RWE Renewables UK Dogger Bank South (West) Limited

RWE Renewables UK Dogger Bank South (East) Limited

Dogger Bank South Offshore Wind Farms

Environmental Statement

Volume 7

Chapter 24 – Traffic and Transport

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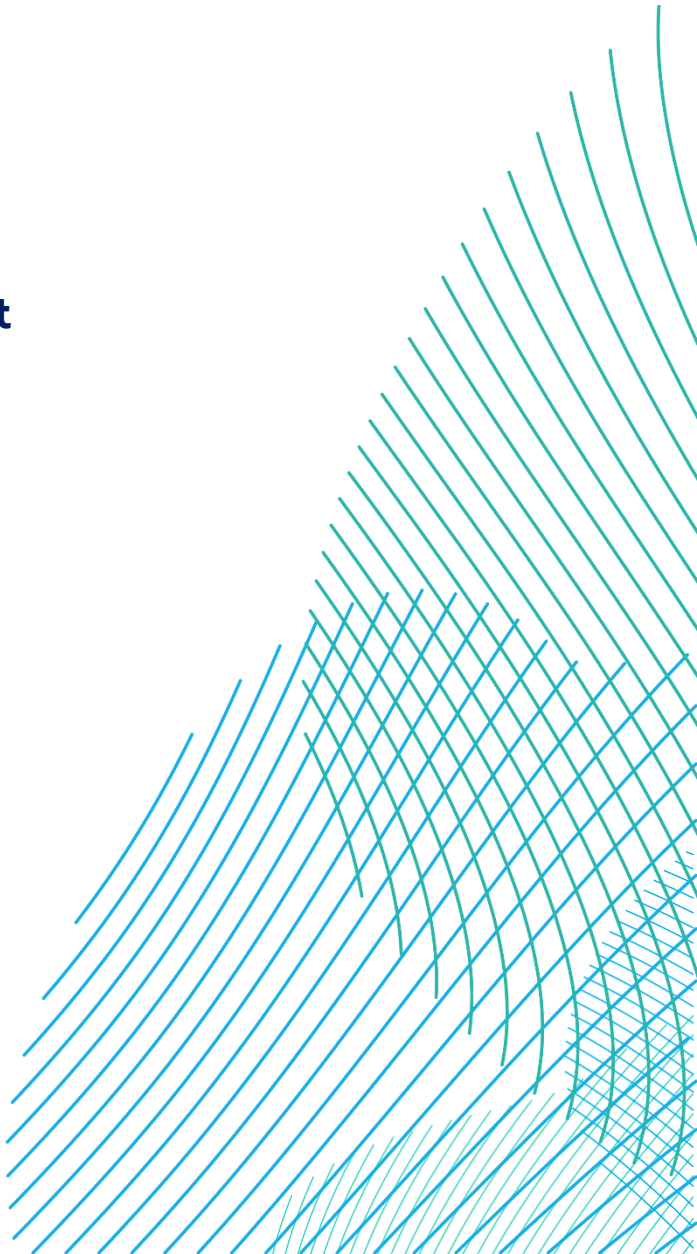

Unrestricted

Company:	**RWE Renewables UK Dogger Bank South (West) Limited and RWE Renewables UK Dogger Bank South (East) Limited**	Asset:	**Development**
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Glossary

Term	Definition
Concurrent Scenario	A potential construction scenario for the Projects where DBS East and DBS West are both constructed at the same time.
Decommissioning Plan	A document which would define the extent of works, in relation to the onshore infrastructure, which are required to be undertaken at the end of the operational lifetime of the Projects. The plan would be subject to agreement with relevant stakeholders at the time.
Development Scenario	Description of how the DBS East and /or DBS West Projects would be constructed either in isolation, sequentially or concurrently.
Dogger Bank South (DBS) Offshore Wind Farms	The collective name for the two Projects, DBS East and DBS West.
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach, and information to support, the Environmental Impact Assessment (EIA) and Habitats Regulations Assessment (HRA) for certain topics.
Heavy Goods Vehicle (HGV)	HGV is the term for any vehicle with a Gross Weight over 3.5 tonnes. This is also used as a proxy for HGVs and buses / coaches recognising the similar size and environmental characteristics of the respective vehicle types.
In Isolation Scenario	A potential construction scenario for one Project which includes either the DBS East or DBS West array, associated offshore and onshore cabling and only the eastern Onshore Converter Station within the Onshore Substation Zone and only the northern route of the onward cable route to the proposed Birkhill Wood National Grid Substation.
Light Vehicle (LV)	The range of vehicles that would be used by construction employees, i.e. cars, vans, pick-ups, minibuses, etc.

Term	Definition
Movement	A single trip (i.e. the arrival or departure from site) for the transfer of employees or delivery of goods.
Onshore Export Cable Corridor	This is the area which includes cable trenches, haul roads, spoil storage areas, and limits of deviation for micro-siting. For assessment purposes, the cable corridor does not include the Onshore Converter Stations, Transition Joint Bays or temporary access routes; but includes Temporary Construction Compounds (purely for the cable route).
Onshore Export Cables	Onshore Export Cables take the electric from the Transition Joint Bay to the Onshore Converter Stations.
Onshore Substation Zone	Parcel of land within the Onshore Development Area where the Onshore Converter Station infrastructure (including the haul roads, Temporary Construction Compounds and associated cable routeing) would be located.
Relevant Highway Authorities	The term relevant highway authorities for the Projects includes all highway authorities within the traffic and transport study area, namely, East Riding of Yorkshire Council, Hull City Council and National Highways.
Sequential Scenario	A potential construction scenario for the Projects where DBS East and DBS West are constructed with a lag between the commencement of construction activities. Either Project could be built first.
Serious collision	A collision resulting in serious injury for which a person is detained in hospital as an 'in-patient', or any of the following injuries whether or not they are detained in hospital: fractures, concussion, internal injuries, crushing, burns (excluding friction burns), severe cuts, severe general shock requiring medical treatment and injuries causing death 30 or more days after the accident.

Term	Definition
Slight collision	A collision resulting in a slight injury of a minor character such as a sprain (including neck whiplash injury), bruise or cut which are not judged to be severe, or slight shock requiring roadside attention. This definition includes injuries not requiring medical treatment.
The Applicants	The Applicants for the Projects are RWE Renewables UK Dogger Bank South (East) Limited and RWE Renewables UK Dogger Bank South (West) Limited. The Applicants are themselves jointly owned by the RWE Group of companies (51% stake) and Masdar (49% stake).
The Projects	DBS East and DBS West (collectively referred to as the Dogger Bank South Offshore Wind Farms).
Traffic and Transport Study Area (TTSA)	Area where potential impacts from the Projects could occur, as defined for the traffic and transport EIA topic.
Vehicle (HGV, Traffic) trips	A vehicle movement (i.e. the arrival or departure from site) for the transfer of employees or delivery of goods.

Acronyms

Term	Definition
AIL	Abnormal Indivisible Load
CTMP	Construction Traffic Management Plan
DBS	Dogger Bank South
DCO	Development Consent Order
DMRB	Design Manual for Roads and Bridges
EATM	Environmental Assessment of Traffic and Movement
ESDAL	Electronic Service Delivery for Abnormal Loads
ETG	Expert Topic Group
HGV	Heavy Goods Vehicle
HP4	Hornsea Project Four
JLJIS	A164 and Jocks Lodge Junction Improvement Scheme
km	Kilometre
LCV	Light Commercial Vehicle
LoS	Level of Service
LV	Light Vehicle
NCN	National Cycle Network
NPS	National Policy Statement
NRSWA	New Roads and Street Works Act 1991
OCTMP	Outline Construction Traffic Management Plan

Term	Definition
PPG	Planning Practice Guidance
PRC	Practical Reserve Capacity
PRoW	Public Rights of Way
PTMP	Port Traffic Management Plan
RTRA	Road Traffic Regulation Act 1984
TA	Transport Assessment
TMA	Traffic Management Act 2004
TS	Transport Statement
TTSA	Traffic and Transport Study Area

24 Traffic and Transport

24.1 Introduction

1. This chapter of the Environmental Statement (ES) considers the likely significant effects of the Projects on traffic and transport. The chapter provides an overview of the existing environment for the proposed Onshore Development Area, followed by an assessment of likely significant effects for the construction, operation, and decommissioning phases of the Projects.

2. The assessment should be read in conjunction with the following linked chapters:

   - **Volume 7, Chapter 25 Noise (application ref: 7.25)**;
   - **Volume 7, Chapter 26 Air Quality (application ref: 7.26)**;
   - **Volume 7, Chapter 27 Human Health (application ref: 7.27)**;
   - **Volume 7, Chapter 28 Socio Economics (application ref: 7.28)**; and
   - **Volume 7, Chapter 29 Tourism and Recreation (application ref: 7.29)**.

3. Additional information to support this Traffic and Transport chapter include:

   - **Volume 7, Appendix 24-1 Traffic and Transport Consultation Responses (application ref: 7.24.24.1)**;
   - **Volume 7, Appendix 24-2 Transport Assessment (TA) (application ref: 7.24.24.2)**;
   - **Volume 7, Appendix 24-3 Abnormal Indivisible Load Access Report (application ref: 7.24.24.3)**; and
   - **Volume 7, Appendix 24-4 Interaction Between Impacts (application ref: 7.24.24.4)**.

4. In addition to the traffic and transport appendices, an **Outline Construction Traffic Management Plan (OCTMP) (Volume 8, application ref: 8.13)** has also been prepared and submitted with the DCO application. The OCTMP contains details of measures to control, monitor and enforce construction traffic movements and provides details of the mechanisms for managing the design of accesses and offsite highway works.

5. The production of a final version of the CTMP and design of the highway accesses and offsite highway will be undertaken in consultation with the relevant highway authorities (East Riding of Yorkshire Council, Hull City Council and National Highways) and is secured via requirements in the **Draft DCO (Volume 3, application ref: 3.1)**.

24.2 Consultation

6. Consultation with regard to traffic and transport has been undertaken in line with the general process described in **Volume 7, Chapter 7 Consultation (application ref: 7.7)** and the **Consultation Report (Volume 5, application ref: 5.1)**. The key elements include EIA scoping, formal consultation on the Preliminary Environmental Information Report (PEIR) under section 42 of the Planning Act 2008 and the ongoing Evidence Plan Process (EPP) via the Traffic and Transport Expert Topic Group (ETG).

7. The feedback received throughout this process has been considered in the ES. This chapter has been developed following consultation in order to produce the final assessment submitted within the Development Consent Order (DCO) application. **Volume 7, Appendix 24-1 (application ref: 7.24.24.1)** provides a summary of the consultation responses received to date relevant to this topic, and details how the comments have been addressed within this chapter.

24.3 Scope

24.3.1 Effects Scoped In and Scoped Out

8. **Volume 7, Appendix 24-1 (application ref: 7.24.24.1)** details an agreement with the relevant highway authorities and the Planning Inspectorate that the traffic and transport assessment should include an assessment of the effects of construction traffic upon the impacts of severance, amenity, road safety, driver delay and abnormal loads. It was agreed that there would be no requirement to assess the operational phase and as such this has been scoped out of the assessment.

9. No decision has been made regarding a preferred base port for the offshore construction and operation of the Projects. To ensure that any potential effects associated with the Projects' offshore construction and operational phases (including cumulative effects) are assessed and mitigated, the **Draft DCO (Volume 3, application ref: 3.1)** includes a requirement to produce construction and operational phase Port Traffic Management Plan(s) (PTMPs) once the final location of the preferred base port (or ports) is known. **Volume 7, Appendix 24-1 (application ref: 7.24.24.1)** outlines that this approach has been agreed with the relevant highway authorities. The approach to scoping out of the onshore effects of the traffic and transport associated with offshore construction, operation and decommissioning activities has also been accepted by the Planning Inspectorate for other recently consented nationally significant offshore wind farm projects, e.g.

Norfolk Vanguard, East Anglia TWO and THREE, and Hornsea Three and Four.

24.3.2 Study Area

10. The Traffic and Transport Study Area (TTSA) has been established through determining the most probable routes for traffic, for both the transportation of materials and employees and has been agreed with the relevant highway authorities (**Volume 7, Appendix 24-1 (application ref: 7.24.24.1)** refers).

11. The extent of the TTSA is shown on **Volume 7, Figure 24-1 (application ref: 7.24.1)**. The TTSA is divided into 66 separate highway sections known as links, which are sections of road with similar characteristics and traffic flows. In total, the TTSA comprises of approximately 150 kilometres (km) of highway network. The 66 links are notated 1 to 76, noting that some links have been omitted during the development of the Projects.

12. Routes that extend outside of the TTSA are where construction traffic has dissipated and therefore, significant effects upon users of the highway network are unlikely.

