



**DOGGER BANK
TEESSIDE A & B**

**March
2014**

Environmental Statement Chapter 28 Traffic and Access




Application Reference: 6.28


Cover photograph: Indicative image showing installation of meteorological mast within the Dogger Bank Zone

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 Environmental Statement – Chapter 28
 Traffic and Access

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Appendix 28A Transport Assessment

1 Introduction

1.1 Background

- 1.1.1 This chapter of the Environmental Statement (ES) assesses the potential impacts of Dogger Bank Teesside A & B during the construction, operation and decommissioning phases of the works. Where impacts are identified, mitigation measures necessary to avoid, reduce or minimise potential impacts, are proposed in relation to traffic and access.
- 1.1.2 During the development of this ES, land based facilities for servicing the offshore construction and operation of Dogger Bank Teesside A & B have not been identified. Such facilities will be provided or brought into operation by means of one or more planning applications or as port operations enjoying permitted development rights under various Planning Acts.
- 1.1.3 Since offshore servicing facilities are as yet unidentified, this chapter is concerned with the traffic and access aspects of the onshore works only.
- 1.1.4 This chapter is underpinned by the supporting Transport Assessment (TA), contained in **Appendix 28A**. The TA contains the detailed access strategy, derivation and distribution of the traffic demand and highway operation assessments.
- 1.1.5 The outputs and conclusions from the TA have informed the environmental impact assessments contained within this chapter and a number of references to the technical work carried out as part of the TA are contained within this report.
- 1.1.6 Traffic borne noise, vibration and air quality effects are assessed separately in **Chapter 29 Noise** and **Chapter 30 Air Quality**.

2 Guidance and Consultation

2.1 National Planning Policy

National Policy Statements

2.1.1 The assessment of potential traffic and access impacts has been made with specific reference to the Government's National Policy Statements (NPSs). NPSs set out policies or circumstances that Ministers consider should be taken into account in decisions on Nationally Significant Infrastructure Projects (NSIP). All six energy NPSs received designation by the Secretary of State for Energy and Climate Change on the 19 July 2011. Those relevant to Dogger Bank Teesside A & B are:

- Overarching NPS for Energy (EN-1) (DECC 2011a);
- NPS for Renewable Energy Infrastructure (EN-3) (DECC 2011b); and
- NPS for Electricity Networks Infrastructure (EN-5) (DECC 2011c).

2.1.2 The specific assessment requirements for traffic and access, as detailed in the NPSs, are summarised in **Table 2.1**, together with an indication of where each stipulation is addressed. Where any part of the NPS has not been followed within the assessment an explanation as to why the requirement was not deemed relevant, or has been met in another manner, is provided.

Table 2.1 NPS assessment requirements

NPS Requirement	NPS Reference	ES reference
If a project is likely to have significant transport implications, the applicant's ES should include a transport assessment, using the NATA/WebTAG methodology stipulated in Department for Transport guidance, or any successor to such methodology.	EN-1 Section 5.13.3	Chapter 28 Traffic and Access , Section 5 onwards contains the Traffic and Access impact assessment for the projects.
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.	EN-1 Section 5.13.4	Chapter 28 Traffic and Access , Section 6 outlines the demand management proposed for construction in the form of 'embedded mitigation' including car share and HGV controls. Chapter 28 Traffic and Access , Section 7 details a small operational workforce which is below the DfT guidance whereby a workplace travel plan is required.

National Planning Policy Framework

2.1.3 The National Planning Policy Framework (NPPF) was published in March 2012 and replaces Planning Policy Statements and Planning Policy Guidance Notes for guiding development in England. It provides a framework for the preparation

of Local Development Plans further to the implementation of the Government's Localism Bill.

2.1.4 In respect of transport paragraph 32 of the NPPF states 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”.*

2.1.5 The NPPF clearly sets out the need for a TA where significant vehicle movements are anticipated. Due to the large onshore construction phase a TA has been considered necessary for Dogger Bank Teesside A & B, in line with the NPPF, and is provided in **Appendix 28A**. The NPPF requirements for sustainable transport modes and improvements to the transport network are less applicable by the nature of the application and its limited operational requirements, as set out in detail within this chapter. The ES response to local policy is outlined below.

2.2 Local planning policy

Redcar & Cleveland, Local Development Framework

2.2.1 The Redcar and Cleveland Borough Council (RCBC) Core Strategy was adopted on the 19 July 2007. The Core Strategy sets out a spatial vision and aims for the Redcar and Cleveland Local Development Framework (LDF) and the strategic policies to help deliver that vision.

2.2.2 The LDF comprises several Development Plan Documents (DPDs) which together set out the policies and proposals for the spatial planning of the Borough outside the North York Moors National Park for the period up to 2021.

2.2.3 The Core Strategy set the context for the subsequent development of the third Redcar and Cleveland Local Transport Plan (discussed later in this chapter, paragraphs 2.2.8 - 2.2.10) of particular relevance to this application and transport are the following policies:

- Policy CS26 Managing Travel Demand, notes that development proposals will be supported that, improve transport choice, reduce the distance people need to travel, contribute towards a demand management strategy and encourage park and ride at public transport interchanges. The policy notes that the Council will support the implementation of Travel Plans to encourage sustainable transport;

- Policy CS27 Improving Accessibility, focusses on improving accessibility within and beyond the Borough, focussing on improving bus and rail services, integration between various modes, improvements to the A66 and A174 road links to the A19 and beyond to the A1(M), measures to reduce congestion and enhancing freight access and interchange within Teesport; and
- Policy CS28 Sustainable Transport Networks, supports the development of pedestrian, cycling and equestrians networks including routes between urban and rural areas.

2.2.4 Under the NPPF direction, local planning authorities are encouraged to move from a LDF approach under which several documents together form the Local Development Plan, to a Local Plan approach where all the relevant spatial and land use policies are combined within one document.

2.2.5 In this context a Local Plan scoping document was published by RCBC in November 2012 which reviewed current LDF policies. The document concluded that the transport policies are consistent with the NPPF and therefore will be retained for the emerging Local Plan.

2.2.6 The Draft Local Plan was agreed by Cabinet on 21 September 2013, and consultation closed during December 2013. It is not clear what RCBC's timetable is for adopting the final draft document.

Tees Valley Unlimited, Economic and Regeneration Statement of Ambition

2.2.7 In June 2010 the Coalition Government invited businesses and councils to come together to form Local Enterprise Partnerships (LEPs) whose geography reflects the natural economic areas of England. The subsequent white paper *Local growth: realising every place's potential* sets out a diverse range of activities for LEPs effectively replacing the abolished Regional Development Agencies' roles and responsibilities. 'Tees Valley Unlimited' are the LEP with a mandate to deliver jobs and economic growth across the Tees Valley. To help achieve these aims Tees Valley Unlimited has developed a Statement of Ambition 2011 which sets out the vision for the Tees Valley for the next 15 years. The Statement of Ambition has two key ambitions, namely:

- Drive the Transition to the High Value Low Carbon Economy; and
- Create a More Diversified and Inclusive Economy.

2.2.8 The Statement of Ambition focusses on delivering the benefits of the joined up and connected polycentric city region as the drive for economic growth and prosperity, making the best use of the asset of each town and district. Leading city region stakeholders have identified the following key challenges as being most important:

- Improve the journey experience of transport users of urban, regional and local networks, including interfaces with national and international networks;

- Improve the connectivity and access to labour markets of key business centres; and
- Deliver quantified reductions in greenhouse gas emissions within cities and regional networks, taking account of cross-network policy measures.

Redcar and Cleveland, Local Transport Plan

2.2.9 The Redcar and Cleveland third Local Transport Plan, 2011-2021 (LTP3) was adopted by RCBC in March 2011 and builds upon the Core Strategy and the LEP Statement of Ambition by setting five main goals for city and regional networks, namely:

- Reduce Carbon Emissions;
- Support Economic Growth;
- Promote Quality of Opportunity;
- Contribute to better Safety, Security and Health; and
- Improve Quality of Life and a Healthy Natural Environment.

2.2.10 The following five policies have been identified as being critical in achieving the goals of the LTP3 and are considered to be of particular relevance to the application:

- PEG2 - Manage the demand for travel, in particular during peak periods. The package of measures will include car parking restraint and enforcement; providing informed travel choices; considerate land use planning;
- PEG3 - Make best use of the existing highway network, using the powers of the Traffic Management Act, under the control of the Traffic Manager;
- PEG4 - Address localised congestion issues, in particular through the development of Workplace Travel Plans and through localised traffic management schemes;
- PEG5 - Manage freight transport in the borough to provide reliability of journey times and minimise adverse environmental impacts; and
- SSH1 – Improve Road Safety in the borough through a combination of education, encouragement, engineering and enforcement initiatives.

2.2.11 The application acknowledges these five key policies through the development of a construction Traffic and Access Strategy to mitigate the projects' potential traffic impact.

2.3 Other legislation, standards and guidance

Traffic Management Act

2.3.1 The Traffic Management Act 2004 (TMA) was introduced in 2004 to deal with congestion and disruption on the road network. The Act places a duty on local traffic authorities to ensure the expeditious movement of traffic on their road network and those networks of surrounding authorities. The Act gives

authorities additional tools to better manage parking policies, moving traffic enforcement and the co-ordination of street works.

- 2.3.2 The aforementioned Traffic and Access Strategy will facilitate the local traffic authority (RCBC) to meet their duties under this Act. The Traffic and Access Strategy and associated control and enforcement measures would be implemented through a Construction Traffic Management Plan (CTMP) and Construction Travel Plan (CTP).

The Guidelines for the Environmental Assessment of Road Traffic

- 2.3.3 The Guidelines for the Environmental Assessment of Road Traffic (GEART) (Published January 1993 by the Institute of Environmental Assessment) are guidelines for the assessment of the environmental impacts of road traffic associated with new developments, irrespective of whether the developments are to be subject to formal Environmental Impact Assessments (EIAs).
- 2.3.4 The purpose of the guidelines is to provide the basis for systematic, consistent and comprehensive coverage for the appraisal of traffic impacts arising from development projects.
- 2.3.5 GEART is the guidance that informs this assessment and Section 3 of this report contains full details of how the guidance has been applied.

The Strategic Road Network and the Delivery of Sustainable Development

- 2.3.6 The Department for Transport Circular 02/2013 entitled 'The Strategic Road Network and the Delivery of Sustainable Development' was published in September 2013 replacing circular 02/2007 'Planning and the Strategic Road Network' and sets out the ways in which the Highways Agency will engage with communities and developers to deliver sustainable development and, thus economic growth, whilst safeguarding the primary function and purpose of the strategic road network.
- 2.3.7 Under the heading of Environmental Impact 02/2013 notes that:
- "...developers must ensure all environmental implications associated with their proposals, are adequately assessed and reported so as to ensure that the mitigation of any impact is compliant with prevailing policies and standards. This requirement applies in respect of the environmental impacts arising from the temporary construction works and the permanent transport solution associated with the development, as well as the environmental impact of the existing trunk road upon the development itself".*

2.4 Consultation

- 2.4.1 To inform the TA a pre-application consultation process was undertaken with the Planning Inspectorate (former Infrastructure Planning Commission, IPC), the local highway authority (RCBC) and the Highways Agency (HA) who are responsible for the Strategic Road Network (SRN). **Table 2.2** provides a summary of the key consultation stages, a full documented record is contained in **Appendix 28A**.

