4	A148 to Stream/Manor House Road	7,106	111	A5
				A6
				A7
				A8
5	Stream/Manor House Road to Stream adjacent to Baconsthorpe Wood	7,323	111	A9
6	Stream adjacent to Baconsthorpe Wood to B1149	46,927	105	A13
				A15
				A17
				A18
				A23
7	B1149 to Stream	3,748	119	A25
8	Stream to B1354	5,962	113	A26
				A27
9	B1354 to River Bure	3,101	122	A26
				A27
10	River Bure to Stream at Salle	39,777	105	A28
				A29
				A30
				A31
				A32
11	Stream at Salle to B1145	12,470	108	A33
				A34
12	B1145 to Marriott's Way	4,746	115	A35
13	Marriott's Way to Booton Common Stream	4,317	116	A36

Section	Description	Total HGV Movements	Maximum Daily HGV Movements	Available Accesses
14	Booton Common Stream to Stream north of St. Michael the Archangel church	5,676	113	A37
15	Stream north of St. Michael the Archangel church to Stream at Alderford Common	1.1.1 34,490	1.1.2 105	A37
				A38
				A39
				A40
				A41
				A42
16	Stream at Alderford Common to Recreational Foot/Cycle Path Car Park	6,251	112	A43
				A44
17	Recreational Foot/Cycle Path Car Park to River Wensum	4,105	117	A44
18	River Wensum to A1067	2,674	125	A45
				A46
19	A1067 to Stream at Easton	44,069	105	A46
				A47
				A48
				A49
				A50
				A51
				A52
				A53
				A54
				A55
20	Stream at Easton to A47	3,820	118	A56
21	A47 to River Yare	20,834	106	A56
				A57
				A58

Section	Description	Total HGV Movements	Maximum Daily HGV Movements	Available Accesses
				A59
				A60
22	River Yare to B1108	11,180	108	A61
				A62
23	B1108 to Stream	1,173	171	A62
24	Stream to Stream west of Rectory Lane	4,746	115	A63
25	Stream west of Rectory Lane to Stream East of Burnthouse Lane	12,611	108	A64
				A65
				A66
				A67
26	Stream East of Burnthouse Lane to B1172	9,467	109	A68
				A69
27	B1172 to Stream East of Station Lane	2,103	133	A69
28	Stream East of Station Lane to A11	6,535	112	A70
29	A11 to Railway Line	1,173	171	A70
30	Railway line to Stream through woodland	15,472	107	A71
				A72
31	Stream through Spruce's Plantation to Stream West of Intwood	3,389	120	A73
32	Stream West of Intwood to B1113	9,034	110	A74
				A75
33	B1113 to convertor station	3,135	114	A75
34	Convertor Station to end of PEIR corridor	11,862	108	A76
Booster Station		6,503	24	A25
Converter/Sub Station		26,012	32	A75

7.10.1.4 The above sets out the access routes and estimated construction HGV numbers. This PEIR Chapter invites responses to these for consideration and assessment which will be set out within the DCO Application.

7.10.1.5 An impact assessment has not been undertaken within this PEIR; its purpose is to consult on the access route and location options. Responses to the PEIR will be considered to identify the preferred routes for the construction of the onshore cable corridor. The impact assessments will be undertaken once responses to the PEIR have been received and combined with results from site-specific surveys at which point Hornsea Three will consult with the relevant consultees before the DCO application is submitted.

7.10.1.6 The impact assessment will consider the following:

- The temporary impact of the construction work on driver delay;
- The temporary impact of the construction work on severance of routes;
- The temporary impact of the construction work on pedestrian delay;
- The temporary impact of the construction work on pedestrian amenity;
- The temporary impact of the construction work on accidents and road safety; and
- The temporary impact of hazardous, dangerous and abnormal loads during construction works.

7.10.2 Operational and maintenance phase

7.10.2.1 For the reasons set out in Section 7.7.2, an assessment of this phase has been scoped out.

7.10.3 Decommissioning phase

7.10.3.1 For the reasons set out in Section 7.7.2, an assessment of this phase has been scoped out.

7.11 Cumulative Effect Assessment methodology

7.11.1 Screening of other projects and plans into the Cumulative Effect Assessment

7.11.1.1 The Cumulative Effect Assessment (CEA) takes into account the impact associated with Hornsea Three together with other projects and plans. The projects and plans selected as relevant to the CEA presented within this chapter are based upon the results of a screening exercise undertaken as part of the 'CEA long list' of projects (see volume 4, annex 5.2: Cumulative Effects Screening Matrix and Location of Schemes). Each project on the CEA long list has been considered on a case by case basis for scoping in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.