24.3.3 Realistic Worst Case Scenario

24.3.3.1 General Approach

13. The realistic worst case design parameters for likely significant effects scoped into the ES for the traffic and transport assessment are summarised in **Table 24-2**. These are based on the Project parameters described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**, which provides further details regarding specific activities and their durations.

14. In addition to the design parameters set out in **Table 24-1**, consideration is also given to the different Development Scenarios still under consideration as set out in sections 24.3.3.2 to 24.3.3.4.

24.3.3.2 Development Scenarios

15. Following Statutory Consultation high voltage alternating current (HVAC) technology (previously assessed in PEIR) was removed from the Projects' design envelope (see **Volume 7, Chapter 4 Site Selection and Assessment of Alternatives (application ref: 7.4)** for further information). As a result, only high voltage direct current (HVDC) technology has been taken forward for assessment purposes. The ES considers the following Development Scenarios:

- Either DBS East or DBS West is built In Isolation; or

- DBS East and DBS West are both built either Sequentially or Concurrently.

16. An In Isolation Scenario has been assessed within the ES on the basis that theoretically one Project could be taken forward without the other being built out. If an In Isolation Scenario is taken forward, either DBS East or DBS West may be constructed. As such the onshore assessment considers both DBS East and DBS West In Isolation.

17. If an In Isolation Scenario is taken forward, only the eastern Onshore Converter Station within the Onshore Substation Zone would be constructed. In either the Concurrent or Sequential Scenario, both Onshore Converter Station locations within the substation zone would be taken forward for the onshore assessment.

18. In order to ensure that a robust assessment has been undertaken, all Development Scenarios have been considered to ensure the realistic worst case scenario for each topic has been assessed. A summary is provided here, and further details are provided in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**.

19. The three Development Scenarios to be considered for assessment purposes are outlined in **Table 24-1**.

Table 24-1 Development Scenarios and Construction Durations

Development Scenario	Description	Total Maximum Construction Duration (Years)	Maximum construction Duration Onshore (Years)
In Isolation	Either DBS East or DBS West is built In Isolation.	Five	Four

Development Scenario	Description	Total Maximum Construction Duration (Years)	Maximum construction Duration Onshore (Years)
Sequential	DBS East and DBS West are both built sequentially, either Project could commence construction first with staggered / overlapping construction.	Seven	Construction works (i.e. onshore cable civil works, including duct installation) to be completed for both Projects simultaneously in the first four years, with additional works at the landfall, substation zone and cable joint bays in the following two years. Maximum duration of effects of six years.
Concurrent	DBS East and DBS West are both built concurrently reflecting the maximum peak effects.	Five	Four

20. Any differences between the Projects, or differences that could result from the manner in which the first and the second Projects are built (concurrent or sequential and the length of any lag) are identified and discussed where relevant in section 24.6. For each potential impact, the worst case Construction Scenario for the In Isolation Scenario and the Concurrent or Sequential Scenario is presented. The worst case scenario presented for the Concurrent or Sequential Scenario will depend on which of these is the worst case for the potential impact being considered. The justification for what constitutes the worst case is provided, where necessary, in section 24.6.

24.3.3.3 Operation Scenarios

21. Operation scenarios are described in detail in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**. The assessment considers the following scenarios:

- Only DBS East in operation;

- Only DBS West in operation; and
- DBS East and DBS West operating concurrently with or without a lag of up to two years between each Project commencing operation.

22. If the Projects are built using a phased approach, there would also be a phased approach to starting the operational phase. The worst case scenario for the operational phases for the Projects have been assessed. See section 5.1.1 of **Volume 7, Chapter 5 Project Description (application ref: 7.5)** for further information on phasing scenarios for the Projects.

23. The operational lifetime of each Project is expected to be 30 years.

24.3.3.4 Decommissioning Scenarios

24. Decommissioning scenarios are described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**. Decommissioning arrangements will be agreed through the submission of a Decommissioning Plan to be submitted and approved following cessation of commercial operation prior to decommissioning commencing. For the purpose of this assessment it is assumed that decommissioning of the Projects could be conducted separately, or at the same time.

Table 24-2 Realistic Worst Case Design Parameters

	Parameter			
	DBS East or DBS West In Isolation	**DBS East and DBS West Concurrently**	**DBS East and DBS West Sequentially**	**Notes and Rationale**
Construction				
General	The onshore parameters described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)** have been reviewed by construction consultants Wardell Armstrong and the Applicant's engineering team. Wardell Armstrong and the Applicant's engineering team have applied their experience gained through the construction of previous wind farm projects in the UK to determine the worst case scenario for traffic and transport. Traffic demand has been forecast by applying a 'first principles' approach. The first principles approach generates traffic volumes from an understanding of material quantities and employee numbers required for the Projects and converts these metrics into vehicle trips. The following worst case assumptions (described in detail in the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) have been applied to all scenarios: • All materials are delivered direct to the work area by road, i.e. no use of rail or water transport; • No 'back-hauling', i.e. no reduction has been applied to HGV movements to factor the potential that vehicles arriving with deliveries could be used to export materials on the return trip; • Contingencies (reflecting the uncertainties in the design) has been applied to all material quantities and associated HGV movements; • Employee movements have been based upon one employee to one vehicle, i.e. no reduction has been applied to factor the potential that construction employees may car-share, or travel in contractor provided minibuses; • No reduction in traffic movements has been applied to account for the reassignment of traffic. For example, many HGVs would have a local supply chain origin on the local network serving existing customers and would naturally reassign to serve the Projects and would not represent a net increase to baseline traffic flows.			The assessment of severance, amenity and road safety is informed through a consideration of the magnitude of change in daily traffic flows. In order to consider a worst case scenario, the assessment utilises the peak daily traffic flows that could occur during the construction phase. The assessment of driver delay is informed through a consideration of changes in hourly traffic flows. In order to consider a worst case scenario, the assessment utilises the peak hourly traffic flows that could occur during the construction phase. Hourly flows are calculated from peak daily traffic flows. The assessment of all traffic and transport impacts presented within this chapter has been informed by the Projects' worst case peak construction traffic demand. Peak construction traffic demand is likely to occur for a short duration within the overall construction programme. Average traffic flows are provided within **Table 24-17**
Development Scenarios	In order to determine which Development Scenario presents the realistic worst case, a detailed review of construction activity for each Development Scenario has been undertaken. Full details of the traffic derivation is contained in the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**). Analysis in the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) highlights that the construction of the Projects In Isolation generates lower overall traffic flows than the construction of the Projects sequentially or concurrently. The TA further highlights that construction of the Projects concurrently generates the highest flows.			
	The worst case parameters associated with the derivation of the construction vehicle numbers are provided within the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**). The TA outlines the worst case parameters adopted for assigning these daily traffic numbers to the TTSA.	The worst case parameters associated with the derivation of the construction vehicle numbers are provided within the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**). The TA outlines the worst case parameters adopted for assigning these daily traffic numbers to the TTSA.	It is highlighted in the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) that the construction of the Projects Sequentially would generate lower traffic flows that the construction of the Projects concurrently, therefore the traffic flows presented in **Table 24-18** (for the construction of the	

	Parameter			
	DBS East or DBS West In Isolation	**DBS East and DBS West Concurrently**	**DBS East and DBS West Sequentially**	**Notes and Rationale**
	The resultant peak daily traffic flows upon each link within the TTSA are presented in **Table 24-17**.	The resultant peak daily traffic flows upon each link within the TTSA are presented in **Table 24-18**.	Projects concurrently) are considered to represent a worst case scenario. Therefore, in order to ensure that the traffic and transport assessment is proportionate, no separate assessment of Sequential traffic flows is presented.	and **Table 24-18** (together with peak flows) to provide stakeholders and interested parties with an appreciation of 'typical' demand.
Operation				
The Onshore Converter Stations would not be manned; however, access would be required periodically for routine maintenance activities, estimated at an average of one visit per week. Unscheduled maintenance or emergency repair visits would typically involve a very small number of vehicles, typically Light Vehicles (LV) (e.g. vans). Infrequently, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair. Inspection and minor servicing may be required for the electrical plant, but it is anticipated that the Onshore Converter Stations will require minimal scheduled maintenance and operation activities. Maintenance of the onshore cable is expected to be minimal. During operation, periodic testing of the cable is likely to be required (every two to five years). This would require access to the Link Boxes at defined inspection points along the onshore export cable route. This will involve attendance by up to three LV, such as vans, in a day at any one location. The vehicles would gain access using existing field accesses and side accesses as agreed with landowners to reach the relevant sections of the cable. Considering the activities listed, no significant traffic and transport effects are anticipated during the operational phase and as agreed with the relevant highway authorities (detailed in **Volume 7, Appendix 24-1 (application ref: 7.24.24.1)**), no operational scenarios will be assessed within this traffic and transport impact assessment.			
Decommissioning				
No final decision regarding the final decommissioning policy for the offshore project infrastructure including landfall, has yet been made. It is also recognised that legislation and industry best practice change over time. It is likely that offshore project infrastructure will be removed above the seabed and reused or recycled where practicable. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and will be agreed with the regulator. It is anticipated that for the worst case scenario, the impacts will be no greater than those identified for the construction phase.			

24.3.4 Embedded Mitigation

25. This section outlines the embedded mitigation relevant to the traffic and transport assessment, which has been incorporated into the design of the Projects or constitutes standard mitigation measures for this topic (**Table 24-3**). Where additional mitigation measures are proposed, these are detailed in the impact assessment (section 24.6).

Table 24-3 Embedded Mitigation Measures

Parameter	Embedded Mitigation Measures	Where Commitment is Secured
Construction Traffic Management Plan	An **Outline Construction Traffic Management Plan (OCTMP) (Volume 8, application ref: 8.13)** has been submitted alongside the DCO and contains details of measures to control, monitor and enforce HGV movements and provides details of the mechanisms for managing design of accesses and offsite highway works. The **OCTMP (Volume 8, application ref: 8.13)** also includes 'Travel Plan' measures to manage the number of single occupancy car trips.	DCO Requirement 14
Strategy for Access	An access strategy has been developed and will seek to reduce the impact of HGV traffic upon the most sensitive communities and to minimise travelling via narrow roads. The access strategy would be facilitated by: • The construction of a temporary haul road along the onshore export cable route; • The creation of vehicle crossovers; and • Controls on vehicle routing. These embedded mitigation parameters are outlined further below, with the proposed location of accesses and vehicle crossovers shown on **Volume 7, Figure 24-2 (application ref: 7.24.1)**.	DCO Requirement 14
	Haul Road A temporary haul road would be used to provide safe access for construction vehicles along the	DCO Schedule 1

Parameter	Embedded Mitigation Measures	Where Commitment is Secured
	Onshore Export Cable Corridor, thus reducing the requirement for vehicles to travel via the public highway. The Applicants have committed to sharing a Haul Road and construction accesses for both Projects in order to minimise physical disturbance.	
	Vehicle Crossovers To avoid vehicle access via sensitive locations, no direct access would be provided to the Onshore Export Cable Corridor, and vehicles would only be permitted to cross the highway. The proposed access strategy is described in detail within the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) and shown on **Volume 7, Figure 24-2 (application ref: 7.24.1)**. In summary, it includes: • Cliff Road. To avoid construction traffic accessing via this narrow road, all HGV traffic would access via access (notated AC) AC1 and travel north along the temporary Haul Road crossing (notated C) at C1. • Bewholme Road, Dunnington Lane and Dunnington Lane (south). To avoid construction traffic accessing via these narrow roads, HGV traffic would access via AC1 from the west and travel along the temporary Haul Road crossing at crossing point C2. Construction traffic would also access using access AC2 and travel east along the temporary Haul Road crossing at C4 and C3. • Billings Lane. To avoid construction traffic accessing via this narrow road, all HGV traffic would access via AC3 and travel north along the temporary Haul Road crossing at C5. • Harsell Lane. To avoid construction traffic accessing via this narrow road, HGV	DCO Requirement 14

Parameter	Embedded Mitigation Measures	Where Commitment is Secured
	traffic would access via AC3 and travel south along the temporary Haul Road crossing at C6. • Catwick Heads Lane, Rise Lane. To avoid routeing HGV construction traffic via the villages of Catwick and accessing via narrow roads. Vehicles would access via AC5 and travel south along the temporary Haul Road crossing at C7 and C8. • Riston Road. To avoid routeing HGV construction traffic via Long Riston and Catwick, as well as being routed via narrow roads, vehicles will access via AC7 and travel northeast along the temporary Haul Road crossing at C9. • Meaux Lane. To avoid routeing HGV construction traffic via this narrow road vehicles will access via AC8 and travel south and then west along the temporary Haul Road crossing at C10. • Park Lane. To avoid routeing HGV construction traffic via this narrow road and via the community of Cottingham, vehicles will access via AC17 (West or South) and travel along the temporary Haul Road crossing at C14 and C15. These measures are captured in the **OCTMP (Volume 8, application ref: 8.13)**.	
	Landfall AC1, vehicle routeing strategy To avoid the necessity for HGVs to travel through Atwick and Hornsea on the B1242 towards the landfall access, HGVs would be routed via the B1242 and B1249 from the main A165.	DCO Requirement 14