Table 2.2 Summary of consultation stages

Date	Consultees	Summary of issues
May 2012 (Scoping, Statutory)	Planning Inspectorate	A report was submitted to the IPC and provided a preliminary overview of the project and the likely study area. Copies of the scoping report and response are available online at: http://infrastructure.planningportal.gov.uk/projects/yorkshire-and-the-humber/dogger-bank-teesside/?ipcsection=folder
February 2013 (Non Statutory)	HA	In response to the issues raised by the HA in their response to the Scoping Report, a transport specific scoping note was submitted that sought to provide greater detail in regard to the likely project traffic demand.
February 2013 (Non Statutory)	RCBC	A transport specific scoping note was submitted to RCBC to provide them with details of the project and the expected quantum of traffic that would be generated by the project to inform the quantum of the assessment required.
March 2013 (Non Statutory)	RCBC	A second scoping note was submitted to RCBC with details of the likely project traffic demand when distributed on the highway network and details on the proposed new access locations from the local highway network.
April 2013 (Non Statutory)	HA	A second scoping note was submitted to the HA in response to issues raised by the HA following a review of the initial scoping note. The second scoping note sought to provide further details of the likely project traffic demand when distributed onto the highway network and the proposed scope for the TA.
April 2013 (Non Statutory)	HA	A meeting was held with the HA to agree the scope of the TA and the key assumptions informing this.
September 2013 (Non Statutory)	RCBC	The Transport Summary seems to cover all the issues and looks acceptable. Public Rights of Way impacts to be addressed as the project progresses.
September 2013 (Non Statutory)	HA	The Agency gave full agreement to the derivation, distribution and determination of likely trip impacts at the Strategic Road Network. In addition the agency has accepted the Cumulative Traffic Impact and mitigation strategy is appropriate. Further evidence with respect to technical detail on employee car share, operation traffic impact, AIL routing and method for Horizontal Directional Drilling to be provided in the Transport Assessment.
December 2013 (Statutory)	HA	The HA have confirmed that the Agency are content with the findings of the TA in that the impact upon the SRN does not cause any specific concerns. The HA have requested that at the formal application stage the following conditions be included: ensure Horizontal Directional Drilling (HDD) drilling is undertaken in accordance with the DMRB; and that the Agency is involved in the CTMP and CTP.
December 2013 (Statutory)	RCBC	RCBC confirmed that they have no concerns with the proposed development and its impact upon the highway network.
December 2013 (Statutory)	Kirkleatham Memorial Ltd.	With regards to traffic and transport the Kirkleatham Memorial expressed concerns regarding the potential for mud/dirt to be tracked on to the highway by construction traffic.

2.4.2 **Table 2.3** provides a summary of the key issues that were raised during Scoping.

Table 2.3 Summary of key consultation comments

Issue	Summary of issues
Traffic demand and distribution	Both the HA and RCBC have agreed that the methodology used to derive the traffic demand and distribute the traffic demand is acceptable.
Access	The HA have raised no concerns regarding access. RCBC have confirmed that principle of the access locations is acceptable and that the TA should contain planning drawings.
Horizontal Directional Drilling (HDD)	The HA have raised concerns regarding HDD under the A1053 and advised that the works should be planned and undertaken in accordance with the Design Manual for Roads and Bridges HA 120/08.
Deliverables	The HA have agreed that the planning application will include a TA and ES and that a construction travel plan and construction traffic management plan would be developed after determination following the appointment of a contractor.
Junction modelling	Both the HA and RCBC have not requested any junction modelling.
Highway Safety	The HA have confirmed that they are happy with the proposed methodology for assessing road safety impacts *.
Cumulative Assessment	The HA have confirmed that the list of cumulative projects is acceptable. The HA have confirmed that the cumulative impact of Dogger Bank Teesside C & D does not need to be considered as part of the Dogger Bank Teesside A & B application *.
Abnormal Indivisible Loads (AIL)	The HA have raised concerns regarding the movement of AILs and requested that a AIL study is undertaken by a specialist and that the scope of this study is first agreed with the HA. Appendix P of the TA (Appendix 28A) contains an AIL study that complies with this request *.
Mud/dirt on the highway	The Kirkleatham Memorial expressed concerns regarding the potential for mud/dirt to be tracked on to the highway. Appendix 28A details that a CTMP will be developed following determination and that this will detail measures to be employed to prevent dust and dirt being tracked on to the highway.

*This was concurred by RCBC following distribution of minutes from meetings with the HA

3 Methodology

3.1 Introduction

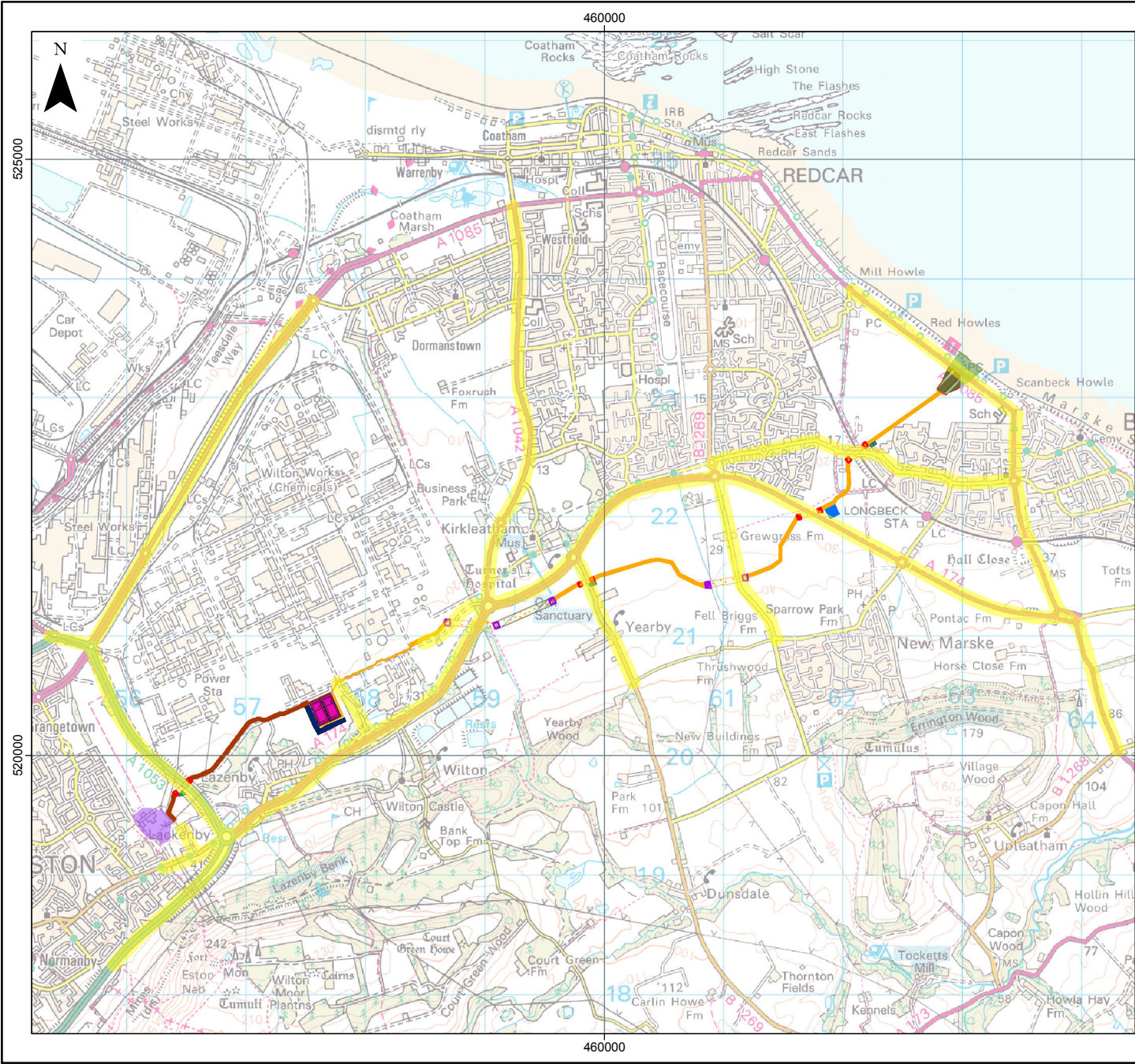
- 3.1.1 This section describes the assessment methodology, including data collation, impacts and impact assessment criteria that were used in the traffic and access assessment.
- 3.1.2 The baseline environmental studies, surveys and the impact assessment for transport have been conducted in accordance with the relevant best practice and standard methodologies, as follows:
- Guidance on Transport Assessments – Department for Transport March 2007; and
 - Guidelines for the Environmental Assessment of Road Traffic (published by the former Institute of Environmental Assessment), 1993 (GEART).

3.2 Study area

- 3.2.1 The study area has been informed by the most probable routes for traffic, for both the movement of materials and employees, during both construction and operational phases of the project, and has been agreed with RCBC and the HA. The study area is illustrated in **Figure 3.1**.

3.3 Characterisation of the existing environment

- 3.3.1 Characterisation of the existing environment has been informed through a number of sources, including:
- Traffic count data from the Department for Transport;
 - Desktop studies and site visits;
 - Personal injury collision data and traffic count information sourced from RCBC; and
 - Traffic surveys commissioned by Forewind.



LEGEND

- Teesside A&B cable landfall envelope
- Teesside A&B landfall construction envelope
- Teesside A&B HVDC, Open trench
- Teesside A&B HVDC, HDD
- Teesside A&B HVAC, Open trench
- Teesside A&B HVAC, HDD
- Teesside A&B major horizontal directional drill entry or exit locations (2,000m²)
- Teesside A&B minor horizontal directional drill entry or exit locations (1,200m²)
- HDD or open trench to be confirmed
- Teesside A&B cable route primary construction compound (10,000m²)
- Teesside A&B intermediate construction compound (784m²)
- Teesside A&B converter stations
- Teesside A&B converter stations construction compounds (10,000m² per project)
- Lackenby 400kV substation
- Traffic and access study area

0 2
Kilometres

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PROJECT TITLE
DOGGER BANK TEESIDE A & B

DRAWING TITLE
Figure 3.1: Traffic and Access Study Area

VER	DATE	REMARKS	Drawn	Checked
1	20/05/2013	Draft	SW	RE
2	04/07/2013	Draft	SW	RE
4	10/02/2014	Pre-DCO submission review	SW	RE