7.11.1.2 In undertaking the CEA for Hornsea Three, it is important to bear in mind that other projects and plans under consideration will have differing potential for proceeding to an operational stage and hence a differing potential to ultimately contribute to a cumulative impact alongside Hornsea Three. For example, relevant projects and plans that are already under construction are likely to contribute to cumulative impact with Hornsea Three (providing effect or spatial pathways exist), whereas projects and plans not yet approved or not yet submitted are less certain to contribute to such an impact, as some may not achieve approval or may not ultimately be built due to other factors. For this reason, all relevant projects and plans considered cumulatively alongside Hornsea Three have been allocated into 'Tiers', reflecting their current stage within the planning and development process. This allows the CEA to present several future development scenarios, each with a differing potential for being ultimately built out. Appropriate weight may therefore be given to each Tier in the decision making process when considering the potential cumulative impact associated with Hornsea Three (e.g. it may be considered that greater weight can be placed on the Tier 1 assessment relative to Tier 2). An explanation of each tier is included below:

- Tier 1: Hornsea Three considered alongside other project/plans currently under construction and/or those consented but not yet implemented, and/or those submitted but not yet determined and/or those currently operational that were not operational when baseline data was collected, and/or those that are operational but have an on-going impact;
- Tier 2: All projects/plans considered in Tier 1, as well as those on relevant plans and programmes likely to come forward but have not yet submitted an application for consent (the PINS programme of projects is the most relevant source of information). Specifically, this Tier includes all projects where the developer has submitted a Scoping Report; and
- Tier 3: All projects/plans considered in Tier 2, as well as those on relevant plans and programmes likely to come forward but have not yet submitted an application for consent (the PINS programme of projects is the most relevant source of information). Specifically, this Tier includes all projects where the developer has advised PINS in writing that they intend to submit an application in the future but have not submitted a Scoping Report.

7.11.1.3 This PEIR Chapter sets out the available access routes and estimated construction HGV numbers and invites responses to these for consideration and assessment which will be set out within the DCO Application. These assessments will be undertaken following the responses to the PEIR, at which point access routes and locations will be defined, assessments will be undertaken and Hornsea Three will consult with the relevant consultees prior to the DCO application submission.

7.11.1.4 A CEA will also be set out within the ES which will accompany the DCO Application.

7.11.1.5 The current 'CEA long list' of projects (see volume 4, annex 5.2: Cumulative Effects Screening Matrix and Location of Schemes) will evolve over time and considerations now will be different to the moment when the CEA is undertaken within the ES chapter submitted with the DCO Application. Furthermore, since this PEIR sets out available access routes and locations for consultation, the parts of the highway network to be assessed have not yet been defined, therefore the projects within the CEA 'long list' that need to be considered cannot yet be defined. For these reasons, full details of the CEA will be set out in the DCO Application alongside the assessment of effects for Hornsea Three.

7.12 Transboundary effects

7.12.1.1 A screening of transboundary impacts has been carried out and is presented in volume 4, annex 5.4: Transboundary Impacts Screening Note. This screening exercise identified that there was no potential for significant transboundary effects with regard to Traffic and Transport from Hornsea Three upon the interests of other EEA States.

7.13 Inter-related effects

7.13.1.1 Inter-relationships are considered to be the impacts and associated effects of different aspects of the proposal on the same receptor. These are considered to be:

- Project lifetime effects: Assessment of the scope for effects that occur throughout more than one phase of the project (construction, operational and maintenance, and decommissioning), to interact to potentially create a more significant effect on a receptor than if just assessed in isolation in these three key project stages (e.g. subsea noise effects from piling, operational turbines, vessels and decommissioning).
- Receptor led effects: Assessment of the scope for all effects to interact, spatially and temporally, to create inter-related effects on a receptor. As an example, all effects on a given receptor such as local residents – construction dust and noise, increased traffic and visual change etc. may interact to produce a different, or greater effect on this receptor than when the effects are considered in isolation. Receptor-led effects might be short term, temporary or transient effects, or incorporate longer term effects.

7.13.1.2 A description of the likely inter-related effects arising from Hornsea Three on Traffic and Transport is provided in volume 2, chapter 12: Inter-relationships (Onshore).

7.14 Conclusion and summary

7.14.1.1 The construction of the onshore cable corridor will generate the greatest number of vehicle movements, with operational traffic flows negligible in comparison. Decommissioning will generate fewer HGV movements than construction.

7.14.1.2 This PEIR Chapter has set out the potential access points, potential access routes and estimated construction HGV movements at each. It invites comments on these for consideration and assessment which will be set out within the DCO Application.

7.15 Next Steps

7.15.1.1 An analysis of the access routes will be undertaken in conjunction with the comments received on this PEIR Chapter to determine the preferred routes and determine an access strategy.

7.15.1.2 This will then inform the survey requirements and allow the assessments to be undertaken to determine any significant effects, as set out above, in order to inform the EIA and DCO application.

7.16 References

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