Parameter	Embedded Mitigation Measures	Where Commitment is Secured
	Onshore cable export corridor, AC2, AC3 and AC4 routeing strategy To avoid the necessity for HGVs to travel via Hornsea and Atwick towards these accesses, HGVs would be routed from the main A165 east towards the accesses.	DCO Requirement 14
	Onshore Cable Export Corridor, accesses AC5, AC7, AC8, AC9, AC11, AC13, AC14, AC15 and AC17a/b, vehicle routeing strategy To avoid HGV construction traffic using narrow roads within the local road network, these accesses will be served directly from main A-roads, namely the A164, A165, A1035, A1079 and A1174.	DCO Requirement 14
	Onshore Cable Export Corridor, accesses AC10, AC12 and AC14, vehicle routeing strategy To avoid HGV construction traffic being routed from the north, vehicles accessing these accesses would travel via the A1035 and travel from the south.	DCO Requirement 14
	Onshore Converter Station(s) access vehicle routeing strategy To avoid HGV construction traffic using narrow roads within the local road network and impacting upon sensitive communities, access to the Onshore Converter Station(s) would be served directly from the A1079.	DCO Requirement 14

Parameter	Embedded Mitigation Measures	Where Commitment is Secured
Trenchless crossing technology e.g. horizontal directional drilling (HDD)	To avoid disruption to transport users whilst the Projects' Onshore Export Cables are installed under road and rail infrastructure, by a trenchless crossing technology e.g. HDD. This will be used at the following locations and shown on **Volume 7, Figure 24-3 (application ref: 7.24.1)**: • The railway line between Hull and Bridlington (to the north of Beverley); • All A and B roads; and • The following local roads: Cliff Road, Dunnington Lane; Meaux Lane; Eske Lane; and Newbald Road.	DCO Requirement 14
Park Lane Crossing	To minimise disruption to transport users whilst the Projects' Onshore Export Cables are installed under Park Lane, access would be maintained via either the use of trenchless crossing technology e.g. HDD or temporary road diversions/road widening within the DCO Order Limits.	DCO Requirement 14

Parameter	Embedded Mitigation Measures	Where Commitment is Secured
Jillywood Farm access	Access to the Onshore Cable Export Corridor via access AC17(west) would use the same junction from the A165 as Jillywood Farm (shown in **Volume 7, Figure 24-2 (application ref: 7.24.1)**). The existing access is identified to be wide enough to allow two LVs to pass slowly but would not be wide enough to allow two HGVs to pass. The link also forms part of a PRoW and bridleway. To accommodate the Project's traffic, the road and junction with the A164 would be widened and users of the PRoW and bridleway would be segregated from construction traffic. Alternatively, an escort vehicle could be used to guide HGVs along the link and hold back conflicting traffic, including pedestrians / equestrians. These measures are captured in the **OCTMP (Volume 8, application ref: 8.13)**.	DCO Requirement 14

24.4 Assessment Methodology

24.4.1 Policy, Legislation and Guidance

24.4.1.1 National Policy Statements

26. The assessment of potential impacts upon traffic and transport has been made with specific reference to the relevant National Policy Statements (NPS) including the Overarching NPS for Energy (EN-1), the NPS for Renewable Energy Infrastructure (EN-3) and the NPS for Electricity Networks Infrastructure (EN-5). These were published in November 2023 and were designated in January 2024. The specific assessment requirements for traffic and transport, as detailed in the NPS, are summarised in **Table 24-4** together with an indication of the section of this chapter where each is addressed.

Table 24-4 NPS Assessment Requirements

NPS Requirement	NPS Reference	ES Section Reference
EN-1 NPS for Energy		
If a project is likely to have significant transport implications, the applicant's ES should include a transport appraisal. The Department for Transport's Transport Analysis Guidance (TAG) and Welsh Governments WelTAG provides guidance on modelling and assessing impacts of transport schemes.	EN-1 paragraph 5.14.5	This chapter and the accompanying **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) have been produced in accordance with current transport guidance (referenced later within section 24.4.1.2.2).
Applicants should consult with National Highways and Highways Authorities as appropriate on the assessment and mitigation to inform the application to be submitted.	EN-1 paragraph 5.14.6	As detailed in **Volume 7, Appendix 24-1 (application ref: 7.24.24.1)**, the scope of the assessment presented in the chapter and supporting **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) have been discussed and agreed with the relevant highway authorities.

NPS Requirement	NPS Reference	ES Section Reference
The applicants should prepare a travel plan including demand management and monitoring measures to mitigate transport impacts. The applicants should also provide details of proposed measures to improve access by active, public and shared transport.	EN-1 paragraph 5.14.7	Section 24.6 contains an assessment of the potential effects on the transport network associated with the Projects and outlines mitigation measures. An **OCTMP (Volume 8, application ref: 8.13)** is provided in support of the DCO application. The OCTMP includes outline travel plan measures, which would be developed further in consultation with the relevant highway authorities prior to the commencement of the Projects.
The assessment should also consider any possible disruption to services and infrastructure (such as road, rail and airports).	EN-1 paragraph 5.14.8	Section 24.6 contains an assessment of the potential effects on the transport network associated with the Projects. No effects upon other transport services or infrastructure are anticipated.
EN-3 NPS for Renewable Energy Infrastructure and EN-5 NPS for Electricity Networks Infrastructure		
EN-3 and EN-5 contain relevant policies in relation to the assessment of renewable electricity generation and electricity transmission and distribution networks respectively. However, no information specific to this traffic and transport chapter is presented.		

24.4.1.2 Other Legislation, Policy and Guidance

27. In addition to the NPS, there a number of pieces of legislation, policy and guidance applicable to the assessment of traffic and transport and these are outlined further in section 24.4.1.2.1 to 24.4.1.2.3.

28. Further detail is provided in **Volume 7, Chapter 3 Policy and Legislative Context (application ref: 7.3)**.

24.4.1.2.1 Local Planning Policy

29. EN-1 states that the Secretary of State will also consider Development Plan documents or other documents in the Local Development Framework to be relevant to its decision making.

30. The TTSA falls under the jurisdiction of East Riding of Yorkshire Council and Hull City Council as the local highway authorities and East Riding of Yorkshire Council as the local authority.

31. Detail of local planning policy document, as well as salient policies contained within these documents relevant to the Projects' traffic and transport demand, are provided in **Table 24-5.** These policies have been considered within the development of the ES.

Table 24-5 Relevant Local Planning Policies

Document	Policy	Salient Policy / Guidance Purpose	ES Section Reference
East Riding Local Plan 2012 – 2029 Strategy Document – Adopted April 2016	Policy EC4: Enhancing Sustainable Transport	*"In order to increase overall accessibility, minimise congestion and improve safety, new development will be supported where it is accessible, or can be made accessible, by sustainable modes of transport and addresses its likely transport impact.* *Development proposals should* • *Produce and agree a transport assessment and travel plan, where a significant transport impact is likely…"*	The scope of this traffic and transport assessment and accompanying **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) has been discussed and agreed with East Riding of Yorkshire Council as outlined in **Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**. It has been agreed with East Riding of Yorkshire Council that an **OCTMP (Volume 8, application ref: 8.13)** will be submitted with the DCO application and that the OCTMP will include outline travel plan measures. Section 24.6.1 contains an assessment of the Projects' effects on traffic and transport receptors and outlines associated mitigation measures (as appropriate).

Document	Policy	Salient Policy / Guidance Purpose	ES Section Reference
Hull Local Plan 2016 – 2032 – Adopted November 2017	Policy 25: Sustainable Travel	In summary, Policy 25 sets out that developments should promote the use of sustainable transport and have minimal impact on the environment and public health.	Section 24.6.1 contains an assessment of the Projects' construction traffic effects upon traffic and transport receptors. The traffic and transport metrics established in this chapter have also been used to inform the consideration of effects upon air quality and human health (detailed in **Volume 7, Chapter 26: Air Quality (application ref: 7.26)**; and **Volume 7, Chapter 27: Human Health (application ref: 7.27)**).

Document	Policy	Salient Policy / Guidance Purpose	ES Section Reference
	Policy 27: Transport Appraisals	In summary, Policy 27 sets out that development should demonstrate an understanding of the travel requirements and resultant impacts by providing a transport appraisal (e.g. Transport Statement (TS)/ Transport Assessment (TA)/ Travel Plan (TP)) and Construction Management Plan where applicable.	The scope of this traffic and transport assessment and accompanying **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) has been discussed and agreed with Hull City Council as outlined in **Volume 7, Appendix 24-1 (application ref: 7.24.24.1)**. It has been agreed with Hull City Council that an **OCTMP (Volume 8, application ref: 8.13)** will be submitted with the DCO application and that the OCTMP will include outline travel plan measures.

24.4.1.2.2 Further Policy and Guidance

24.4.1.2.2.1 The Strategic Road Network and the Delivery of Sustainable Development

32. The Department for Transport policy paper Circular 01/2022 entitled 'The Strategic Road Network and the Delivery of Sustainable Development' (Department for Transport, 2022) sets out the ways in which National Highways will engage with the 'development industry', public bodies and communities to assist in the delivery of sustainable development.

33. Under the heading of General principles 01/2022, it is noted in paragraphs 43 and 44 respectively, that:

    "The company [National Highways] expects development promoters to enable a reduction in the need to travel by private car and prioritise sustainable transport opportunities ahead of capacity enhancements and new connections on the SRN [Strategic Road Network] …"

    "Travel plans are an effective means of incentivising the use of sustainable modes of transport. Where these are required, development promoters must put forward clear targets and commitments to manage down the traffic impact of development and maximise the accessibility of and within sites by walking, wheeling, cycling, public transport and shared travel …"

34. Under the heading of Environmental Assessment 01/2022, it is noted in paragraph 55, that:

    "… Environmental assessments must be comprehensive enough to establish the likely impacts on air quality, light pollution and noise arising from traffic generated by a development, along with the impacts from any proposed works to the SRN [Strategic Road Network] and identify measures to mitigate these impacts. Requirements and advice for undertaking environmental assessments in respect of transport impacts can be found in the DMRB".

35. Circular 01/2022 requirements have been discussed with National Highways and are addressed within the ES and accompanying **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**).

24.4.1.2.2.2 Traffic Management Act 2004

36. The Traffic Management Act, 2004 (TMA) was introduced to address congestion and disruption on the road network. The TMA places a duty on Local Traffic Authorities to ensure the expeditious movement of traffic on their road network and those networks of surrounding local authorities.

37. The TMA directs effective communication between local highway authorities and parties interested in carrying out street works. The TMA encourages a disciplined approach and advance communication to plan the street works.

38. The TMA also contains extra powers for local traffic authorities to manage and direct street works beyond those contained in the New Roads and Street Works Act 1991.

24.4.1.2.2.3 New Roads and Street Works Act 1991

39. The New Roads and Street Works Act, 1991 (NRSWA) was introduced to enable new roads to be provided, to make new provision with respect to street works and provides a legislative framework for street works by undertakers.

40. The aim of the NRWSA is to balance the statutory rights of highway authorities (street authorities) and undertakers (such as utility companies) to carry out works with the right of road users to expect the minimum disruption from works.

24.4.1.2.2.4 Road Traffic Regulation Act 1984

41. The Road Traffic Regulation Act, 1984 (RTRA) was introduced to regulate or restrict traffic on the road network in the interests of safety.

42. The RTRA enables highway authorities to lawfully restrict and manage traffic. In particular, it sets out (in Part I) how Traffic Regulation Orders (or Traffic Management Orders) can be employed to limit or prevent the use of the road by a particular form of traffic.

24.4.1.2.2.5 Highways Act 1980

43. The Highways Act, 1980 legislates the management and operation of the road network in England and Wales and places statutory duties/powers upon the highway authority. The Act provides for the creation, improvement, and maintenance of roads and for acquisition of land.

44. Section 62 and 278 of the Act provides for private developers to either fund or complete works to public highways outside or beyond the development site itself, such as traffic calming and capacity improvements.

24.4.1.2.2.6 Environmental Assessment of Traffic and Movement

45. The Environmental Assessment of Traffic and Movement (EATM) are guidelines published by the Institute of Environmental Management and Assessment (2023) for the assessment of the environmental impacts of road traffic associated with new developments.

46. 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.

47. EATM is the principal guidance that informs this assessment and section 24.4.3 of this chapter contains full details of how the guidance has been applied.

24.4.1.2.2.7 Planning Practice Guidance – Travel Plans, Transport Assessment and Statements

48. For the purpose of assessing the effect of the Projects, the relevant Planning Practice Guidance (PPG) is 'Travel Plans, Transport Assessment and Statements' (henceforth referred to as the Transport PPG).