DRAWING NUMBER: **F-ONL-MA-003**

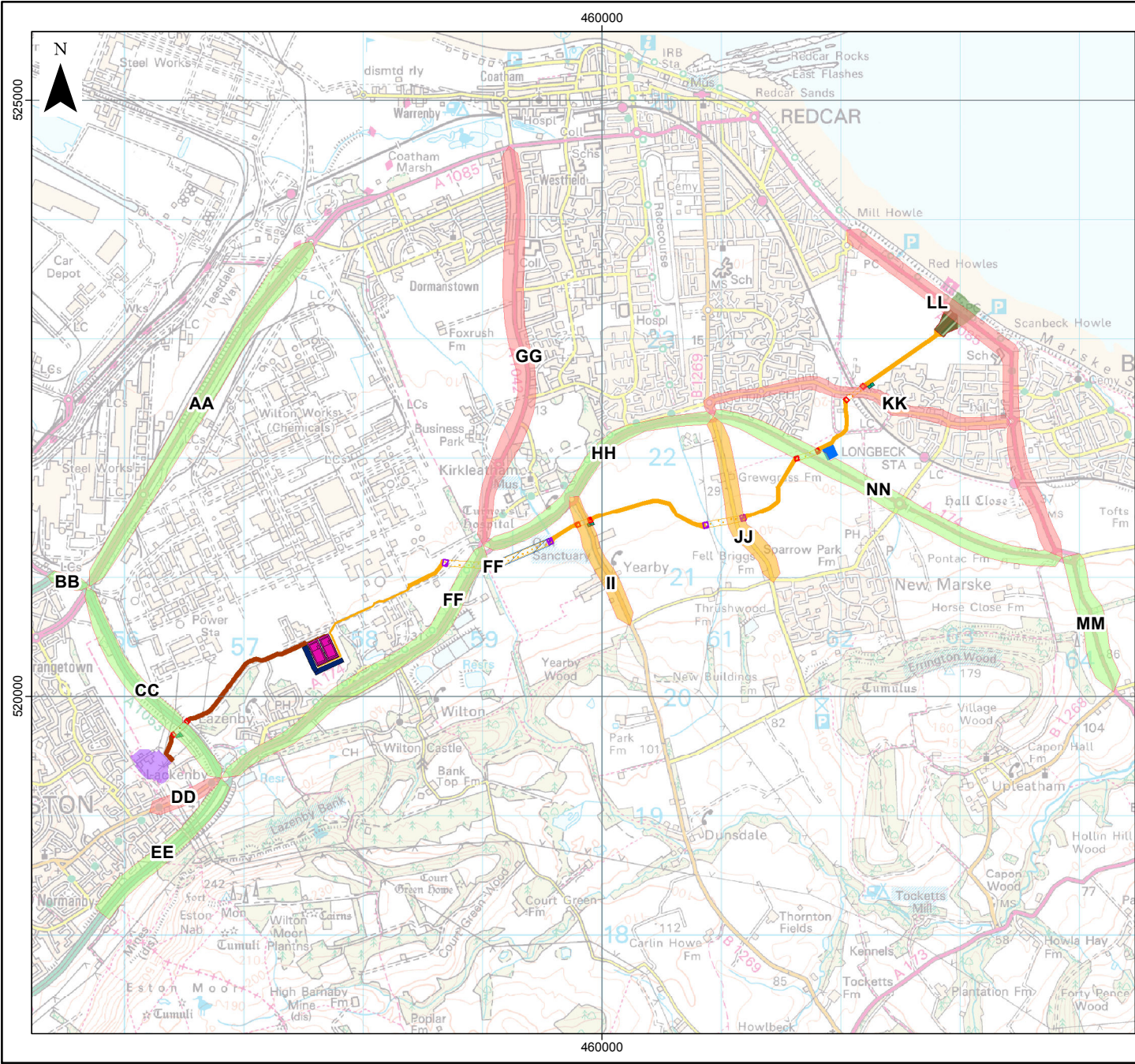
SCALE 1:50,000 PLOT SIZE A4 DATUM OSGB36 PROJECTION BNG

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3.4 Screening process and sensitive receptors

- 3.4.1 The following rules, taken from the GEART, have informed the screening process and thereby defined the extent and scale of this assessment:
- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%); and
 - Rule 2: Include any other specifically sensitive areas where traffic flows (or HGV component) are predicted to increase by 10% or more.
- 3.4.2 In justifying these rules GEART examines the science of traffic forecasting and states:
- “It is generally accepted that accuracies greater than 10% are not achievable. It should also be noted that the day to day variation of traffic on a road is frequently at least some + or -10%. At a basic level, it should therefore be assumed that projected changes in traffic of less than 10% create no discernible environmental impact.*
- ...a 30% change in traffic flow represents a reasonable threshold for including a highway link within the assessment.”*
- 3.4.3 Therefore, changes in traffic flows below the GEART Rules (thresholds) are assumed to result in no discernible or significant environmental effects and have therefore not been assessed further as part of this study.
- 3.4.4 The sensitivity of a road can be defined by the type of user groups who may use it, e.g. elderly people or children. A sensitive area may be a village environment or where pedestrian or cyclist activity may be high, for example in the vicinity of a school.
- 3.4.5 A desktop exercise augmented by site visits has been undertaken to identify the sensitive receptors in the study area. The routes that are adjacent to (and therefore serving) the sensitive receptors have been assigned sensitivity value according to the highest value receptor on the route under consideration. For example; a village road providing access to schools (high sensitivity receptors) and residential dwellings with good footways (low sensitivity receptors). Using the methodology adopted, such a road would be identified as a high sensitivity route.
- 3.4.6 All routes within the study area have been assessed and assigned a sensitivity. **Table 3.1** details the routes and the rationale for the applied link sensitivity and **Figure 3.2** illustrates these routes graphically.
- 3.4.7 The access strategy for the projects has been underpinned by the use of the available “A” class roads to access site compounds, converter stations site or points along the cable route, where possible. This strategy has been specifically adopted in order to reduce traffic impacts on sensitive receptors.
- 3.4.8 In general terms “A” class roads are more heavily trafficked than “B”, “C” or unclassified roads forming part of the immediate surrounding highway network. For this reason additional construction or maintenance vehicles when added to

baseline flows will have a reduced environmental impact on the receptors that adjoin the heavily trafficked routes.



LEGEND

- Teesside A&B cable landfall envelope
- Teesside A&B landfall construction envelope
- Teesside A&B HVDC, Open trench
- Teesside A&B HVDC, HDD
- Teesside A&B HVAC, Open trench
- Teesside A&B HVAC, HDD
- Teesside A&B major horizontal directional drill entry or exit locations (2,000m²)
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- Teesside A&B cable route primary construction compound (10,000m²)
- Teesside A&B intermediate construction compound (784m²)
- Teesside A&B converter stations
- Teesside A&B converter stations construction compounds (10,000m² per project)
- Lackenby 400kV substation
- Low Sensitivity
- Medium Sensitivity
- High Sensitivity
- XX Link designation

0 2
Kilometres

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Figure 3.2: Link Sensitivity

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Table 3.1 Link based sensitive receptors

Link	Description	Link sensitivity	Rationale for link sensitivity
AA	A1085 (Trunk Rd)	Low	A main (A) road designed to carry high quantities of traffic.
BB	A1053 (Tees Dock Rd)	Low	A main (A) road designed to carry high quantities of traffic.
CC	A1053 (Greystone Rd)	Low	A main (A) road designed to carry high quantities of traffic.
DD	B1380 (High St)	High	The link is a main (B) road but has residential properties and a play area in close proximity to the road that could be susceptible to increases in traffic flow.
EE	A174	Low	A main (A) road designed to carry high quantities of traffic.
FF	A174 (south of Wilton)	Low	A main (A) road designed to carry high quantities of traffic.
GG	A1042 (Kirkleatham Ln)	High	Although Kirkleatham Lane is a main A road, to the north the link passes close to many high sensitive receptors such as a school, and residential properties and is therefore considered to be susceptible to increase in traffic.
HH	A174 (south of Redcar)	Low	A main (A) road designed to carry high quantities of traffic.
II	B1269 (Fishponds Rd)	Medium	The link is a main (B) road but has residential properties (at Yearby) that are linked by a footway to Redcar that could be susceptible to increase in traffic flow.
JJ	Grewgrass Ln	Medium	The link is a high speed road of good standard with occasional frontage development which could be susceptible to increases in traffic.
KK	Redcar Rd	High	Redcar Road is a modern distributor road with controlled pedestrian crossing, however there is significant pedestrian footfall between the community to the south of Redcar Road and the amenities to the north that could be susceptible to increases in traffic.
LL	A1085 (Coast Rd)	High	Although Coast Road is a main A road the link passes close to many highly sensitive receptors such as a secondary school, shops, and residential properties and is therefore considered to be susceptible to increase in traffic.
MM	A174 (south of Marske)	Low	A main (A) road designed to carry high quantities of traffic.
NN	A174 (Redcar - Marske)	Low	A main (A) road designed to carry high quantities of traffic.

3.5 Assessment of impacts

3.5.1 The impact assessment methodology is taken from GEART, which sets out consideration and in some cases, thresholds in respect of changes in the volume and composition of traffic to facilitate a subjective judgement of traffic impact and significance.

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

Severance

- 3.5.3 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. The term is used to describe a complex series of factors that separate people from places and other people. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to quite minor traffic flows if they impede pedestrian access to essential facilities. Severance effects could equally be applied to residents, motorists or pedestrians.
- 3.5.4 GEART suggests that changes in total traffic flow of 30%, 60% and 90% are considered to be slight, moderate and substantial respectively.

Pedestrian amenity

- 3.5.5 Pedestrian amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic. This definition also includes pedestrian fear and intimidation, and can be considered to be a much broader category including consideration of the exposure to noise and air pollution, and the overall relationship between pedestrians and traffic.
- 3.5.6 GEART suggests that a threshold of a doubling of total traffic flow or the HGV component may lead to a negative impact upon pedestrian amenity.

Highway safety

- 3.5.7 The salient GEART guidance on highway safety is as follows:
- “Where a development is expected to produce a change in the character of traffic (e.g. HGV movements on rural roads), then data on existing accidents levels may not be sufficient. Professional judgement will be needed to assess the implications of local circumstances, or factors which may elevate or lessen the risk of accidents, e.g. junction conflicts.”*
- 3.5.8 In accordance with the guidance an examination of the existing collisions within the study area has been undertaken to identify any collision clusters with collision rates higher than local and national averages. These sites are considered to be sensitive to changes in traffic flows (sensitive receptors) and therefore more detailed analysis of local factors has been undertaken in the context of the proposals.

Driver delay

- 3.5.9 GEART recommends the use of proprietary software packages to model junction delay and therefore estimate increased vehicle delays. However, it is noted that vehicle delays are only likely to be significant when the surrounding highway network is at, or close to, capacity.
- 3.5.10 Consultation with the highway authorities (**Table 2.2**) has established that junction modelling is not necessary based on the projects' traffic generation and distribution presented in Section 6 of this chapter. Therefore, for the purpose of this assessment the GEART Rule 1 and Rule 2 have been utilised as primary evidence to judge the impact upon drivers.

- 3.5.11 Driver delay may also be associated with the transportation of Abnormal Indivisible Loads (AILs).
- 3.5.12 The accompanying TA (**Appendix 28A**) contains a routing feasibility assessment produced by Abnormal Load Engineering Limited (ALE) detailing the most suitable routes for AILs and mitigation measures to reduce the impacts. Prior to movement of loads full consultation will be undertaken with the highway authorities and Police to ensure delivery is scheduled to minimise delay on the highway network.

Other impacts

- 3.5.13 Traffic borne noise and vibration effects and air quality effects informed by the traffic data outlined in this chapter are assessed in **Chapter 29** and **Chapter 30** respectively.
- 3.5.14 Pedestrian amenity and severance may also be adversely impacted by the interaction between the construction of the cable route and the temporary severing of Public Rights of Way (PRoW) by the construction works. The impacts upon PRoW are assessed in **Chapter 23 Tourism and Recreation**.

3.6 Impact evaluation

- 3.6.1 **Table 3.2** details the assessment framework adapted from GEART. These thresholds are guidance only and provide a starting point by which transport data will inform a local analysis of the impact magnitude.

Table 3.2 Traffic and Access assessment framework

Effect	Magnitude of effect			
	Negligible	Low	Medium	High to Very High
Severance	Change in total traffic flow of less than 30%.	Change in total traffic flows of 30-60%.	Change in total traffic flows of 60-90%.	Changes in total traffic flows of over 90%.
Pedestrian amenity	Change in traffic flow (or HGV component) less than a 100%.		Greater than 100% increase in traffic (or HGV component) and a review based upon the quantum of vehicles, vehicle speed and pedestrian footfall.	
Highway safety	Informed by a derivation of collision rates at junctions based upon the existing personal injury collision records and the forecast increase in traffic.			
Driver delay	Informed through projected traffic increases on highways links and a review of residual network capacity.			

- 3.6.2 **Table 3.3** sets out the assessment matrix adopted for routes that have met the screening criteria (Rule 1 and Rule 2) which combines the initial impact assessment derived from the assessment framework presented in **Table 3.2** with the receptor value presented in **Table 3.1** to determine the magnitude of impact.

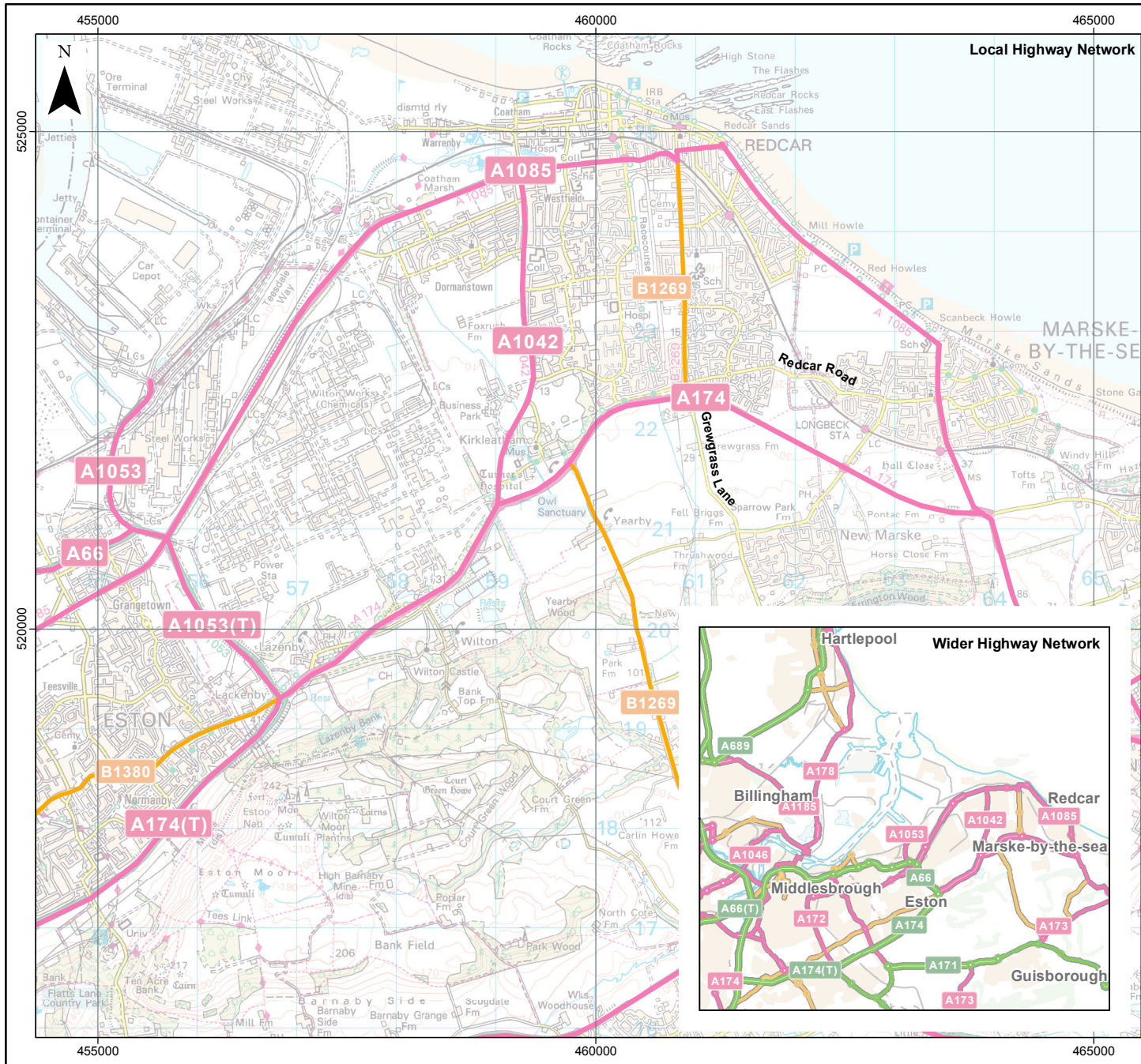
Table 3.3 Traffic and Access significance impact assessment matrix

Receptor Sensitivity	Magnitude of Effect				
	Very High	High	Medium	Low	Negligible
Very High	Major	Major	Moderate	Minor	Negligible
High	Major	Moderate	Minor	Minor	Negligible
Medium	Moderate	Minor	Minor	Negligible	Negligible
Low	Minor	Minor	Negligible	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible	Negligible

4 Existing Environment

4.1 Introduction

- 4.1.1 Teesside is the given name for a group of towns situated in the north east of England. Teesside incorporates the towns Middlesbrough, Stockton-On-Tees, Thornaby, Billingham, Cleveland, Redcar and other smaller settlements near the River Tees.
- 4.1.2 Teesside is located on the eastern coast of the UK. Access to the wider strategic highway network is predominantly via the A66 and A19 dual carriageways, which link to the A1(M). The A1(M) provides access to the key north south corridor passing close to Newcastle upon Tyne and Leeds. The A1(M) also provide access to the east west transport corridor of the M62.
- 4.1.3 **Figure 4.1** depicts the local and wider highway network surrounding the study area providing a graphical overview of the existing highway network.
- 4.1.4 Teesside is bounded by the North Sea (to the east) and the North York Moors National Park (to the south). The River Tees reduces links to the north, therefore the majority of inward traffic to the area routes from the west.
- 4.1.5 The main links considered within this assessment are shown in **Figure 4.1** and are described below.



LEGEND

- Primary routes
- Main roads
- Secondary roads

Wider Highway Network

0 2
Kilometres

Data Source:
Ordnance Survey data © Crown copyright and database right, 2014

PROJECT TITLE
DOGGER BANK TEESIDE A & B

DRAWING TITLE
**Figure 4.1:
Local and Wider Highway Network**

VER	DATE	REMARKS	Drawn	Checked
2	31/05/2013	Draft	SW	RE
3	04/07/2013	Draft	SW	RE
5	27/01/2014	Pre-DCO submission review	SW	RE

DRAWING NUMBER:
F-ONL-MA-005

SCALE	1:60,000	PLOT SIZE	A4	DATUM	OSGB36	PROJECTION	BNG
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4.2 Strategic road network

- 4.2.1 The A1053 links the A66 to the north with the A174 to the south. The road is of dual carriageway classification and subject to the national speed limit.
- 4.2.2 The A174 from its junction with the A1053 heading west is a dual carriageway. The A174 connects to the A19 where in turn it connects to the wider national highway network.

4.3 Local highway network

- 4.3.1 The A66 is the main west to east traffic route connecting Teesside with Workington on the west coast. The A66(M) links with the A1(M) and travels eastwards passing Darlington to the north and through the centre of Middlesbrough. The A66 terminates at A1053/A1085 roundabout.
- 4.3.2 The A66 is a high speed dual carriageway with two lanes in each direction.
- 4.3.3 From the A1053 heading east the A174 becomes an adopted highway under the jurisdiction of the RCBC and bounds Redcar to the south continuing toward the junction (roundabout) with the B1269 (Redcar Lane). Heading east the A174 becomes a single carriageway following the coast towards Whitby.
- 4.3.4 The A1085 begins at the junction with the A66 and A1053 and bounds Redcar to the north. The road follows the coast around to the junction with the A174 roundabout.
- 4.3.5 The A1085 is a mixture of both two lane dual carriageway and two lane single carriageway construction between the junction of A66/A1053 and upon entering the Redcar urban area. At this point the character of the road changes from a modern dual carriageway to a single carriageway into an urban built up area passing sensitive receptors such as residential houses, shops and Redcar and Cleveland College. The road continues along the coast as the A1085 Coast Road routing through Marske-by-the-Sea where it terminates at the roundabout with A174.
- 4.3.6 The A1042 runs from the junction with the A174 and Wilton Complex north towards the A1085 to the north of Redcar.
- 4.3.7 The A1042 is a modern single carriageway road with on road cycle lanes in each direction. The road is street lit and subject to a 40mph speed limit with no frontage development. From its junction with Staintondale Avenue and Waveney Road the character of the road changes from a modern single carriageway to a single carriageway within an urban built up environment.
- 4.3.8 From its junction with Staintondale Avenue the A1042 passes sensitive receptors such as a school and residential properties. This section of the road is also street lit and subject to a 30mph speed limit.
- 4.3.9 Redcar Road is a modern 30mph single carriageway road that connects from Redcar Lane linking off the A174. Redcar Road connects Redcar with Marske-by-the-Sea passing residential properties, education facilities and Marske-by-the-Sea town centre. The road then terminates with its junction with the A1085 Coast Road.

- 4.3.10 From its junction with the A174 roundabout Grewgrass Lane routes to the south into the village of New Marske. The road is a modern rural single carriageway subject to a 7.5t lorry weight restriction and National Speed limits. Access to New Marske is achieved via the crossroads with Longbeck Lane.
- 4.3.11 Fishponds Road originates from its roundabout junction with the A174 and routes south to the hamlet of Yearby. The road is a modern single carriageway road subject to National Speed limits until it reaches the outskirts of Yearby where it changes to 40mph then 30mph limits.

4.4 Traffic flow data

- 4.4.1 Existing traffic flow data for all the key roads within the study area has been captured from a number of sources, namely:
- Traffic count data from the DfT for classified Annual Average Daily flows (available for all 'A' roads); and
 - Commissioned Automatic Traffic Counts (for all other roads) undertaken between the 31 January 2013 and 6 February 2013.
- 4.4.2 Data from the Automatic Traffic Counts has been assessed to identify the network peak hours as 08:00 – 09:00 and 16:00 – 17:00.
- 4.4.3 Baseline traffic flow data for the SRN and local highway network is summarised in **Table 4.1**.

Table 4.1 Existing daily traffic flows for the Dogger Bank Teesside A & B study area

Link	Description	Background 2011/2013 flows (24hr AADT*)	
		Total Vehicles**	Total HGVs**
AA	A1085 (Trunk Rd)	19,360	444
BB	A1053 (Tees Dock Rd)	22,633	1,811
CC	A1053 (Greystone Rd)	15,618	1,267
DD	B1380 (High St)	9,189***	402***
EE	A174	25,530	1,439
FF	A174 (south of Wilton)	39,436	1,362
GG	A1042 (Kirkleatham Ln)	14,898	342
HH	A174 (south of Redcar)	27,406	1,499
II	B1269 (Fishponds Rd)	5,594***	209***
JJ	Grewgrass Ln	4,281***	13***
KK	Redcar Rd	8,743***	139***
LL	A1085 (Coast Rd)	11,301	114
MM	A174 (south of Marske)	11,809	245
NN	A174 (Redcar - Marske)	27,406	1,499

*AADT – Annual Average Daily Traffic

**2011 traffic flows, sourced from the DfT

***2013 traffic flows, from commissioned traffic counts

4.4.4 To derive the future year baseline traffic demand the observed 2011 and 2013 traffic flows have been growthed to a 2015 opening year (as presented in Section 6). Growth factors have been derived from the Department for Transport Trip End Model Presentation Programme (TEMPro) Version 6.2, with data set 6.2 for the Redcar and Cleveland area and then scaled with National Road Traffic Forecasts.

4.5 Sustainable transport

4.5.1 **Appendix 28A**, Section 4 contains a detailed review of the existing suitable transport options and considers the opportunities for construction workers to travel by more sustainable forms of transport.

4.5.2 The review identifies that within the study area there is a good network of cycle links and high frequency bus services (linking to the wider rail network), providing accessibility for locally based employees to travel by more sustainable modes of transport than the private car.

4.6 Intermodal freight

4.6.1 Teesport is a deep water port located approximately 1.5km from the mouth of the River Tees. The main access to the port is achieved via Tees Dock road off the A66 / A1053 roundabout. Other accesses to the port and further upstream maritime facilities are achieved off the A66 and the B1513 Dockside Road.

4.6.2 Teesport handles over 5,000 vessels each year and around 55 million tonnes of cargo. The Port covers an area of 588 acres south of the river and has direct access to the A66 Trans-Pennine East and West routes and A19/A11 M1 national motorway links north and south.