49. The Transport PPG (Department for Levelling Up, Housing and Communities, 2014) sets out the key principles to be adopted when developing a Transport Assessment as follows:

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

50. The Transport PPG key principles have shaped the development of the ES and accompanying **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) and can be seen throughout this chapter.

24.4.1.2.3 Further Technical Transport Guidance

51. Further supplementary technical transport guidance has been utilised in developing the EIA, these documents are outlined in **Table 24-6**.

Table 24-6 Supplementary Technical Transport Guidance

Document	Purpose/Application
Design Manual for Roads and Bridges (DMRB) CD 123 – Geometric design of at-grade priority and signal-controlled junctions (National Highways, November 2021)	The DMRB has been prepared for trunk roads and motorways and has been adopted as best practice within this assessment for the design of accesses.
DMRB GG 119 – Road Safety Audit (Highways England, 2020a)	Provides the requirements for road safety audit for highway schemes.
DMRB LA 112 – Population and Human Health (Highways England, 2020b)	Sets out rights of way sensitivity thresholds for walkers, cyclist and horse-riders when crossing roads.
Manual for Streets (Chartered Institute of Highways and Transportation, 2007)	Guidance to inform the visibility requirements for accesses and crossings where measured main road speeds are below 40mph.
Manual for Streets 2 (Chartered Institute of Highways and Transportation, 2010)	
Traffic Signs Manual Chapter 8 Traffic Safety Measures and Signs for Road Works and Temporary Situations Part 1: Design (Department for Transport, 2009)	Provides guidance upon temporary traffic management that will be used to inform the assessment of driver delay impacts related to temporary road closures.

24.4.2 Data and Information Sources

24.4.2.1 Site Specific Surveys

52. In order to provide site specific and up to date information on which to base the impact assessment, traffic surveys were undertaken to inform data gaps identified in the TTSA. A summary of the surveys is outlined in **Table 24-7**, full details are presented within the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**).

Table 24-7 Key Sources of TTSA Data

Data Set	Spatial Coverage	Date	Notes
Automatic Traffic Counts	22 locations within the TTSA	Traffic flows were obtained for a period of seven days in November 2022 for 20 of the links. Two further counts were undertaken for link 39 and 76 in November 2023.	Traffic counts commissioned by the Applicants which provide classified hourly and daily count and speed data. Full details are provided within the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**).
Manually Classified Turning Counts	Three junctions within the TTSA	Traffic flows were obtained over three neutral weekdays in November 2023 between 06:30 – 09:30 and 16:00 – 19:00.	Traffic counts commissioned by the Applicants which provide classified hourly turning count data at specific junctions. Full details are provided within the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**).

24.4.2.2 Other Available Sources

53. Other sources that have been used to inform the assessment are listed in **Table 24-8**.

Table 24-8 Other Available Data and Information Sources

Data Set	Spatial Coverage	Year	Notes
Traffic Flows	31 locations within the TTSA	Annual average daily traffic flows were obtained from the Department for Transport for two years 2019 and 2022. It was agreed with National Highways and Hull City Council (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) to use 2019 data for all links within their network as whilst more recent data is available, this would either include periods where traffic flows were impacted due to the Covid-19 pandemic or where traffic has reassigned due to construction works associated with the A63 Castle Street improvement scheme in Hull. Annual average daily traffic flows for roads within the administration area of East Riding of Yorkshire Council were drawn from surveys undertaken in 2022 (where available) or 2019 where data for 2022 was not available.	National road traffic statistics provided by the Department for Transport provide a summary of traffic flows and vehicle composition (e.g. HGV, car, motorcycle) for a range of motorways, 'A' roads and minor roads across the UK. Data was acquired for 31 of the 66 links within the TTSA. Full details of the data and application in the TTSA is presented in the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**).

Data Set	Spatial Coverage	Year	Notes
Collision data	All links within the TTSA.	Data was acquired for the latest five-year period available at the time of drafting (01st January 2017 to 31st December 2021 for East Riding of Yorkshire Council and 31st October 2017 to 30th October 2022 for Hull City Council).	Collisions on the public highway that are reported to the police, and which involve injury or death are recorded by the police on a form known as STATS19 and collated by the relevant local highway authorities (East Riding of Yorkshire Council and Hull City Council). The personal injury collision data includes a wide variety of information about the collision (such as time, date, location, road conditions). Full details of the data and application in the TTSA is presented in the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**).
Public Rights of Way	The extent of the TTSA.	n/a	Geographic Information System layer showing the location of Public Rights of Way (PRoW).
National Cycle Network routes	The extent of the TTSA.	n/a	Map of the National Cycle Network (NCN) routes from Sustrans.

54. The desk-based assessment of data sources was also supported by site visits to provide information to validate the existing baseline highway environment, clarifying characteristics and sensitive receptors.

24.4.3 Impact Assessment Methodology

55. **Volume 7, Chapter 6 EIA Methodology (application ref: 7.6)** provides a summary of the general impact assessment methodology applied. The following sections describe the methods used to assess the likely significant effects on traffic and transport. These principles have been augmented by traffic and transport specific methodologies (as prescribed in EATM) to inform a significance evaluation.

56. The methodology within the Scoping Report was presented to the traffic and transport ETG as part of the Evidence Plan Process (detailed in **Volume 7, Appendix 24-1 (application ref: 7.24.24.1)**).

57. It was agreed during traffic and transport ETG meetings with the relevant highway authorities (as outlined in **Volume 7, Appendix 24-1 (application ref: 7.24.24.1)**), that the potential traffic and transport impacts to be assessed are:

- Severance;
- Amenity;
- Road Safety;
- Driver Delay; and
- Abnormal Loads.

58. Traffic borne noise and vibration, air quality, and health effects have been informed by the traffic data outlined in this chapter. These effects are assessed in **Volume 7, Chapter 25 Noise (application ref: 7.25)**, **Volume 7, Chapter 26 Air Quality (application ref: 7.26)** and **Volume 7, Chapter 27 Human Health (application ref: 7.27)** respectively.

24.4.3.1 Abnormal Load Impact Assessment Methodology

59. Abnormal load is a generic term that covers a broad range of vehicles, ranging from limited load projections permitted for standard vehicles to Special Order Vehicles designed specifically for the purpose of moving loads well in excess of standard vehicle parameters.

60. Loads that require Special Type Vehicles are defined as Abnormal Indivisible Loads (AILs) in The Road Vehicles (Authorisation of Special Types) (General) Order 2003. The Road Vehicles (Authorisation of Special Types) (General) Order 2003 limits gross weight of an AIL to 150 tonnes, axle weight to 16,500kg, length to 30m and/or width to 6.1m, above which a Special Order is required from National Highways (who manage approval on behalf of the Secretary of State for Transport).

61. The transformers for the Projects' Onshore Converter Station(s) will require Special Order AILs. In addition, there may also be a requirement for non-Special Order abnormal loads associated with large items of plant, cable drums, etc.

24.4.3.1.1 Special Order AILs

62. The Applicants commissioned Wynns Ltd (consulting engineers specialising in the transportation of AILs) to undertake an AIL study assessing the effects of transporting the transformers to inform the management measures required for the transportation of AILs for the Projects. The AIL study is provided as **Volume 7, Appendix 24-3 (application ref: 7.24.24.3)**.

63. The AIL study considered two potential access options for accessing the Onshore Converter Stations in Substation Zone 4 and also the potential to access a substation zone to the south of the A164 (referred to as Zone 1). However following completion of the AIL study, the Zone 1 option and the option to access the Onshore Substation Zone 4 from the A164/A1079 junction have been discounted.

64. The AIL study has identified that the load could come from the Port of Hull (Albert Docks) and travel to the onshore substation(s) via a preferred route of the A63, A1034 and A1079.

65. This route was utilised in 2022 for trailers carrying 256 tonne nett transformers for the Dogger Bank A and B substation currently under construction.

66. The AIL study highlights that the route is considered negotiable with local accommodation works along the route, including, overrunning of kerbs, removal of signs, traffic signals, bollards and pruning of trees, etc.

67. National Highways (responsible for consenting AIL movements) have provided agreement in principle to this proposed route and confirmed the route as being structurally acceptable (outlined in **Volume 7, Appendix 24-3 (application ref: 7.24.24.3)**).

24.4.3.1.2 Non – Special Order Abnormal Loads

68. The total forecast HGV movements (assessed within this chapter) include for the transportation of cable drums and plant, and these could require non-Special Order abnormal loads.

69. Plant movements are likely to be by standard HGV with limited load projections and therefore are not discriminated within the overall impact assessments. Cable drum size would be subject to a number of factors (e.g. market conditions, port facilities, shipping constraints, transmission technology and is unlikely to be finalised until after the principal contractor is appointed.

24.4.3.1.3 Abnormal Load Controls

70. To ensure that potential impacts associated with the transportation of all AILs are managed and coordinated, the **OCTMP (Volume 8, application ref: 8.13)** (which is secured by DCO Requirement) includes a commitment that, prior to the movement of any AILs, the contractor would be required to submit notifications to the relevant authorities (police, highway authorities and bridge/ structure owners) through ESDAL. The ESDAL process would detail which proposed routes would be used and ensure the timings would be co-ordinated and potential effects would not be significant.

24.4.3.2 Definitions

71. For each potential impact, the assessment identifies receptors sensitive to that impact and implements a systematic approach to understanding the impact pathways and the level of impacts (i.e. magnitude) on given receptors. The definitions of sensitivity and magnitude for the purpose of the traffic and transport assessment are provided in **Table 24-10** and **Table 24-12.**

24.4.3.3 Sensitivity

72. EATM identifies that it is necessary to identify particular user groups ('receptors') and associated locations, which may be sensitive to changes in the traffic and transport network conditions.

73. **Table 24-9** provides a summary of the potential impacts and an indication of the receptors affected and potential locations that will be considered within the assessment.

Table 24-9 Potential Impacts and Receptors

Potential Impacts	Receptors	Location
Severance	Pedestrians, cyclists and equestrians	Local communities adjoining the TTSA, designated routes, e.g. Public Rights of Way (PRoW), National Cycle Network routes (NCN routes).
Amenity		
Road Safety	All road users	The TTSA
Driver Delay (Capacity)	Drivers and passengers in vehicles	Highway links and junctions
Driver Delay (Highway Geometry)		
Driver Delay (Road Closures)		
Abnormal Loads	All road users	

24.4.3.3.1 Severance and Amenity

74. For the impacts of severance and amenity an evaluation of the TTSA has been undertaken to identify potential locations with a concentration of receptors which may be sensitive to changes in traffic conditions.

75. Definitions of the different sensitivity levels for highway traffic receptors are given in **Table 24-10**.

Table 24-10 Definition of Sensitivity for Receptors

Sensitivity	Definition
High	Concentrations of sensitive receptors (e.g. hospitals, schools, residential dwellings, areas with high footfall) and limited separation from traffic provided by the highway environment; or a low concentration of sensitive receptors and no separation from traffic provided by the highway environment.
Medium	A low concentration of sensitive receptors (e.g. residential dwellings, pedestrian desire lines) and some separation from traffic provided by the highway environment.
Low	Few sensitive receptors.

Sensitivity	Definition
Negligible	Links that fall below EATM Rule 1 and 2 screening thresholds (see section 24.4.3.4) and major 'A' roads with no pedestrian, cycle or equestrian environment; or a highway environment that can accommodate substantial changes in volumes of traffic.

24.4.3.3.2 Road Safety

76. To assess the effects on road safety, the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) includes an examination of the existing collisions occurring within the TTSA to identify any areas of the highway with concentrations of collisions with similar patterns (termed collision clusters), or roads with collision rates that are higher than national averages.

77. These sites (summarised in **Table 24-16**) are considered to be sensitive to changes in traffic flows (sensitive receptors) and therefore a more detailed analysis of the collision data is undertaken (in section 24.6.1.4) to understand the locations' sensitivity to changes in traffic flow.

24.4.3.3.3 Driver Delay (Capacity)

78. Recognising the extent of the TTSA (approximately 150km of highway network), a proportionate approach to the assessment of driver delay (capacity) effects has been agreed with the relevant highway authorities (**Volume 7, Appendix 24-1 (application ref: 7.24.24.1)** refers).

79. The relevant highway authorities were engaged to understand locations that they considered would potentially be sensitive to changes in traffic, this included:

- Locations known to the relevant highway authorities to be operating close to or above capacity; and/or
- Locations where the relevant highway authorities considered that the Projects' forecast levels of construction traffic demand could have a significant impact upon junction capacity.

80. During consultation with the relevant highway authorities (detailed in **Volume 7, Appendix 24-1 (application ref: 7.24.24.1)**) a total of 17 junctions were identified. These junctions are described in **Table 24-11** and depicted graphically on **Volume 7, Figure 24-4 (application ref: 7.24.1)**.