4.6.3 The port contains two container terminals (TCT1 and TCT2) with capacity of handling 500,000 twenty-foot equivalent units (TEUs) per year. In addition the port contains five general cargo berths handling a variety of commodities including steel, dry cargo and project cargoes. There are opportunities to source bulk materials and specialist materials via the port which can therefore redirect any impacts from HGV routing upon the existing local highway network.

4.6.4 Within Teesport there are also private rail sidings capable of handling a full range of cargoes.

4.7 Highway safety

4.7.1 Recorded collision data supplied by RCBC has been utilised to undertake a highway safety study. The full study is contained in Section 4 of the **Appendix 28A**, and summarised as follows.

4.7.2 An examination of the routes within the study area has been undertaken to identify any 'collision clusters'. Collision clusters for the local highway network have been defined (based upon RCBC local averages) as roundabouts with four or more collisions and priority/signal controlled junctions with three or more collisions within a five year period. For the strategic road network collision

clusters have been compared with typical values contained within the DMRB¹ Table 2/1 which provides average accident frequencies at different types of roundabout.

4.7.3 The following clusters were identified and can be considered sensitive receptors:

- Redcar Road, High Street (A1085) and The Wynd roundabout;
- A174, A1085 and Marske road roundabout;
- Longbeck Road, Sherwood Drive and The Drive staggered cross roads;
- A174, B1269 and Grewgrass Lane roundabout;
- B1269, Redcar Road and Plantation Road roundabout;
- A1043, A174 and Wilton Complex roundabout;
- A1053, A1741 and the B1380 roundabout;
- A1042, Staintondale Avenue and Waveney Road staggered priority cross roads;
- A1085 and A1042 signalised junction;
- A1085, West Coatham Lane, Wilton Complex and the TATA steel works roundabout;
- Cluster 11: A1053, A1085 and Wilton Complex roundabout; and
- The A66 and Whitworth Road signalised junction.

4.7.4 Further examination of the 12 identified collision clusters has been undertaken to establish whether there is an emerging pattern or trend to collisions that may be impacted by the projects. Where this is the case, further detailed assessment of causation factors is undertaken in Section 6.

¹ Design Manual for Roads and Bridges, Volume 6, Section 2

5 Assessment of Impacts – Worst Case Definition

5.1 Introduction

- 5.1.1 This section details the realistic worst case construction scenarios as a basis for the subsequent impact assessment. Full details of the range of project options being considered by Forewind are provided within **Chapter 5 Project Description**.
- 5.1.2 The specific timing and phasing of the construction of the two projects will be determined post consent and therefore a ‘Rochdale Envelope²’ approach has been undertaken for the application.
- 5.1.3 The four construction phasing scenarios for Dogger Bank Teesside A & B considered within the onshore assessment for traffic and access are:
- i. Build A or Build B in isolation;
 - ii. Build A and B concurrently;
 - iii. Build A, gap of up to 5 years, Build B (sequential); and
 - iv. Build A and install conduits for B, gap of up to 5 years, install cables for B in conduits.
- 5.1.4 For scenario 1, either project is considered to have the same impact on traffic and access and therefore represent worst case construction scenario for a single project.
- 5.1.5 Scenario 2 is considered to be the worst case traffic scenario, due to the general doubling of construction traffic.
- 5.1.6 Scenario 3 and 4 represent similar or less construction traffic demand than scenarios 1 and 2 respectively.
- 5.1.7 As such, the onshore construction scenarios which define the traffic impact Rochdale Envelope for the projects are:
- i. Single project (A or B) – built in isolation; and
 - ii. Two projects (A and B) – built concurrently.
- 5.1.8 These two scenarios have been utilised to derive the ‘realistic worst case definition’ for construction traffic outlined in **Table 5.1**.
- 5.1.9 National Grid has provided an indication of the duration of their works at the existing National Grid Electricity Transmission (NGET) substation at Lackenby. The first phase of works is expected to last 18 months and the second phase 22 months. National Grid has indicated that due to available space and safe

² As described in **Chapter 5 Project Description** the term ‘Rochdale Envelope’ refers to case law (R.V. Rochdale MBC Ex Part C Tew 1999 “the Rochdale case”). The ‘Rochdale Envelope’ for a project outlines the realistic worst case scenario or option for each individual impact, so that it can be safely assumed that all lesser options will have less impact.

working requirements it is unlikely that the two phases will be completed concurrently.

5.1.10 It is however conceivable that one National Grid phase will overlap with either the single or concurrent construction scenarios and this is captured in the worst case scenario.

Table 5.1 Realistic worst case scenario for the assessment of traffic and access impacts

Impact	Realistic worst case scenario	Rationale
Construction	Minimum construction duration of 18 months.	18 months is the minimum realistic duration the works can be completed in and results in the highest traffic demand due to the intensity of activities.
	Minimum duration for individual construction activities.	Minimum durations for individual activities within the 18 month programme have been adopted to represent the peak traffic demand for each activity.
	Full overlap of all construction activities during the peak construction period being assessed (with the exception of mobilisation/demobilisation).	Represents maximum intensity of activities and results in peak traffic generation.
	Peak National Grid traffic demand overlaps peak Dogger Bank Teesside A & B traffic demand.	Represents peak 'in-combination' traffic generation.
	Earliest start of construction 2015.	2015 is the earliest realistic construction start date for the assessment of environmental impacts. It would result in the greatest impact as background traffic demand will be subject to limited growth and therefore traffic increase more significant.
	No stagger between the start of Dogger Bank Teesside A & B.	Represents peak 'in-combination' traffic impacts for the combined projects.
	No allowance for construction workers to be able to travel by non-car modes (bus, rail, walking and cycling) has been applied to the traffic demand.	Distributes construction employee travel to work by car only resulting in a higher traffic demand for the purpose of a robust assessment.
	No allowance for reduction of HGV traffic due to intermodal freight transfer (rail, maritime).	Transfer of bulk materials by rail or maritime modes would lead to a reduction in HGV traffic on some of the links within the study area. However there would still be a need for local transfer by road therefore any potential gains have been disregarded for the purpose of this assessment.
Operation	Each converter station will be staffed 24 hours a day by two full time members of staff resulting in eight (two-way) vehicle movements per converter station per day.	Assuming that the converter stations will be manned 24 hours a day results in a greater localised traffic impact than remote monitoring.
Decommissioning	HGV and LCV traffic demand as per construction, assuming minimal opportunities to leave components <i>in-situ</i> or recycle materials on site.	Represents peak decommissioning traffic impacts.

6 Assessment of Impacts During Construction

6.1 Embedded mitigation

6.1.1 In direct response to the policy and guidance framework and stakeholder engagement (outlined in Section 2) a 'Traffic and Access Strategy' has been developed. Recognising the need to manage the traffic impact the following embedded mitigation measures are promoted within the strategy and have been applied to the traffic forecasts contained in this chapter:

- Access to the development primarily from A or B roads, thereby minimising the impacts upon local communities and utilising the most suitable roads;
- Access routes located close to the main A and B roads to reduce the impact upon local communities;
- The use of a remote haul route to reduce trips upon the highway network to distribute materials as well as reducing the number of points of access on to the highway network;
- The use of a haul route from the Wilton Complex under the A1053 (via an underpass) to the existing NGET substation at Lackenby to reduce traffic movements upon the B1380 where possible;
- Primary compounds and the converter stations site are located away from sensitive receptors to reduce the traffic impact upon local communities;
- The use of HDD for all (public highway) road and rail crossings to reduce the disruption to traffic from more conventional cut and cover techniques;
- The linear nature of the project will allow for the even distribution of activities and associated daily HGV demand; and
- The implementation of car-sharing amongst construction staff at a minimum ratio of 2.5 employees to a vehicle to reduce light commercial vehicle (LCV) traffic.

6.2 Route screening

6.2.1 In accordance with the GEART a (Rule 1 and Rule 2) screening process has been undertaken for the study area to identify routes that are likely to have sufficient changes in traffic flows and therefore require further impact assessment.

6.2.2 Details of materials, plant, personnel and timescales for the works have been taken from **Chapter 5** and this data has been utilised to derive the traffic increases on the highway network.

6.2.3 **Appendix 28A**, Section 5, provides full details in regards to the derivation, distribution and assumptions that have used to develop the peak daily traffic increases for each construction scenario.

6.2.4 **Table 6.1** and **Table 6.2** summarise the total daily peak movements of all materials, personnel and plant during the ninth month (the peak activity month) when distributed across the highway network. The tables also provide a comparison of the peak construction flows with the forecast background traffic flows in 2015 (assumed worst case realistic start of construction).

Table 6.1 Existing and proposed daily traffic flows for Dogger Bank Teesside A or B in isolation

Link	Description	Link sensitivity	Background 2015 flows (24hr AADT*)		2015 construction flows		Percentage increase	
			Total Vehicles	Total HGVs	Total Vehicles	Total HGVs	Total Vehicles	Total HGVs
AA	A1085 (Trunk Rd)	Low	19,902	456	0	0	0.0%	0.0%
BB	A1053 (Tees Dock Rd)	Low	23,267	1,862	227	154	1.0%	8.3%
CC	A1053 (Greystone Rd)	Low	16,055	1,302	227	154	1.4%	11.8%
DD	B1380 (High St)	High	9,327	408	123	33	1.3%	8.1%
EE	A174	Low	26,245	1,479	206	121	0.8%	8.2%
FF	A174 (south of Wilton)	Low	40,540	1,400	389	241	1.0%	17.2%
GG	A1042 (Kirkleatham Ln)	High	15,315	352	48	0	0.3%	0.0%
HH	A174 (south of Redcar)	Low	28,173	1,541	138	44	0.5%	2.8%
II	B1269 (Fishponds Rd)	Medium	5,678	212	32	20	0.6%	9.4%
JJ	Grewgrass Ln	Medium	4,345	14	7	4	0.2%	32.1%**
KK	Redcar Rd	High	8,874	141	6	3	0.1%	2.4%
LL	A1085 (Coast Rd)	High	11,617	117	47	6	0.4%	5.4%
MM	A174 (south of Marske)	Low	12,140	252	40	0	0.3%	0.0%
NN	A174 (Redcar - Marske)	Low	28,173	1,541	98	16	0.3%	1.0%

*AADT – Annual Average Daily Traffic

**Exceeds GEART screening thresholds

Table 6.2 Existing and proposed daily traffic flows for Dogger Bank Teesside A & B concurrently

Link	Description	Link sensitivity	Background 2015 flows (24hr AADT*)		2015 construction flows		Percentage increase	
			Total Vehicles	Total HGVs	Total Vehicles	Total HGVs	Total Vehicles	Total HGVs
AA	A1085 (Trunk Rd)	Low	19,902	456	0	0	0.0%	0.0%
BB	A1053 (Teess Dock Rd)	Low	23,267	1,862	415	291	1.8%	15.6%
CC	A1053 (Greystone Rd)	Low	16,055	1,302	415	291	2.6%	22.3%
DD	B1380 (High St)	High	9,327	408	129	37	1.4%	9.0%
EE	A174	Low	26,245	1,479	372	229	1.4%	15.4%
FF	A174 (south of Wilton)	Low	40,540	1,400	739	482	1.8%	34.5%**
GG	A1042 (Kirkleatham Ln)	High	15,315	352	81	0	0.5%	0.0%
HH	A174 (south of Redcar)	Low	28,173	1,541	253	87	0.9%	5.7%
II	B1269 (Fishponds Rd)	Medium	5,678	212	64	40	1.1%	18.8%
JJ	Grewgrass Ln	Medium	4,345	14	14	9	0.3%	64.1%**
KK	Redcar Rd	High	8,874	141	11	7	0.1%	4.8%
LL	A1085 (Coast Rd)	High	11,617	117	82	13	0.7%	10.8%**
MM	A174 (south of Marske)	Low	12,140	252	67	0	0.6%	0.0%
NN	A174 (Redcar - Marske)	Low	28,173	1,541	173	32	0.6%	2.1%

*AADT – Annual Average Daily Traffic

**Exceeds GEART screening thresholds

6.3 Screening Summary

6.3.1 In accordance with GEART only those links that are showing greater than 10% increase in total traffic flows (or HGV component) for sensitive links or greater than 30% increase in total traffic or HGV component for all other links are considered when assessing the traffic impact upon receptors.