Table 24-11 Sensitive Junctions

Junction ID	Location	Junction Description
Junction 1	Junction of the A15 and Ferriby Road.	A five arm roundabout.
Junction 2	Junction of the A15, A164 and A1105 (Wingfield Farm Roundabout).	A four arm roundabout.
Junction 3	Junction of the A63, A1033, Southcoates Lane (Southcoates Roundabout).	A four arm roundabout.
Junction 4	Junction of the A1033, King Georges Dock and Littlefair Road (Northern Gateway).	A four arm roundabout.
Junction 5	Junction of the A1033 and Marfleet Ave (Marfleet Roundabout).	A four arm roundabout.
Junction 6	Junction of the A1033, Queen Elizabeth Dock and Somerden Road (Somerden Roundabout).	A four arm roundabout.
Junction 7	Junction of the A1033, Staithes Road, Paull Road and Salt End Lane (Salt End Roundabout).	A five arm roundabout.
Junction 8	Junction of the A1033, Leads Road and West Carr Lane.	A four arm traffic signal controlled roundabout.
Junction 9	Junction of the A1033 and A1165 (Ferry Lane).	A four arm roundabout.
Junction 10	Junction of the A1165 and Chamberlain Road.	A three arm roundabout.
Junction 11	Junction of the A1033 and A1165 (Cleveland Street).	A four arm roundabout.
Junction 12	Junction of the A1033, James Reckitt Avenue and Mount Pleasant.	A four arm roundabout.
Junction 13	Junction of the A165 and A1033.	A four arm signal controlled junction.
Junction 14	Junction of the A164, A1035 and A1174 (Swinemoor Lane Roundabout).	A four arm roundabout.

Junction ID	Location	Junction Description
Junction 15	Junction of the A164, B1232 and Albian Lane (Papa's Roundabout).	A four arm signal controlled roundabout.
Junction 16	Junction of the A164, B1232 and Albian Lane (Killingwoldgraves Roundabout).	A five arm roundabout.
Junction 17	Junction of the A1079, A1033 and A1774 Lane (Dunswell Roundabout).	A four arm roundabout.

81. These junctions are considered to be sensitive to changes in traffic and therefore a more detailed analysis of the junctions' level of service is undertaken (in section 24.6.1.6) to understand the locations' sensitivity to changes in traffic flow.

24.4.3.3.4 Driver Delay (Highway Geometry)

82. A review of all the links within the TTSA has been undertaken to identify those links of constrained width to prevent two vehicles from passing (therefore leading to potential delays associated with waiting and manoeuvring). A review of all links has been undertaken to identify these links, defined as roads less than 5.5m wide.

83. Within the TTSA there are four links (out of a total of 66 links) that are of constrained width, these are:

- Link 7: Dunnington Lane;
- Link 11: An unnamed road north of the A1035 (Link 10);
- Link 58: Ings Road; and
- Link 73: Eske Lane.

84. These four links are considered to be sensitive to increases in traffic and a review of the links capacity to accommodate HGVs (in section 24.6.1.7) has been undertaken to understand the locations' sensitivity to changes in traffic flow. The remaining 62 links are not considered further.

24.4.3.3.5 Driver Delay (Road Closures)

85. The onshore cable corridor would cross approximately 27 public roads; of these, it is proposed that Onshore Export Cables for the Projects would be installed under 18 roads using trenchless crossing technology e.g. HDD (allowing the roads to remain open at all times).

86. **Volume 7, Figure 24-3 (application ref: 7.24.1)** highlights those roads where trenchless crossing technology i.e. HDD would be used and those where it is proposed that the Onshore Export Cables may be installed using open cut techniques.

87. The nine roads proposed to be potentially crossed by open cut techniques are considered to be sensitive to driver delay (road closure) impacts. The volume and type of road users along these links are examined to determine a sensitivity value (in section 24.6.1.8). It is proposed that access for pedestrians and cyclists at these locations would be maintained at all times. Hence, only drivers may be subject to effects.

24.4.3.4 Magnitude of Impact

88. EATM suggests application of the following rules to define the extent and scale of the assessment required:

- Rule 1: Include highway links where traffic flows will increase by more than 30% (or where the number of HGVs will increase by more than 30%); and
- Rule 2: Include highway links of high sensitivity where traffic flows have increased by 10% or more).

89. In justifying these rules EATM examines the science of traffic forecasting and states:

"Traffic forecasting is not an exact science, and the accuracy of projections is open to debate. 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 + 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."

90. Therefore, changes in traffic flows below the EATM Rules (thresholds) are assumed to result in no discernible or negligible environmental effects and have therefore not been assessed further as part of the assessment.

91. EATM however notes that the Rule 1 and Rule 2 'criteria' process may not be appropriate for some impacts, and it is generally accepted by regulators and practitioners that it should not be applied to assessments of road safety and driver delay. These impacts can be potentially significant for lower changes in traffic flow when high baseline traffic flows are evident. Full details of the methodology adopted for these effects are set out later in this section.

92. Following initial screening, EATM, sets out considerations and, in some cases, thresholds in respect of changes in the volume and composition of traffic to facilitate a subjective judgement of traffic effect and significance.

93. The following sub-sections provide detail of the adopted methodology for assessing traffic and transport impacts.

24.4.3.4.1 Severance

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

95. EATM suggests that changes in total traffic flows of 30%, 60% and 90% are considered to be slight, moderate, and substantial respectively. These are transposed into the EIA magnitude of impact matrix (**Table 24-13**) as less than 30% as negligible, 30 – 60% as low, 60 – 90% as medium and greater than 90% as high respectively. However, EATM notes that these figures should be used cautiously, and the assessment should pay full regard to specific local conditions, e.g. sensitivity of adjacent land uses, prevalence of vulnerable people, whether or not crossing facilities are provided, traffic signal settings, etc.

96. It is identified that the addition of traffic flow to low baseline traffic could present an exaggerated magnitude of change and overestimate the severance effects likely to occur on such links.

24.4.3.4.2 Amenity

97. Amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition, and separation from traffic. It can affect a range of non-motorised users such as pedestrians, cyclists, and equestrians (this includes users of PRoW).

98. This definition also includes pedestrian fear and intimidation and can be considered to be a much broader category considering the overall relationship between pedestrians and traffic.

99. EATM suggests that the significance of changes in pedestrian amenity would be where the traffic flow (or HGV component) is halved or doubled, interpreted within the magnitude of impact assessment matrix (**Table 24-12**) as a medium to high magnitude of impact. EATM notes that this threshold should be used cautiously, and the assessment should pay full regard to specific local conditions. This is addressed through the introduction of receptor sensitivity values (**Table 24-15**), whereby lower changes in traffic can lead to significant effects upon high sensitive receptors.

24.4.3.4.3 Road Safety

100. EATM outlines two potential approaches to considering road safety effects, these can be broadly categorised as follows:

- The 'traditional' approach – whereby the assessor reviews historic collision data to understand existing trends which could be exacerbated by additional traffic from an examination of collision rates or clusters, etc; or
- Safe System approach – whereby a study area is identified using historic collision data (similar to the traditional approach) and then objective modelling techniques are used to establish a baseline and assess the effects of additional traffic.

101. Noting that the Safe System approach is only recently emerging in the UK and is not widely adopted, EATM recommends that the assessor should engage with the relevant highway authorities to determine the best approach for assessing significance of road safety effects.

102. In this context, the approach to considering road safety effects was discussed and agreed with the relevant highway authorities (**Volume 7, Appendix 24-1 (application ref: 7.24.24.1)** refers) and comprises of review of the existing collisions occurring within the TTSA to identify any areas of the highway with concentrations of collisions (clusters) with similar patterns and links with collision rates higher than the national average (for comparable roads). These sites are considered to be sensitive to changes in traffic flows (sensitive receptors) and therefore a more detailed analysis of significance has been undertaken in the context of the proposals to inform a judgement of the magnitude of impacts.

103. In addition to considering existing patterns of collisions, the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) outlines how any new risks associated with the formation of new points of access to the Projects would be managed and mitigated.

24.4.3.4.4 Driver Delay

104. EATM outlines that values for driver delay can be determined by the use of proprietary software packages such as ARCADY for roundabouts, PICADY for priority junctions and LinSig traffic signalised intersections.

105. However, it is noted that delays are only likely to be significant when the surrounding highway network is at, or close to capacity of the system.

106. During the traffic and transport ETGs with the relevant highway authorities (**Volume 7, Appendix 24-1 (application ref: 7.24.24.1)** refers) it was agreed that the assessment of driver delay should consider not only the impact of increases in traffic upon junction capacity but also delays related to highway geometry (e.g. routes where highway width is constrained) and roadworks.

107. The driver delay assessment applies to all vehicle users of the highway network including:

- Cars and light commercial vehicles (LCVs);
- Motorcyclists;
- Public transport;
- Private transport (e.g. taxis)
- HGVs; and
- Emergency services.

24.4.3.4.5 Driver Delay (Capacity)

108. Paragraphs 64 to 68 present details of the proposed approach to identifying 17 potentially sensitive junctions.

109. During consultation with National Highways and Hull City Council, it was identified that for junctions 1 to 13, ongoing major road works associated with the A63 Castle Street improvement works in Hull are currently impacting baseline traffic flows, resulting in traffic reassignment (e.g. drivers reassigning to other links or changing their travel times).

110. Consequently, it was advised by Hull City Council and National Highways at an ETG meeting (refer to **Volume 7, Appendix 24-1 (application ref: 7.24.24.1)**) that any surveys of baseline traffic flows undertaken at this stage would not be representative of future baseline conditions. It was also advised that by Hull City Council and National Highways that forecasts of future turning counts for this location would not be valid as they were undertaken prior to the impact of Covid-19 on travel patterns.

111. It was therefore agreed that junction capacity modelling for junctions 1 to 13 should be deferred to post determination. Therefore, no further assessment of the driver delay (capacity) effects upon the users of junctions 1 to 13 is presented.

112. The **OCTMP (Volume 8, application reference: 8.13)**, secured by DCO Requirement, includes a commitment to submitting detail of the revised traffic forecasts through sensitive junctions to Hull City Council and National Highways to advise if they require more detailed assessment. This approach is broadly comparable to that accepted by the Secretary of State for the recently consented Hornsea Four Offshore windfarm.

113. Should the assessments indicate potentially significant effects, mitigation measures will be applied on a hierarchical basis with demand management measures (e.g. use of minibuses, staggering shift times, peak hour restrictions etc.) being preferred. The measures would be agreed with the respective highway authority to ensure that residual effects (including any cumulative effects) are not significant.

114. The remaining junctions (14 to 17) within the East Riding of Yorkshire Council area are not influenced by major highway works and therefore detailed junction capacity modelling informs the assessment of magnitude of impact. Further details of the junction capacity modelling can be found in the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**).

24.4.3.4.6 Driver Delay (Highway Geometry)

115. Road users can also experience delays where the existing width of the highway prevents two vehicles from passing and drivers are required to give-way to each other.

116. A review of the TTSA has been undertaken to identify all links where two vehicles would not be able to pass each other (section 24.4.3.3.4). An assessment of the potential changes in traffic flows and opportunities for vehicles to pass along these links (e.g. frequency of passing places) has been undertaken to inform a judgement regarding magnitude of impact.

24.4.3.4.7 Driver Delay (Road Closures)

117. Road users are likely to experience delays where road or carriageway lane closures (roadworks) are required. Roadworks will be required during construction where open cut techniques are used to install the Projects' Onshore Export Cables across the public highway. These locations are identified in section 24.6.1.8.

118. To assess the potential effects of roadworks, the assessment considers an initial worst case where a full road closure is required (i.e. access is not maintained via a single lane closure).

119. To inform a judgement regarding the magnitude of impact, the assessment considers the required length and duration of the detour that may be required to divert.

120. The exception to this assessment approach is Park Lane where embedded mitigation measures would ensure access is maintained through shuttle working (the use of traffic signals to alternate flows on a one-way section of road) as outlined in **Table 24-3**.

121. Chapter 8 of the Traffic Signs Manual (Department for Transport, 2009) provides guidance upon when various forms of road works are likely to introduce significant delays.

122. The assessment framework derived from Chapter 8 identifies a duty to inform of possible future delays where works will take longer than a week and introduce delays of over two minutes, or where moderate to severe delays of over 10 minutes are forecast (regardless of duration). On this basis delays of less than two minutes are considered to result in impacts of negligible magnitude, whilst delays of more than 10 minutes in impacts of medium to high magnitude. **Table 24-12** provides a summary of the assessment framework.

24.4.3.4.8 Magnitude of Impact (Summary)

123. **Table 24-12** details the assessment framework for magnitude thresholds adapted from EATM. These thresholds are guidance only and provide a starting point by which transport data will inform a local analysis augmented by professional judgement of the magnitude of impact.