6.3.2 It is noted from **Table 6.1** and **Table 6.2** that links 'FF' (A174 south of Wilton), 'JJ' (Grewgrass Lane) and 'LL' (A1085, Coastal Road) are above the screening threshold. The remaining links all fall below the GEART screening thresholds and are therefore not considered further in the impact assessment.

6.4 Impacts

6.4.1 The following paragraphs summarise the construction traffic impacts on the effects identified as being susceptible to changes in flow for the construction

scenarios identified in Section 5 (single project in isolation, both projects concurrent).

Severance

Single project and Concurrent projects

6.4.2 The peak change in total traffic for both scenarios, for all links is less than the 30% change in traffic threshold and therefore the impact is assessed as **negligible**.

Pedestrian Amenity (both construction scenarios)

Single project

6.4.1 The peak change in total flows or HGV component, for link JJ of 32.3% is substantially less than the 100% GEART impact threshold and therefore is assessed as a negligible effect. This equates to a **negligible** impact for these routes.

Concurrent projects

6.4.2 The peak change in total flows or HGV component flows for screened links is less than the 100% GEART impact threshold and therefore is assessed as a negligible effect for link LL (10.8% increase in HGVs) and low effect for links FF (34.5% increase in HGVs) and JJ (63.1% increase in HGVs). This equates to a **negligible** impact for these routes.

Highway Safety

6.4.3 Having identified the collision clusters (see Section 4) an assessment has been undertaken to identify emerging patterns or factors that could be exacerbated by the projects' traffic generation. This narrowed down the cluster sites to only those that could be exposed to a significant impact. The following clusters were identified:

- Cluster 2: A174, A1085 and Marske Road roundabout;
- Cluster 4: A174, B1269 and Grewgrass Lane roundabout;
- Cluster 5: B1269, Redcar Road and Plantation Road roundabout;
- Cluster 7: A1053, A1741 and the B1380 roundabout; and
- Cluster 10: A1085, West Coatham Lane, Wilton Complex and the TATA steel works roundabout.

6.4.4 A detailed assessment was then undertaken to identify any local factors that could expose the projects' traffic, or the travelling public to an increased risk of collisions, a summary is outline in **Table 6.3**.

Table 6.3 Summary of Highway Safety impacts

Cluster description	Summary of collisions	Sensitivity	Summary of Assessment
Cluster 2: A174, A1085 and Marske Road	The junction has experienced 10 collisions within five years of which one resulted in serious and nine slight injuries. All but one of the collisions	High	The junction benefits from targeted road safety measures that include advanced direction signing, high friction surfacing and street lighting and there is limited scope for further

Cluster description	Summary of collisions	Sensitivity	Summary of Assessment
roundabout.	involved rear end shunts between cars or motorcycles, no HGV collisions were recorded.		intervention.
Cluster 4: A174, B1269 and Grewgrass Lane roundabout	The junction has experienced 12 collisions within five years all of which resulted in slight injury. Of the 12 collisions all but two involved rear end shunts between cars or motorcycles, no HGV collisions were recorded. Five of the collisions are clustered at the Redcar Lane arm of the roundabout, three on the A174 east, two on Grewgrass Lane and two on the A174 west.	High	It is considered that two and three collisions within five years on the Grewgrass Lane and A174 arms respectively are not statistically significant. Redcar Lane arm does demonstrate a pattern of collisions that it is considered is significant, however the level of daily traffic generated by the projects on this arm will not significantly influence accident frequency.
Cluster 5: B1269, Redcar Road and Plantation Road roundabout	The junction has experienced eight collisions within five years all of which resulted in slight injury. Of the eight collisions three are attributable to rear end shunt type collisions, two to collisions between vehicles at the roundabout and three to collisions between a car and pedal cycle.	High	The level of daily traffic generated by the projects on this junction will not significantly influence accident frequency.
Cluster 7: A1053, A1741 and the B1380 roundabout	The junction has experienced 22 collisions in five years of which one resulted in a fatal injury and the remaining 21 resulted in slight injury. Of the 22 collisions, 20 of the collisions can be grouped into three types, namely: 11 involved a rear end shunt type collisions between two vehicles, five involved the loss of control of a vehicle and four involved the collision between two vehicles on the roundabout.	Very high	Discussions with the HA identified that this junction was improved in December 2010 as part of the works for the Teesport Northern Gateway development benefits from enhanced road safety measures. It is considered these road safety measures are appropriate to mitigate the identified collisions and improve road safety at this junction.
Cluster 10: A1085, West Coatham Lane, Wilton Complex and the TATA steel works roundabout	The junction has experienced nine collisions within five years of which two resulted in serious injury and the remaining seven resulting in slight injury. Of the nine collisions, six are attributed to loss of control, one to a rear end shunt type collision, one to a collision between two vehicles on the roundabout and one to loss of control due to a medical condition.	High	Based upon the assumed origin and destination of employees, there will not be an increase in traffic flows through this roundabout.

- 6.4.5 Only those Cluster Sites that are exposed to construction traffic above the GEART screening thresholds are considered in the impact assessment.

Single project

- 6.4.6 It should be noted that only Cluster 4 is impacted by the screened construction traffic, namely link JJ, Grewgrass Lane.
- 6.4.7 For Cluster 4, the assessment has identified that the collisions occurring at this junction are either not statistically significant (A174 and Grewgrass Lane arms) or unlikely to be impacted by the level of traffic demand (Redcar Lane Arm). Therefore the magnitude of effect is assessed as negligible on a high value receptor resulting in a **negligible** impact.

Concurrent projects

- 6.4.8 For concurrent projects, Clusters 2, 4 and 7 are impacted by screened construction traffic, link LL, A1085 Coast Road, link JJ, Grewgrass Lane and link FF, A174 south of Wilton respectively.
- 6.4.9 For Cluster 2, the assessment has identified that targeted road safety measures have been introduced at the junction and therefore the introduction of construction traffic is likely to have a low effect at worst. Therefore the overall impact on this cluster is assessed low effect on high value receptor resulting in **minor adverse** impact.
- 6.4.10 For Cluster 4, the assessment has identified that the collisions occurring at this junction are either not statistically significant (A174 and Grewgrass Lane arms) or unlikely to be impacted by the level of traffic demand (Redcar Lane Arm). Therefore the magnitude of effect is assessed as negligible on a high value receptor resulting in a **negligible** impact.
- 6.4.11 For Cluster 7, the assessment has identified that the junction was improved in December 2010 as part of the works for the Teesport Northern Gateway development and benefits from enhanced road safety measures. This intervention facilitates the safer movement of construction traffic through the junction. Therefore, the overall impact on this cluster is assessed as a low effect on a very high value receptor resulting in **minor adverse** impact.

Single project and Concurrent projects

- 6.4.12 The highway safety review also considered the access points proposed for the projects and identified that there is no emerging pattern of collisions at these locations.
- 6.4.13 Notwithstanding, it is recognised that whilst there may not be an existing collision problem, the increase in turning manoeuvres and slow moving vehicles could lead to an increased risk of collisions.
- 6.4.14 Therefore, a package of embedded mitigation measures has been developed to reduce the risk to the travelling public and construction employees at these locations and is outlined in **Table 6.4**. With these measures in place the magnitude of effect at points of access is assessed as low on low value receptors resulting in a **negligible** impact.

Table 6.4 Access detail and mitigation strategy

Point of access	Type of access & location of access	Mitigation Measures
Access 1 A1085 Coast Road	It is proposed that access will be taken directly from the A1085 to the south via a new bell mouth. Upon completion of the construction works the access will be removed.	<p>Temporary direction and warnings signs to advise of turning vehicles will be provided in accordance with Chapter 8 of the Traffic Signs Manual³.</p> <p>This signage will highlight the proposed accesses to drivers to avoid late breaking manoeuvres and highlight to the travelling public the potential for turning vehicles. The current speed limit is 40mph and it is proposed to provide an advisory 30mph speed limit in the vicinity of the access throughout the duration of the works.</p>
Access 2 Redcar Road	It is proposed to utilise the existing highway access that currently serves the sewage works (Green Lane) to provide access from to the north of Redcar Road. Upon completion of the construction works the access will be removed.	Temporary direction and warnings signs on Redcar Lane to advise of turning vehicles will be provided.
Accesses 3 & 4 A174 south of Redcar	It is proposed that access will be taken directly from the A174 to the north and south via a two new bell mouths. Upon completion of the construction works the accesses will be removed.	<p>The geometry of the bell mouths will be such as to prevent vehicles from right turning in and out of the construction access and from crossing from one access to the other. Instead vehicles will use adjacent roundabouts on the A174 to complete U-turning manoeuvres.</p> <p>The access geometry will reduce the risk of rear end shunts and collisions between turning vehicles.</p> <p>The current speed limit is 60mph and it is proposed to provide an advisory 30mph speed limit in the vicinity of the accesses throughout the duration of the works.</p> <p>Temporary direction and warnings signs to advise of turning vehicles will be provided.</p>
Access 5 Grewgrass Lane	It is proposed that access will be taken directly from Grewgrass Lane to the east via a new bell mouth. Upon completion of the construction works the access will be removed.	<p>The current speed limit is 60mph and it is proposed to provide an advisory 30mph speed limit in the vicinity of the access throughout the duration of the works.</p> <p>The temporary speed limit will allow for the provision of a reduced visibility splay recognising the temporary nature of the works and the environmental impact of removing large sections of mature hedge.</p> <p>Temporary direction and warnings signs to advise of turning vehicles will be provided</p>
Accesses 6 & 7 B1269	It is proposed that access will be taken directly from B1269 to the east and west via a two new bell mouths. Upon completion of the construction works the accesses	<p>The current speed limit is 60mph and it is proposed to provide an advisory 30mph speed limit in the vicinity of the accesses throughout the duration of the works.</p> <p>The temporary speed limit will allow for the provision of a reduced visibility splay recognising the temporary nature</p>

³ Traffic Signs Manual, Chapter 8, Traffic Safety Measures and Signs for Road Works and Temporary Situations. Parts 1 and 2

Point of access	Type of access & location of access	Mitigation Measures
	will be removed.	of the works and the environmental impact of removing large sections of mature hedge. Temporary direction and warnings signs to advise of turning vehicles will be provided.
Accesses 8 & 9 Wilton Complex	It is proposed to utilise the existing highway accesses from the A174 to the Wilton Complex for construction traffic. These accesses will also be used for operational access to the converter stations site.	The Wilton Complex is already sign posted and drivers will be directed which entrance to use.
Access 10 B1380 High Street	It is proposed to utilise the existing highway access from B1380 High Street to the existing NGET substation at Lackenby for National Grid construction traffic and larger plant and vehicles that cannot route from accesses 8 and 9. This access will also be used for operational access to the substation.	Temporary direction and warnings signs to advise of turning vehicles will be provided.

Driver Delay

Single project and Concurrent projects

- 6.4.15 The peak change in total traffic for all scenarios, for all links is less than the GEART Rule 1 and Rule 2 thresholds whereby, the increase in traffic is likely to be indiscernible in the context of daily traffic fluctuations. Therefore the magnitude of effect is assessed as negligible on all receptors resulting in a **negligible impact**.