Table 24-12 Definition of Magnitude of Impacts

Impacts	**Magnitude of Impact**			
	Negligible	**Low**	**Medium**	**High**
Severance	Change in total traffic flow of less than 30%	Change in total traffic flows of 30 to 60%	Change in total traffic flows of 60 to 90%	Change in total traffic flows of over 90%

Impacts	Magnitude of Impact			
	Negligible	**Low**	**Medium**	**High**
Amenity	Change in traffic flow (or HGV composition) of less than 100%		Greater than 100% increase in traffic (or HGV composition) and a review based upon the quantum of vehicles, vehicle speed and pedestrian footfall.	
Road Safety	Informed by a review of existing collision records from within the TTSA and the forecast increase in traffic.			
Driver Delay (Capacity)	Informed by a review of the potential increase in peak hour traffic through sensitive junctions.			
Driver Delay (Highway Geometry)	Informed by a review of the potential increase in peak hour traffic through sensitive junctions and links.			
Higher Delay (Road Closures)	No or single lane road closure required, or delays of less than two minutes.	Delays of two to ten minutes.	Delays over ten minutes and a review based upon the quantum of vehicles and scheduled buses.	

24.4.3.5 Significance of Effect

124. The assessment of significance of an effect is informed by the sensitivity of the receptor (outlined in section 24.4.3.3) and the magnitude of the impact (section 24.4.3.4). The determination of significance is guided by the use of a traffic and transport significance of effect matrix, as shown in **Table 24-13**. Definitions of each level of significance are provided in **Table 24-14**. For the purposes of this assessment, any effect that is of major or moderate significance is considered to be significant in EIA terms, whether this be adverse or beneficial. Any effect that has a significance of minor or negligible is not significant.

Table 24-13 Traffic and Transport Significance of Effect Matrix

		Adverse Magnitude				Beneficial Magnitude			
		High	**Medium**	**Low**	**Negligible**	**Negligible**	**Low**	**Medium**	**High**
Sensitivity	High	Major	Major	Moderate	Minor	Minor	Moderate	Major	Major
	Medium	Major	Moderate	Minor	Minor	Minor	Minor	Moderate	Major
	Low	Moderate	Minor	Minor	Negligible	Negligible	Minor	Minor	Moderate
	Negligible	Minor	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Minor

Table 24-14 Definition of Effect Significance

Significance	Definition
Major	Very large or large change in receptor condition, which is likely to be important considerations at a regional or district level because they contribute to achieving national, regional or local objectives, or could result in exceedance of statutory objectives and / or breaches of legislation.
Moderate	Intermediate change in receptor condition, which is likely to be important considerations at a local level.
Minor	Small change in receptor condition, which may be raised as local issues but are unlikely to be important in the decision making process.
Negligible	No discernible change in receptor condition.
No change	No impact, therefore, no change in receptor condition.

24.4.4 Cumulative Effects Assessment Methodology

125. The Cumulative Effects Assessment (CEA) considers other schemes, plans, projects and activities that may result in significant effects in cumulation with the Projects. **Volume 7, Chapter 6 EIA Methodology (application ref: 7.6)** (and accompanying **Volume 7, Appendix 6-1 Onshore Cumulative Assessment (application ref: 7.6.6.1)**) provides details of the general framework and approach to the CEA.

126. A detailed assessment cumulative traffic and transport effects is presented in section 24.8.1.

24.4.5 Assumptions and Limitations

127. The impacts of Covid-19 and A63 Castle Street improvements on traffic flows have influenced the approach to baseline data collection as outlined in the accompanying **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**).

128. Where routine assumptions have been made in the course of undertaking the assessment, these are noted in sections 24.5 to 24.10 and the accompanying **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**).

24.5 Existing Environment

129. As set out in section 24.4.2, characterisation of the existing environment in relation to traffic and transport has been informed through a number of sources, including:

- Desktop studies and site visits;
- Personal injury collision data sourced from East Riding of Yorkshire Council and Hull City Council;
- Traffic count information sourced from the Department for Transport; and
- Traffic surveys commissioned for the Projects.

130. Details of link characteristics for all 66 links within the TTSA are detailed in the following sections:

- The estimated future traffic flows (**Table 24-17** and **Table 24-18**);
- An audit of the sensitive receptors in the TTSA (section 24.5.3);
- A detailed review of the baseline road safety conditions (section 24.5.4); and
- An audit of the TTSA based on the highway geometry (section 24.6.1.6).

24.5.1 Existing Highway Network

131. This section provides a broad overview of the baseline characteristics of the 66 links forming the TTSA. These links are illustrated on **Volume 7, Figure 24-1 (application ref: 7.24.1)**.

132. The Principal (A) road network in the TTSA includes the A1033, A1165 and A165 managed by Hull City Council, the A1035, A1079, A1174, A164 and A165 managed by East Riding of Yorkshire Council.

133. The A63 and the A15 (within the TTSA) form part of the Strategic Road Network managed by National Highways.

24.5.1.1 Strategic Road Network

134. The A63 provides a key strategic connection in East Yorkshire between Leeds and Hull. The A63 has intersections with the A15 to the south and the A164 and A1033 to the north.

135. Within the TTSA, the A63 comprises of a dual carriageway throughout with both at-grade and grade separated junctions.

136. National Highways are currently constructing improvements to the A63 known as the 'A63 Castle Street Improvements'. The improvements are scheduled to be open in 2024/2025 and are proposed to relieve congestion and provide better access to the Port of Hull by improving the A63 Castle Street.

24.5.1.2 A-roads (East Riding of Yorkshire Council and Hull City Council Areas)

137. The A1035 is a predominantly single-lane single carriageway road that heads west from a roundabout with the A165 to the east of the village of Leven, passing to the north of Beverley, and linking up with the A1079 to the east of Bishop Burton. A short section of the A1035 to the east of Leven is provided as dual carriageway. The traffic-free NCN Route 1 is parallel to the A1035 Constitution Hill, north-west of Beverley. Footways are also present along the A1035 within proximity of existing developments.

138. The A1079 connects York and Hull. Within the TTSA, the A1079 is a single-lane single carriageway road (except for a short stretch at the junction with the A164) that routes from Hull to the south of Beverley before linking up with the A1035 close to Bishop Burton.

139. The A164 is a cross-country road in East Yorkshire, which travels north from Hessle to Driffield, bypassing the City of Hull to the west of the city. Within the TTSA, the A164 links the A63 (to the south of Hull) with the A1035 (to the east of Beverley). The A164 is predominantly a single lane single carriageway road except for its extent between the Castle Road roundabout and the B1232 roundabout. There are footways present along the A164 within proximity of existing developments.

140. East Riding of Yorkshire Council are constructing improvements to the junction of the A1079 and A164, known as the 'A164 and Jocks Lodge junction improvement scheme'. The improvements are proposed to be complete by 2026 and are designed to improve safety and capacity at the junction.

141. The A165 links Scarborough and Hull. Within the TTSA, the A165 routes south from Carnaby through Lissett, Beeford, Brandesburton and Leven to the roundabout between it and the A1035. After which, the A165 continues south into Hull, until its junction with the A1033. The A165 is predominantly a single-lane carriageway road with footways present within proximity of developed areas. Between the Brandesburton roundabout and the White Cross roundabout, the A165 is a four-lane dual carriageway.

142. The A1174 is a single carriageway A-road that provides a link between the A1079 (to the north of Hull) and the A1035 (to the east of Beverley). Within the TTSA, a continuous footway / cycleway is provided alongside the A1174.

143. The A1033 provides a north westerly link between the A63 and A165 in Hull and the A1079 to the southwest of Beverly. An off-road footway/cycleway is provided alongside the majority of the route.

24.5.1.3 B-roads and Other Local Roads

144. From the main A road network, to access many of the proposed construction access points for the Projects, construction vehicles would need to utilise the local road network for a short part of their journey.

145. **Volume 7, Figure 24-2 (application ref: 7.24.1)** depicts the proposed access locations, whilst the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) provides a description of the proposed routes that construction traffic would use to access each of the accesses from the main A road network.

24.5.2 Traffic Flow Data

146. Traffic flow data for all links within the TTSA have been informed by traffic counts. The **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) contains full details of these counts, and a summary of the baseline traffic flows for all links within the TTSA.

147. Current Transport Analysis Guidance from the Department for Transport (Department for Transport, May 2020) directs that assessment of traffic impacts should be based on normal ('neutral') conditions (i.e. not during school holidays). Neutral months are defined as March to July and September to November. This approach is also in keeping with highway network management practice across the UK.

148. In accordance with current guidance, background traffic flows (contained in section 24.6.1) are therefore representative of neutral traffic conditions. The adoption of neutral conditions represent a robust baseline as it provides a better indicator of the magnitude of impact of the Projects' traffic, whereas an elevated baseline, would inadvertently reduce the magnitude of impact based on the percentage increase in traffic.

149. This general default approach was agreed with the relevant highway authorities during the traffic and transport ETGs as outlined within **Volume 7, Appendix 24-1 (application ref: 7.24.24.1)**.

24.5.3 Link Based Sensitive Receptors

150. The sensitivity of a road (link) can be defined by the type of user groups who may use it. A sensitive area may for example be a village environment or where pedestrian or cyclist activity may be high, for example near a school. Broad definitions of the different sensitivity levels are provided in **Table 24-10** (derived from EATM) which have been applied to the assessment.

151. A desktop exercise augmented by site visits has been undertaken to identify the sensitive receptors in the TTSA. Broad definitions of the different sensitivity levels (derived from EATM) are provided in **Table 24-15** which have been applied to the assessment of severance and amenity. All 66 links within the TTSA have been assessed and assigned a sensitivity. **Volume 7, Figure 24-5 (application ref: 7.24.1)** illustrates these routes graphically.

Table 24-15 Link Based Sensitive Receptors

Link ID.	Link Description	Link sensitivity	Rationale for applied link sensitivity
1	A165 Carnaby to Lissett	Low	A-road with sporadic frontage development.
2	A165 Lissett to Beeford	Medium	A-road with a low number of receptors for the majority of the link with a larger number of diverse receptors as the link heads into Beeford village.
3	A165 Beeford to Brandesburton	Low	A-road with sporadic frontage development.
4	B1242 Lissett to Skipsea	High	B-road which passes through villages with frontage developments, including residential and commercial properties. The link is also crossed by PRoW.
5	Beeford Road	High	B-road with receptors at both ends of the link at Beeford village where there are residential frontage developments and Skipsea village where there are residential and commercial frontages. The link is also crossed by PRoW.

Link ID.	Link Description	Link sensitivity	Rationale for applied link sensitivity
6	B1242 (Hornsea Road) Skipsea to End of TTSA	High	B-road with a high number of sensitive receptors as the link passes through the centre of Skipsea village including a primary school and residential and commercial frontages.
7	Dunnington Lane	Low	An unclassified road with no identified receptors along the link.
8	Catfoss Road	Low	An unclassified road with sporadic frontage development including residential properties and accesses to industrial development.
9	A165 Brandesburton to Leven	Negligible	A-road with no receptors along the link.
10	A1035 (West Road) Leven to Catwick	Medium	A-road with a few receptors except within the village of Catwick where there is frontage residential development. Within Catwick village there is limited separation between the carriageway and the footway. The link is also crossed by PRoW.
11	Unnamed road north of A1035	Low	An unclassified road with limited sensitive receptors along the link.
12	A1035 (West Road) Leven to A165	Negligible	A-road with no receptors along the link.
13	A165 from A1035 (West Road) to Skirlaugh	Low	A-road which bypasses the village of Long Riston. There is sporadic frontage development adjacent to the link.

Link ID.	Link Description	Link sensitivity	Rationale for applied link sensitivity
14	A165 through Skirlaugh	High	A-road which passes through the village of Skirlaugh. Within the village of Skirlaugh there are residential and commercial frontage development along the roads as well as a public house. There is limited separation between the carriageway and the footway through the village.
15	A165 from Skirlaugh to Coniston	Low	A-road with a sporadic frontage development. The link is crossed by NCN Route 68 and a bridleway.
16	A165 from Coniston to Holderness Road	High	A-road that passes residential developments with limited separation between the footway and carriageway.
17	A165/Holderness Road	High	A-road that passes residential properties, shops, and public houses. Footways are provided on both sides of the road and as on-road cycleway is provided along the road.
18	A165/Holderness Road	High	A-road passing through an area of dense residential and commercial development, including public houses, doctor's surgery and supermarkets, with limited separation between the footway and carriageway with on-road cycleways.
19	Mount Pleasant/A1033	Low	A-road with sporadic frontage development, primarily consisting of commercial properties. A footway / cycleway is provided alongside the road linked by controlled crossings.