7 Assessment of Impacts During Operation

7.1 Impacts during operation

- 7.1.1 During the operational phase of Dogger Bank Teesside A & B, traffic movements will be limited to that generated by the daily operation and periodic maintenance of the converter stations site.
- 7.1.2 It is anticipated that as a worst case each converter station will be staffed 24 hours a day by a minimal workforce (typically two full time personnel). This will result in a worst case impact of eight daily vehicle movements per converter station, i.e. the two arriving personnel will overlap with the two departing personnel from the day/night shift.
- 7.1.3 It is proposed that operational personnel will access the site from the existing Wilton Complex accesses from the A174. When any planned maintenance works are required, maintenance vehicles will also use Wilton Complex accesses from the A174.
- 7.1.4 The maximum peak change in operational traffic flow is eight (two-way) vehicle movements per converter station per day or eight and 16 movements for the single and concurrent projects respectively.
- 7.1.5 When comparing this to the background traffic flows for the A174 (south of Wilton), 40,540 AADT, 0.02% single project and 0.04% concurrent projects and is therefore less than the GEART Rule 2 (10%) screening threshold. Therefore, **negligible** impacts are predicted for all traffic borne effects for all receptors during the operational stage of Dogger Bank Teesside A & B.

8 Assessment of Impacts During Decommissioning

8.1 Impacts during decommissioning

8.1.1 Decommissioning, including the cable route and the converter stations site, will form part of an overall Decommissioning Plan for Dogger Bank Teesside A & B, for which a full EIA will be carried out ahead of any decommissioning works being undertaken. However, decommissioning activities are expected to include:

- The majority of the buried cable system left *in situ*;
- Dismantling and removal of above ground electrical equipment;
- Removal of any building services equipment;
- Demolition of the buildings and removal of security fences; and
- Landscaping and reinstatement of the site.

8.1.2 Prior to decommissioning, a further traffic assessment will be carried out and traffic management procedures agreed with the appropriate highways authorities. However, the levels of traffic associated with decommissioning are likely to be lower than those required during construction as elements of the proposed project may be left *in situ* or recycled on site subject to the details presented in a Decommissioning Plan.

8.1.3 It is therefore expected that the traffic impacts are likely to be similar or less than those presented during for the construction phase scenarios and similar mitigation strategies as presented will be valid for decommissioning.

9 Inter-relationships

9.1 Inter-relationships

- 9.1.1 In order to address the environmental impact of the proposed project as a whole, this section establishes the inter-relationships between traffic and access and other physical, environmental and human receptors. The objective is to identify where the accumulation of impacts on a single receptor, and the relationship between those impacts, may give rise to a need for additional mitigation.
- 9.1.2 **Table 9.1** summarises the inter-relationships that are considered of relevance to traffic and access and identifies where they have been considered within the ES.

Table 9.1 Inter-relationships relevant to the assessment of traffic and access (all phases)

Inter-relationship	Section where addressed	Linked Chapter
The relationship between traffic delay and upon tourists.	Chapter 31 Inter-relationships	Chapter 23 Tourism and Recreation
The relationship between traffic delay and traffic noise upon local residents.	Chapter 31 Inter-relationships	Chapter 29 Noise
The relationship between traffic delay and traffic related air quality upon local residents.	Chapter 31 Inter-relationships	Chapter 30 Air Quality
The relationship between increased traffic and effects on landscape	Chapter 31 Inter-relationships	Chapter 21 Landscape and Visual
The relationship between access impacts upon land use	Chapter 31 Inter-relationships	Chapter 26 Land Use and Agriculture
The relationship between impact of increased traffic and cultural heritage setting	Chapter 31 Inter-relationships	Chapter 27 Terrestrial Archaeology

- 9.1.3 **Chapter 31 Inter-relationships** provides an overview of all the inter-related impacts associated within the proposed project.

10 Cumulative Impact Assessment

10.1 Cumulative impact assessment

- 10.1.1 This section describes the cumulative impact assessment (CIA) for traffic and access, taking into consideration other plans, projects and activities. A summary of the CIA is presented in **Chapter 33 Cumulative Impact Assessment**.
- 10.1.2 In its simplest form the CIA onshore involves consideration of whether impacts on a receptor can occur on a cumulative basis between the onshore elements of Dogger Bank Teesside A & B and other activities, projects and plans for which sufficient information regarding location and scale exist.
- 10.1.3 The strategy recognises that data and information sufficient to undertake an assessment will not be available for all potential projects, activities, plans and/or parameters, and seeks to establish the ‘confidence’ we can have in the data and information available.
- 10.1.4 The projects, activities and plans relevant to traffic and access are detailed in **Table 10.1** along with a screening exercise to identify whether there is sufficient confidence to take these forward to the assessment.

Table 10.1 Projects to be considered within the cumulative impact assessment

Project Name	Description	Planning Reference	Location	Expected construction date	Material Consideration
Tees Renewable Energy Plant	300MW biomass power station	N/A	Teesport owned land, adjacent to the river Tees	Expected to be operational in 2015	No Construction will be complete prior to the commencement of construction at Dogger Bank Teesside A & B. Operational demand will be 150 staff resulting in a peak of 30 movements in any hour due to shift working. HGV movements will be 27 two-way movements per day. Therefore operational demand is considered to be negligible.
Tees Renewable Energy Plant underground cable	400kV underground cable	R/2011/0181/CL	Cable route runs along the eastern corner of the Wilton Complex to the existing NGET substation at Lackenby	Expected to be operational in 2015	No Construction expected to be completed prior to Dogger Bank Teesside A & B commencing. No operational demand.
York Potash Project	Underground pipeline to transport potash	N/A	Land adjacent to Wilton Complex	Application was expected November 2012, however to date no application has been submitted	Yes Forewind have met with the York Potash Project promoters to establish the likely route of the pipeline. This has identified that there is the potential a cumulative impact with Dogger Bank Teesside A & B. Therefore, the cumulative impacts of the pipeline are considered further.
Anemometry Mast at The Wilton Complex	Installation of a temporary 70m high anemometry mast	R/2010/0909/FF	Adjacent to site G	Approved February 2011, construction must begin within three years	No No material traffic impact.
Northern Gateway Terminal	Approval of reserved matters following the approval of outline planning	R/2012/0605/RMM	On PD ports land to the north of the Wilton Complex	Outline permission given in 2007. October 2012 decision: Grant Reserved	No Discussions with the Highway Agency have identified that mitigation measures for the Northern Gateway have been provided to accommodate the impact of the development when fully operational.

Project Name	Description	Planning Reference	Location	Expected construction date	Material Consideration
	permission for a container terminal			Matters	
Breagh Pipeline	Installation of an underground natural gas and monoethylene glycol pipeline including a beach valve compound	R/2011/0850/FFM	Pipeline landfalls at Coatham Sands and then heads in a SW direction crossing the River Tees to the Teesside Gas Processing Plant	Approved April 2012, development must begin within three years.	No The ES identifies that the project will be divided between works to the north of the River Tees and works to the south. The works to the north are unlikely to impact upon the study area for Dogger Bank Teesside A & B. The works to the south will result in a peak of 41 vehicle movements per day split over two shifts. Therefore, traffic demand is considered to be negligible.
Two storey two, three and four bedroom dwelling houses and garages	Residential dwellings	R/2013/0097/FFM	Accessible off the main trunk road (A174)	Public consultation ends March 2013	No Increases in traffic from new residential developments are captured within TEMPro.
Installation of single pole to house transformer unit	Installation of single pole to house transformer unit	R/2012/0996/EA	Located off the A1042, Trent Road, Redcar	Public consultation end February 2013	No No material traffic impact.
Redevelopment comprising the erection of 288 dwellings and ancillary works	288 residential dwellings	R/2012/0829/FFM	Located between A1042 and A1085, Westmorland Road, Redcar	Granted planning permission	No Increases in traffic from new residential developments are captured within TEMPro.
Demolition of various buildings	Demolition of various buildings and replace with new buildings and associated landscaping and boundary changes	R/2012/0880/F3	Located between A1042 and A174, Kirkleatham	Grant deemed consent February 2013	No Traffic impact considered to be insignificant as no Transport Assessment/Statement submitted in support of the application.
Erection of six	Six residential	R/2012/0832/FF	Located off A174,	Granted	No

Project Name	Description	Planning Reference	Location	Expected construction date	Material Consideration
dwelling	dwelling		Langley Close, Redcar	planning permission February 2013	Increases in traffic from new residential developments are captured within TEMPro.
Teesside Power Station	Demolition of eight exhaust stacks	R/2012/0867/PND	Located off A1053., Greystone Road Grangetown TS6 8JF	Permission not required December 2012	No The works are expected to be completed prior to Dogger Bank Teesside A & B commencing.
Three storey 72 bedroom care home	72 bed care home	R/2012/0838/cam	Located off A1085, Kirkleatham Street Redcar TS10 1QW	Planning permission granted, March 2013	No The supporting Transport Statement identifies that the additional vehicle movements generated are unlikely to significantly add to vehicle movements on the road network surrounding the site.
Screening opinion request for new biomass import facility	Biomass import facility	R/2012/0847/SC	Land at Teesport, Grangetown	EIA not required, November 2012	No The screening opinion identified that the traffic and transport impacts of the development during construction would not result in significant traffic impacts and that operational impacts would be 10 employee movements per day as the site will exploit rail and sea transport to import bulk materials. It is considered that the operational traffic demand will have no material impact.
Screening opinion for proposed potash processing plant	Potash processing facility	R/2012/0837/SC	Wilton International Works, Redcar	Insufficient info in planning application, November 2012	Yes The Potash Processing Facility will be located within the Wilton Complex and therefore there is the potential for a cumulative impact with Dogger Bank Teesside A & B. Therefore, the cumulative impacts of the potash processing facility are considered further.
Two storey management block with associated 92 space car park	Two storey management block	R/2012/0811/FF	Former Dow Plant, The Wilton Centre, Wilton, Redcar	Planning permission granted December 2012, development must begin within three	No Traffic impact considered to be insignificant as no Transport Assessment/Statement submitted in support of the application.