Link ID.	Link Description	Link sensitivity	Rationale for applied link sensitivity
20	A1033 Slip Road	Medium	A-road which passes several commercial, residential and industrial developments as well as a prison and a public house. A footway / cycleway is provided alongside the main carriageway linked by controlled crossings.
21	A1033/Hedon Road	Low	A-road with sporadic frontage development and a wide footway / cycleway alongside the main carriageway linked by controlled crossings.
22	A1033/Hedon Road	Low	A-road with a low number of sensitive receptors and a footway / cycleway alongside the main carriageway linked by a controlled crossing.
23	A1033/Hedon Road	Negligible	A-road with no receptors along the link.
24 and 25	A63 from Mount Pleasant Roundabout to A63/A1166/St Andrews Quay roundabout	Low	A-road with a low number of sensitive receptors along the link. A footway is provided alongside part of the to allow pedestrians and cyclists to cross the carriageway safely via bridges, underpasses and signalised crossings.
26 and 27	A63 from A63/A1166/St Andrews Quay roundabout to end of TTSA	Negligible	A-road with no sensitive receptors along the link.
28	A15/Boothferry Road	Low	A-road with few sensitive receptors along the link and a wide footway / cycleway alongside the main carriageway linked by controlled crossings.

Link ID.	Link Description	Link sensitivity	Rationale for applied link sensitivity
29	A15 Humber Bridge	Low	A-road across the Humber Bridge, with parallel footway separated from the traffic.
30 and 31	A164 from A164/A15/A1105 roundabout to Papas Roundabout	Negligible	A-road with no sensitive receptors along the link.
32	A164 from Papas Roundabout to Castle Hill Roundabout	Low	A-road with limited frontage development.
33	A164 from Castle Hill Roundabout to A164/B1233 Roundabout	Low	A-road with no frontage development. A footway is provided alongside the link for a short distance.
34 and 35	A164 (Beverley Road) from A164/B1233 Roundabout to Jock's Lodge junction	Low	A-road with limited frontage development. A footway is provided alongside the link. The link is crossed by a PRoW.
36 and 37	Dunflat Road and Coppleflat Lane off A164	Low	An unclassified road with no footway or frontage development. The link is crossed by a PRoW.
38	A164 from Jock's Lodge junction to A164/Victoria Road roundabout	Low	A-road with limited frontage development and a footway is provided alongside the link.
39	B1248	Low	B-road with no frontage development.

Link ID.	Link Description	Link sensitivity	Rationale for applied link sensitivity
40	A1033/Thomas Clarkson Way	Low	A-road with limited frontage development, the link however provides access to a leisure centre. A footway / cycleway is provided alongside the road which is set back from the edge of the road and linked by controlled and uncontrolled crossings.
45	A1033	Low	A-road with limited sensitive receptors. A footway / cycleway is provided alongside the road.
46 and 49	A1174	High	A-road with a high number of sensitive receptors, including residential properties, commercial development and primary schools. A footway/cycleway is provided alongside the link.
50, 51 and 52	A164/ Woodmansey and A1174/A164	Low	A-road with limited frontage development. A footway/cycleway is provided alongside the link.
53	A1174/A164/Swinemoor Lane	High	A-road with a high number of sensitive receptors, including a hospital, residential properties, commercial and industrial development. A footway / cycleway is provided alongside the link. The cycle route forms part of NCN Route 164.
54 and 55	A1035 (Hornsea Road)	Low	A-road with sporadic frontage development. A footway / cycleway is provided alongside the link. The cycle route forms part of NCN Route 164.

Link ID.	Link Description	Link sensitivity	Rationale for applied link sensitivity
56	A1035 (Hull Bridge Road)	Medium	A-road with some frontage development including residential properties and commercial development. A footway / cycleway is provided alongside the link. The cycle route forms part of NCN Route 164.
57	A1035/A164	Low	A-road with sporadic frontage development. A footway / cycleway is provided alongside the link. This link is crossed by the Minster PRoW.
58	Ings Road	Low	An unclassified road leading to a farm and a car park, the road is narrow and has no footway or cycleway.
59	A164 (Driffield Road)	Low	A-road which provides access to the Beverley Ambulance Station. A footway is provided alongside the link.
60	A1035 (Constitution Hill)	Low	A-road with sporadic frontage development. A footway / cycleway is provided alongside the link. The cycle route forms part of NCN Route 1.
61	A1035/Dog Kennel Lane	Low	A-road with sporadic frontage development.
62	A1174 (York Road)	Low	A-road with sporadic frontage development. A footway is provided alongside the link.
63	A1079	Negligible	A-road with no sensitive receptors along the link.
64	Killingwoldgraves Lane	Low	An unclassified road with sporadic frontage development.

Link ID.	Link Description	Link sensitivity	Rationale for applied link sensitivity
65	A1079/Bishop Burton	High	A-road with a concentration of frontage development including residential properties and a public house as the link enters Bishop Burton. No footway is present until Bishop Burton, within Bishop Burton a footway is provided alongside the road.
66	A1079	Negligible	A-road with no frontage development.
68	Coppleflat Lane	Low	An unclassified road with sporadic frontage development.
71	B1230 (Broadgate)	Medium	B-road with a concentration of residential frontage development. An offroad footway/cycleway is provide along the majority of the link. The cycle way forms part of NCN Route 164.
73	Eske Lane	Low	An unclassified road with limited sensitive receptors.
74 and 75	Mount Pleasant/A1033 and Stoneferry Road/A1165 and Sutton Road/A1033	Low	A-roads with limited sensitive receptors. A footway / cycleway is provided alongside the road.

Link ID.	Link Description	Link sensitivity	Rationale for applied link sensitivity
76	Marfleet Lane and Maybury Road	High	The link forms the 'Ring Road' and is signed as the main route for traffic travelling along the A1033 to access settlements to the north including Bridlington, York and Beverley. There are a high number of sensitive receptors along the ring road, including schools, residential properties, commercial and industrial development. A footway / cycleway is provided alongside the link.

24.5.4 Road Safety

152. To assess whether the Projects would have an adverse effect upon road safety it is necessary to establish a baseline and identify any inherent road safety issues within the TTSA.

153. It was agreed during the traffic and transport ETGs with the relevant highway authorities (**Volume 7, Appendix 24-1 (application ref: 7.24.24.1)** refers) that the road safety review should examine the baseline collision data to identify those areas that are potentially sensitive to changes in traffic and that this review should include:

- Examining the rate of collisions per length of road in miles ('collision rates') and comparing this to a national average for comparable roads; and
- Reviewing the types of collisions at defined clusters of four or more collisions within three years (or three in a single year), ('collision clusters') to understand any patterns or trends, especially those involving HGVs and vulnerable road users (namely cyclists, pedestrians and motorcyclists).

154. The **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) details an audit of the TTSA and provides a road safety baseline including collision rates and cluster locations.

155. A summary of the identified collision clusters by link and whether the link has a collision rate below or above the national average for comparable roads is presented in **Table 24-16**. Where the link has collision clusters and/or a collision rate above the national average the link will be subject to further assessment (detailed in section 24.6.1.4).

Table 24-16 Road Safety Summary

Link ID.	Collision Clusters	Collision Rate	Further Assessment
1	Collision cluster 1, at the junction of Link 1 and Manor Farm	Above national average	Yes
2	Collision cluster 2, at the junction between Link 2 and Main Street	Below national average	Yes
3	No collision clusters present	Below national average	No
4	No collision clusters present	Above national average	Yes
5	No collision clusters present	Above national average	Yes
6	No collision clusters present	Above national average	Yes
7	No collision clusters present	Below national average	No
8	No collision clusters present	Above national average	Yes
9	Collision cluster 3, at the roundabout junction of links 9, 10 and 12	Above national average	Yes
10	Collision cluster 3, at the roundabout junction of Links 9, 10 and 12	Above national average	Yes
	Collision cluster 4, at the junction of Link 10 and Catwick Lane		
11	No collision clusters present	Below national average	No
12	Collision cluster 3, at the roundabout junction of Links 9, 10 and 12	Below national average	Yes

Link ID.	Collision Clusters	Collision Rate	Further Assessment
	Collision cluster 5, at roundabout junction of Links 13 and 54		
13	Collision cluster 5, at roundabout junction of Links 12 and 54	Below national average	Yes
14	No collision clusters present	Above national average	Yes
15	No collision clusters present	Above national average	Yes
16	Collision cluster 6, at roundabout junction with Link 17	Above national average	Yes
17	Collision cluster 6, at roundabout junction with Link 16	Below national average	Yes
	Collision cluster 8, at junction between Link 17, Link 18 and Link 76		
18	Collision cluster 7, at junction between Link 18 and Bellfield Avenue	Above national average	Yes
	Collision cluster 8, at junction between Link 17, Link 18 and Link 76		
	Collision cluster 9, at junction between Link 19 and 74		
19	Collision cluster 9, at junction between Link 18 and 74	Above national average	Yes
	Collision cluster 10, at roundabout junction with Link 20		
20	Collision cluster 10, at roundabout junction with Link 19	Above national average	Yes

Link ID.	Collision Clusters	Collision Rate	Further Assessment
	Collision cluster 11, at roundabout between Links 21 and 23		
21	Collision cluster 11, at roundabout between Links 20 and 23	Below national average	Yes
22	No collision clusters present	Below national average	No
23	Collision cluster 11, at roundabout between Links 20 and 21	Below national average	Yes
24	Collision cluster 12, at roundabout junction between A1165 and Link 24	Below national average	Yes
	Collision cluster 13, at junction between Link 24, Market place and Queen Street		
	Collision cluster 14, on Link 24 250m west from collision cluster 21		
	Collision cluster 15, at junction with Link 25		
25	Collision cluster 15, at junction with Link 24	Below national average	Yes
26	Collision cluster 16, on Link 26 2km east of junction with A15	Below national average	Yes
27	No collision clusters present	Below national average	No
28	Collision cluster 17, at roundabout junction of Links 29 and 30	Above national average	Yes

Link ID.	Collision Clusters	Collision Rate	Further Assessment
29	Collision cluster 18, at toll booths on the bridge	Above national average	Yes
	Collision cluster 17, at roundabout junction of Links 28 and 30		
30	Collision cluster 17, at roundabout junction of Links 28 and 29	Above national average	Yes
31	No collision clusters present	Below national average	No
32	Collision cluster 19, at Willerby Hill roundabout	Above national average	Yes
	Collision cluster 20, at roundabout junction of Link 33		
33	Collision cluster 20, at roundabout junction of Link 32	Below national average	Yes
34	No collision cluster present	Below national average	No
35	Collision cluster 21, at junction between Link 35 and entry/exit to the A1079 (Links 63 and 66)	Above national average	Yes
36	No collision cluster present	Above national average	Yes
37	No collision cluster present	Above national average	Yes
38	Collision cluster 22, at junction with 51	Above national average	Yes
39	No collision cluster present	Below national average	No
40	Collision cluster 23, at roundabout junction with Link 75	Below national average	Yes
	Collision cluster 24, at roundabout junction with Link 45		

Link ID.	Collision Clusters	Collision Rate	Further Assessment
45	Collision cluster 24, at roundabout junction with Link 40	Above national average	Yes
	Collision cluster 25, at roundabout junction between Link 46 and 66		
46	Collision cluster 25, at roundabout junction between Link 45 and 66	Above national average	Yes
49	No collision cluster present	Above national average	Yes
50	No collision cluster present	Below national average	No
51	Collision cluster 22, at roundabout junction with Link 38	Above national average	Yes
52	No collision cluster present	Below national average	No
53	No collision cluster present	Below national average	No
54	Collision cluster 5, at roundabout junction of Links 12 and 13	Below national average	Yes
55	No collision cluster present	Above national average	Yes
56	No collision cluster present	Below national average	No
57	Collision cluster 26, at roundabout junction between Links 59 and 60	Above national average	Yes
58	No collision cluster present	Below national average	No
59	Collision cluster 26, at roundabout junction between Links 57 and 60	Above national average	Yes
60	No collision cluster present	Above national average	Yes
61	Collision cluster 27, 600m south of Dog Kennel Lane roundabout	Above national average	Yes

Link ID.	Collision Clusters	Collision Rate	Further Assessment
	Collision cluster 28, at roundabout junction between Links 62, 63, 64 and 65.		
62	Collision cluster 28, at roundabout junction between Links 62, 63, 64 and 65.	Above national average	Yes
63	Collision cluster 28, at roundabout junction between Links 61 62, 64 and 65.	Below national average	Yes
64	Collision cluster 28, at roundabout junction between Links 61, 62, 63 and 65.	Below national average	Yes
65	Collision cluster 28, at roundabout junction between Links 61, 62, 63 and 64.	Above national average	Yes
66	No collision cluster present	Below national average	No
68	No collision cluster present	Below national average	No
71	No collision cluster present	Below national average	No
73	No collision cluster present	Above national average	Yes
74	Collision cluster 10, with junction between Links 18 and 19	Below national average	Yes
	Collision cluster 24, at junction with Link 40		
	Collision cluster 29, at roundabout junction with A1165		
	Collision cluster 30, at roundabout junction with B1237		
	Collision cluster 31, at roundabout junction with Link 75		

Link ID.	Collision Clusters	Collision Rate	Further Assessment
75	Collision cluster 23, at roundabout junction with Link 40	Above national average	Yes
	Collision cluster 31, at roundabout junction with Link 74		
76	Collision cluster 32, at roundabout junction with Lines 21 and 22.	Above national average	Yes
	Collision Cluster 33, at junction with Preston Road		
	Collision Cluster 34, at junction with Staveley Road		
	Collision Cluster 35, at junction with Hopewell Road		

24.5.5 Future Trends

156. In the event that the Projects are not developed, an assessment of future conditions for traffic and transport has been carried out and is described within this section.