Project Name	Description	Planning Reference	Location	Expected construction date	Material Consideration
				years	
Dogger Bank Teesside Projects C & D	Offshore wind farm and onshore grid connection.	n/a	Similar to Teesside A & B but with grid connection at Tod point	Application expected in 2015	No DfT Guidance for Transport Assessments stipulates that “The inclusion or exclusion of committed developments in the assessments should be agreed with the relevant authorities at the pre-application stage.” In accordance with this guidance, it has been agreed with the highway authorities that Teesside C & D projects should not be subject to a transport CIA until such time as the application for those projects is developed. Appendix 28A details the agreed minutes of these discussions which were circulated to RCBC who agreed this approach was acceptable.
Scoping Request for two Wind Turbines	Two wind turbines and associated infrastructure	R/2013/0716/scp	Land 680m west of Yearby and 650m north each of Wilton	Scoping Opinion	No Traffic impact considered to be insignificant as no Transport Assessment/Statement submitted in support of the application.
Erection of wind turbine	One wind turbine and associated infrastructure	R/2013/0679/FF	Land approximately 600m southeast of Turners arms farm, off Fishponds Road, Yearby	Withdrawn	No Traffic impact considered to be insignificant as no Transport Assessment/Statement submitted in support of the application.
Waste Treatment Facility	Waste Treatment Facility for bioremediation and treatment of hazardous wastes.	R/2013/0608/FFM	Teesport Waste Treatment Facility, Grangetown	Public consultation end date: 11 October 2013	No The Design and Access Statement notes that no increase in traffic is anticipated from the development.
Extension to Factory	Extension to existing factory building	R/2013/0501/FFM	Kirkleatham Business Park, Troisdorf Way,	Major application, Approved	No Traffic impact considered to be insignificant as no Transport

Project Name	Description	Planning Reference	Location	Expected construction date	Material Consideration
			Kirkleatham, Redcar		Assessment/Statement submitted in support of the application.
Teesside Power Plant	Prior notification for demolition of a power station	R/2013/0393/PND	Teesside Power Plant, Greystone Road, Grangetown, TS6 8JF	PN Permission not required. (decided 26 June 2013)	No Traffic impact considered to be insignificant as no Transport Assessment/Statement submitted in support of the application.
Anaerobic power plant	Proposed anaerobic digestion and combined heat and power plant	R/2013/0369/FFM	Land at Wilton International, Trunk Road, Redcar	Planning permission granted 24 July 2013. Development to begin within three years of permission	No Traffic impact considered to be insignificant as no Transport Assessment/Statement submitted in support of the application.
Erection of wind turbine	One wind turbine and associated infrastructure	R/2013/0209/FF	Land west of Kirkleatham Business Park, Kirkleatham, Redcar	Planning permission granted 6 June 2013. Development to begin within three years of permission	No Traffic impact considered to be insignificant as no Transport Assessment/Statement submitted in support of the application.
Effluent main pipeline	Installation of above ground effluent main pipeline	R/2013/0468/FF	Land between South Bank coke ovens site to bran sands treatment plant	Planning permission granted 29 August 2013. Development to begin within three years of permission	No Traffic impact considered to be insignificant as no Transport Assessment/Statement submitted in support of the application.
Wind Farm	Five wind turbines and associated	R/2013/0674/FFM	Bankfield, North of Guisborough	Public consultation ends 30 November 2013	No Traffic impact considered to be insignificant as no Transport Assessment/Statement submitted in support of the application.

Project Name	Description	Planning Reference	Location	Expected construction date	Material Consideration
	infrastructure				
Single wind turbine	One wind turbine and associated infrastructure	R/2013/0509/FF	Land at court Green Farm, Wilton Lane, Guisborough, TS14 6QY	Public consultation end date 2 September 2013	No Traffic impact considered to be insignificant as no Transport Assessment/Statement submitted in support of the application.
Changes to house Types	Residential dwellings	R/2013/0427/FFM	The Closes Estate, Land adjoining the meadows, moorland Fell and Westmorland Road, Redcar	Consultation end date 2 August 2013	No Traffic impact considered to be insignificant as no Transport Assessment/Statement submitted in support of the application.
Four bungalows	Three, four bedroomed special needs bungalows and day-care centre	R/2012/0978/FF	Yew Tree Care Centre, Yew Tree Avenue, Redcar, TS10 4QG	Planning permission granted 1 July 2013. Development to begin within three years of permission	No Traffic impact considered to be insignificant as no Transport Assessment/Statement submitted in support of the application.
1000 Dwelling development (Land at the Marske Estate)	1000 residential dwellings and ancillary uses including a park- and- ride car park, petrol filling station, drive-through, public house/ restaurant and 60 bed hotel	R/2013/0669/OOM	Land to the south of Marske-by-the-sea bounded by Longbeck Road, A1085 and A174. Marske by the Sea	Public consultation end date 26 November 2013	Yes Typically increases in traffic from new residential developments are captured within a local TEMPro model based on outputs from local authority adopted development plans. However, the application indicates that the development will exceed the allocations set within RCBC Core Strategy and will also include leisure uses. Therefore the cumulative impact of the development is considered further.

Project Name	Description	Planning Reference	Location	Expected construction date	Material Consideration
Erection of agricultural building	Resubmission	R/2013/0266/RS	Land at Mickle Dales, Adjacent to Redcar Road and Cat Flatt Lane	Public consultation ends 12 June 2013	No Traffic impact considered to be insignificant as no Transport Assessment/Statement submitted in support of the application.
Residential Development	14 residential dwellings	R/2013/0540/FFM	Vacant land adjoining Errington CP school. Windy Hill Lane, Marske by the Sea TS11 7BL	Planning permission granted four November 2013. Development to begin within three years of permission	No Traffic impact considered to be insignificant as no Transport Assessment/Statement submitted in support of the application.

10.1.5 The cumulative impact assessment in **Table 10.1** has identified that the Land at the Marske Estate development and the York Potash Project (including the Potash Processing facility) have the potential to lead to an adverse cumulative impact when considered cumulatively with Dogger Bank Teesside A & B.

10.2 York Potash Project

10.2.1 The York Potash Project comprises a potash mine located approximately 2km south of Sneaton village in the North York Moors and a buried pipeline (approximately 43km long) from the mine to a processing facility within the Wilton Complex.

10.2.2 The mine and majority of the pipeline are considered to be remote from Dogger Bank Teesside A & B and are therefore unlikely to have a cumulative impact due to their distance from the study area.

10.2.3 However, the last section of pipeline from the Wilton Complex to near Skelton and the potash processing facility at the Wilton Complex could potentially have a cumulative impact due to the proximity to the converter stations sites.

10.2.4 At this stage there is insufficient detail within the public domain with regards to the project timing, expected traffic and access impacts of the York Potash Project such as traffic demand, distribution etc., furthermore, there is no historic data from previous projects as this will be the first project of its type in the UK.

10.2.5 However, it is reasonable to assume that employees and materials for the processing plant and last section of pipeline will be likely to originate from within the study area for Dogger Bank Teesside A & B. Recognising this, and the uncertainty with regard to timing, Forewind will continue to liaise with the York Potash Project promoters and assess any implications of the York Potash Project traffic demand when further detail becomes available and consider measures within the context of the proposed CTMP.

10.3 Land at the Marske Estate

10.3.1 The Land at the Marske Estate (LaME) comprises primarily of a residential development of up to 1,000 dwellings with the potential for complementary amenities including a convenience store, primary school, community hall and doctors/pharmacy being explored. In addition to the residential element the application also proposes a rail/public car park and leisure uses including a hotel, pub/restaurant and petrol filling station.

10.3.2 LaME is located to the south of Markse-by-the-Sea, bounded by the A174 to the south, A1085 to the east, Longbeck Road to the west and the Saltburn to Middlesbrough railway line to the north.

10.3.3 The development is expected to be built out in two phases. Phase one will provide up to 500 homes by 2023 and with phase two providing the remaining 500 at a later date. The leisure development is expected to delivered within phase one.

10.3.4 Recognising that the latest Dogger Bank Teesside A & B will start construction is 2020, only phase one of the LaME development would be operational prior to the completion of Dogger Bank Teesside A & B in 2022, as such the cumulative impact of phase two is not considered further.

- 10.3.5 The LaME development is supported by an Environmental Statement; however transport impacts are not considered as part of this assessment.
- 10.3.6 Section 6 of this chapter identifies that Dogger Bank Teesside A & B will result in a **minor adverse** impact upon highway safety with all other impacts assessed as negligible. The Transport Assessment for LaME identifies that there would be 'no material impact' upon road safety from the development.
- 10.3.7 Therefore, it is assessed that there is **no cumulative impact** upon highway safety.

11 Summary

11.1 Summary

- 11.1.1 This chapter of the ES has assessed the potential impacts the onshore elements of Dogger Bank Teesside A & B may have on the surrounding traffic sensitive receptors.
- 11.1.2 This chapter has been developed with regard to the legislative and policy framework outlined in Section 2 and further informed by consultation with the Planning Inspectorate (former IPC), the local highway authority, RCBC and the HA.
- 11.1.3 This chapter is underpinned by the supporting TA, contained in **Appendix 28A**. The TA contains the detailed access strategy, derivation and distribution of the traffic demand and highway operation assessments.
- 11.1.4 Traffic demand has been calculated with regard to a Traffic and Access strategy that has been adopted for the projects. The strategy seeks to manage the traffic impact through 'embedded mitigation' which would be implemented through a CTMP and CTP post planning determination.
- 11.1.5 In accordance with national guidance (GEART) a study area was identified, baseline conditions established and sensitive receptors within the study identified. The study area was screened to identify routes that could be potentially impacted by the projects' traffic generation using GEART Rule 1 and Rule 2. This identified three routes as requiring a detailed impact assessment, namely; link FF (A174 south of Wilton), link JJ (Grewgrass Lane) and link LL (A1085, Coastal Road).
- 11.1.6 This detailed assessment concluded no moderate or major adverse impact as identified with all impact being of either **minor adverse** or **negligible** levels as shown by **Table 11.1**.
- 11.1.7 The potential for interrelationship impacts due to traffic borne noise and air quality effects has been identified and is discussed separately in **Chapter 29** and **Chapter 30** respectively. Furthermore, the potential for interrelationship impacts upon tourisms and recreation resulting from traffic delays have been identified and are discussed separately in **Chapter 23**.
- 11.1.8 A cumulative impact assessment was undertaken reviewing projects, activities and plans relevant to traffic and access.
- 11.1.9 In accordance with GTA, it has been agreed with the highway authorities that Dogger Bank Teesside C & D projects should not be subject to a transport CIA until such time as the application for those projects is developed.
- 11.1.10 The CIA concluded that that the YPP and LaME have the potential to lead to an adverse cumulative impact when considered cumulatively with Dogger Bank Teesside A & B.
- 11.1.11 With regards to the York Potash Project it is has also been established that there is insufficient detail within the public domain with regards to the project

timing, expected traffic and access impacts of the York Potash Project. Recognising this, and the uncertainty with regard to timing, Forewind will assess any implications of the York Potash Project traffic demand when further detail becomes available and consider measures within the context of the proposed CTMP.

- 11.1.1 With regards to LaME it has been established that only phase one of the development has the potential to overlap with the construction of Dogger Bank Teesside A & B.
- 11.1.2 The residual impacts of Dogger Bank Teesside A & B are all assessed as negligible with the exception of road safety where the residual impact is assessed as minor adverse. The Transport Assessment for LaME identifies that there would be 'no material impact' upon road safety from the development and therefore, it is assessed that there is no cumulative impact upon highway safety.

Table 11.1 Impact summary

Description of Impact	Mitigation Measures	Residual Impact
Construction		
Pedestrian severance (all scenarios)	N/A	Negligible
Pedestrian amenity (all scenarios)	N/A	Negligible
Highway safety (all scenarios)	N/A	Minor adverse
Driver delay (all scenarios)	N/A	Negligible
Operation		
Pedestrian severance	N/A	Negligible
Pedestrian amenity	N/A	Negligible
Highway safety	N/A	Negligible
Driver delay	N/A	Negligible
Decommissioning		
Pedestrian severance	N/A	Negligible
Pedestrian amenity	N/A	Negligible
Highway safety	N/A	Minor adverse
Driver delay	N/A	Negligible

12 References

Communities and Local Government. (2012). National Planning Policy Framework

Department for Transport. (2008). Design Manual for Roads and Bridges, Volume 11 Environmental Assessment

Department for Transport. (2009). Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen

Department for Transport. (March 2007). Guidance on Transport Assessment

Department for Transport. (September 2013). DfT Circular 02/2013, The Strategic Road Network and the Delivery of Sustainable Development

Department of Energy and Climate Change (2011a) Overarching National Policy Statement for Energy (EN-1)

Department of Energy and Climate Change (2011b) National Policy Statement for Renewable Energy Infrastructure (EN-3)

Department of Energy and Climate Change (2011c) National Policy Statement for Electricity Network Infrastructure (EN-5)

Institute of Environmental Assessment. (1993). Guidelines for the Environmental Assessment of Road Traffic

Redcar & Cleveland Borough Council. (July 2007). Redcar & Cleveland Local Development Framework, Core Strategy DPD Adoption

Redcar & Cleveland Borough Council. (March 2011). Redcar & Cleveland Local Transport Plan 2011 – 21

Tees Valley Unlimited. (2011). Economic and Regeneration Statement of Ambition