24.5.5.1 Future Year Traffic Flows

157. The earliest date that the main construction works would be likely to start would be 2026.

158. In order to consider a worst case scenario, a reference year for background traffic of 2026 has been derived. The rationale for this is later years would result in higher background traffic flows (due to forecast growth in background traffic) and therefore a lesser magnitude of impact.

159. To take account of changes in travel patterns and sub-regional growth in housing and employment, a proportionate approach to forecasting future traffic growth for the 2026 reference year has been agreed during the traffic and transport ETG with the relevant highway authorities (**Volume 7, Appendix 24-1 (application ref: 7.24.24.1)** refers).

160. Forecast 2026 future year baseline traffic flows are presented in **Table 24-17** and **Table 24-18**. The **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) includes details of the approach to forecasting these flows using growth factors from the Department for Transport Trip End Model Presentation Programme software (known as TEMPro).

24.5.5.2 Climate Change and Natural Trends

161. Decarbonising Transport: A Better Greener Britain (Department for Transport, 2021) identifies that transport is the largest contributor to UK domestic greenhouse gas (GHG) emissions, and that emissions from transport have been broadly flat for the last 30 years.

162. The UK Government has enshrined in law the commitment to 'net zero' by 2050, and notably, has banned the sale of new full petrol and diesel cars and vans from 2035.

163. To meet the commitments to net-zero, '*Decarbonising Transport*' outlines broad approaches to how transport will be 'decarbonised'. These can be categorised as:

- Accelerating modal shift, e.g. increasing the number of journeys made by walking or cycling as opposed to road transport, and supporting the shift from road freight to rail or water, etc.; and
- Decarbonising emissions from all transport modes, e.g. through adoption of electric vehicles.

164. Given the rate of technological advancement in the decarbonisation of transport, and legal commitments to net-zero, it is anticipated that GHG emissions will be reduced from current baseline levels. These predictions for forecast changes in vehicle emissions are reflected in the assessment of air quality (**Volume 7, Chapter 26 Air Quality (application ref: 7.26)**).

165. The contribution of decarbonisation from modal shift is harder to forecast, especially given the significant ongoing travel choice changes related to the Covid-19 pandemic. *Decarbonising Transport* notes:

"Last year, we commissioned research (see Part 2) to understand the impact of COVID-19 on current and future travel choices. It now seems likely some of the necessary short-term changes brought about by the pandemic, including the rise of home working, could remain for the longer-term and could become permanent shift in travel habits. This has created additional uncertainty for projecting forward transport usage and potential carbon emissions. It seems highly unlikely that the demand, patterns, timings, and modal choices of transport users across all forms of transport will simply return to those of 2019".

24.6 Assessment of Significance

166. This section assesses the potential effects of the Projects on sensitive receptors within the TTSA.

167. The identification of the traffic and transport environmental effects is based on an assessment of the volume of traffic demand associated with the Projects. The **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) contains the derivation of the Projects' construction traffic flows and background (baseline) traffic flows that have informed this assessment.

168. Section 24.3.3 outlines the range of Development Scenarios will be considered within the ES, namely:

- Either DBS East or DBS West is built In Isolation; or
- DBS East and DBS West are both built either Sequentially or Concurrently.

169. **Table 24-1** identifies that the construction of the Projects sequentially would generate lower traffic flows that the construction of the Projects concurrently, therefore the traffic flows presented for the construction of the Projects concurrently are considered to represent a worst case scenario.

170. Therefore, in isolation and concurrent traffic scenarios represent the bounds of the assessment and to ensure that the traffic and transport assessment is proportionate, no separate assessment of Sequential traffic flows is presented.

24.6.1 Potential Effects During Construction

24.6.1.1 Construction Traffic Impact Screening

171. With reference to EATM (Rule 1 and Rule 2), a screening process has been undertaken for the TTSA to identify routes that are likely to have significant changes in traffic flows and therefore require further impact assessment.

172. **Table 24-17** and **Table 24-18** summarise the assigned daily peak vehicle trips generated by all materials, personnel and plant associated with the construction of DBS East or DBS West In Isolation and DBS East and DBS West concurrently, respectively.

173. **Table 24-17** and **Table 24-18** also provide a comparison of the peak daily construction flows with the forecast background daily traffic flows in 2026 and identifies the links exceeding the EATM screening thresholds (highlighted in blue).

Table 24-17 Link Screening DBS East or DBS West In Isolation

Link ID	Link Description	Link Sensitivity	Background 2026 Annual Average Daily Traffic Flows		Forecast Peak Daily Construction Vehicle Trips		Forecast Average Daily Construction Vehicle Trips		Percentage increase (utilising peak flows)	
			All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
1	A165 Carnaby to Lissett	Low	11,238	556	19	0	11	0	0.2%	0.0%
2	A165 Lissett to Beeford	Medium	11,238	556	207	59	112	32	1.8%	10.6%
3	A165 Beeford to Brandesburton	Low	10,447	763	382	115	223	71	3.7%	15.1%
4	B1242 Lissett to Skipsea	High	2,650	100	31	30	17	16	1.2%	29.6%
5	Beeford Road	High	1,224	40	160	30	86	16	13.1%	74.5%
6	B1242 (Hornsea Road) Skipsea to End	High	2,799	104	191	59	103	32	6.8%	56.8%
7	Dunnington Lane	Low	133	56	177	56	112	39	132.9%	100.6%
8	Catfoss Road	Low	913	33	125	43	64	19	13.7%	128.7%
9	A165 Brandesburton to Leven	Negligible	11,238	556	505	158	285	91	4.5%	28.4%
10	A1035 (West Road) Leven to Catwick	Medium	7,708	241	205	73	93	25	2.7%	30.3%
11	Unnamed road north of A1035	Low	200	8	55	30	19	11	27.5%	370.5%
12	A1035 (West Road) Leven to A165	Negligible	18,557	1,247	706	231	376	116	3.8%	18.5%
13	A165 (Whitecross Road) from A1035 to Skirlaugh	Low	8,737	586	649	462	353	229	7.4%	78.8%
14	A165 through Skirlaugh	High	8,737	586	491	462	245	229	5.6%	78.8%
15	A165 from Skirlaugh to Coniston	Low	8,737	586	491	462	245	229	5.6%	78.8%
16	A165 from Coniston to Holderness Road	High	8,737	586	491	462	245	229	5.6%	78.8%
17	A165/Holderness Road	High	26,834	696	479	462	239	229	1.8%	66.4%

Link ID	Link Description	Link Sensitivity	Background 2026 Annual Average Daily Traffic Flows		Forecast Peak Daily Construction Vehicle Trips		Forecast Average Daily Construction Vehicle Trips		Percentage increase (utilising peak flows)	
			All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
18	A165/Holderness Road	High	15,560	1,149	0	0	0	0	0.0%	0.0%
19	Mount Pleasant/A1033	Low	19,465	1,344	481	469	401	394	2.5%	34.9%
20	A1033 Slip Road	Low	11,664	1,092	481	469	385	378	4.1%	42.9%
21	A1033/Hedon Road	Low	41,211	4,619	481	469	401	394	1.2%	10.2%
22	A1033/Hedon Road	Low	11,664	1,092	498	469	410	394	4.3%	42.9%
23	A1033/Hedon Road	Negligible	30,420	3,241	462	462	229	229	1.5%	14.3%
24	A63 from Mount Pleasant Roundabout to Castle Street junction	Low	44,501	4,968	469	469	394	394	1.1%	9.4%
25	A63 from Castle Street Junction to A63/A1166/St Andrews Quay roundabout	Low	53,535	5,965	0	0	0	0	0.0%	0.0%
26	A63 from A63/A1166/St Andrews Quay roundabout to A63/A15 junction	Negligible	56,155	6,370	0	0	0	0	0.0%	0.0%
27	A63 from A63/A15 junction to end of TTSA	Negligible	50,346	6,413	798	469	581	394	1.6%	7.3%
28	A15/Boothferry Road	Low	31,913	2,981	798	469	581	394	2.5%	15.7%
29	A15 Humber Bridge	Low	31,575	2,610	286	0	162	0	0.9%	0.0%
30	A164 from A164/A15/A1105 roundabout to A164/B1231 roundabout	Negligible	19,584	1,343	1,133	469	771	394	5.8%	34.9%
31	A164 from A164/B1321 roundabout to Papas Roundabout	Negligible	19,584	1,343	1,133	469	771	394	5.8%	34.9%

Link ID	Link Description	Link Sensitivity	Background 2026 Annual Average Daily Traffic Flows		Forecast Peak Daily Construction Vehicle Trips		Forecast Average Daily Construction Vehicle Trips		Percentage increase (utilising peak flows)	
			All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
32	A164 from Papas Roundabout to Castle Hill Roundabout	Low	19,584	1,343	1,346	469	893	394	6.9%	34.9%
33	A164 from Castle Hill Roundabout to A164/B1233 Roundabout	Low	34,214	1,550	1,346	469	893	394	3.9%	30.3%
34	A164 (Beverley Road) from A164/B1233 Roundabout to Dunflat Road	Low	34,214	1,550	1,570	469	1,020	394	4.6%	30.3%
35	A164 (Beverley Road) from Dunflat Road to Jock's Lodge junction	Low	34,214	1,550	1548	469	1,003	386	4.5%	30.3%
36	Dunflat Road off A164	Low	1,970	37	53	24	22	8	2.7%	63.3%
37	Coppleflat Lane	Low	2,577	65	53	24	22	8	2.0%	35.9%
38	A164 from Jock's Lodge junction to A164/Victoria Road roundabout	Low	23,203	991	1,164	469	631	236	5.0%	47.3%
39	B1248	Low	11,581	529	70	0	40	0	0.6%	0.0%
40	A1033/Thomas Clarkson Way	Low	20,173	837	542	469	436	394	2.7%	56.1%
45	A1033	Low	22,393	929	686	469	517	394	3.1%	50.5%
46	A1174	High	14,646	487	117	0	66	0	0.8%	0.0%
49	A1174	High	14,646	487	117	0	66	0	0.8%	0.0%
50	A164/ Woodmansey	Low	10,102	491	1,124	469	608	236	11.1%	95.6%
51	A164/Woodmansey	Low	10,102	491	1,124	469	608	236	11.1%	95.6%
52	A1174/A164	Low	16,535	847	1,241	469	674	236	7.5%	55.4%
53	A1174/A164/Swinemoor Lane	High	16,535	847	1,241	469	674	236	7.5%	55.4%
54	A1035 (Hornsea Road)	Low	17,896	992	1,189	469	658	239	6.6%	47.3%

Link ID	Link Description	Link Sensitivity	Background 2026 Annual Average Daily Traffic Flows		Forecast Peak Daily Construction Vehicle Trips		Forecast Average Daily Construction Vehicle Trips		Percentage increase (utilising peak flows)	
			All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
55	A1035 (Hornsea Road)	Low	17,896	992	1,284	469	707	239	7.2%	47.3%
56	A1035 (Hull Bridge Road)	Medium	17,896	992	1,455	469	799	239	8.1%	47.3%
57	A1035/A164	Low	12,316	773	264	56	121	17	2.1%	7.2%
58	Ings Road	Low	87	2	125	39	52	14	143.6%	2,053.6%
59	A164 (Driffield Road)	Low	9,938	338	33	17	7	3	0.3%	5.0%
60	A1035 (Constitution Hill)	Low	10,614	1,008	501	143	239	44	4.7%	14.2%
61	A1035/Dog Kennel Lane	Low	15,481	1,019	443	126	211	38	2.9%	12.3%
62	A1174 (York Road)	Low	5,821	150	119	50	67	17	2.0%	33.0%
63	A1079	Negligible	20,951	1,313	1,027	382	515	140	4.9%	29.1%
64	Killingwoldgraves Lane	Low	6,401	232	113	47	47	17	1.8%	20.2%
65	A1079/Bishop Burton	High	11,609	729	70	0	80	0	0.6%	0.0%
66	A1079	Negligible	18,817	1,035	876	469	626	394	4.7%	45.3%
68	Coppleflat Lane	Low	6,401	232	113	47	47	17	1.8%	20.2%
71	B1230 (Broadgate)	Medium	6,309	119	142	47	60	17	2.2%	39.7%
73	Eske Lane	Low	46	2	124	38	72	18	267.4%	1,613.3%
74	Mount Pleasant/A1033 and Stoneferry Road/A1165	Low	25,640	1,948	514	469	420	394	2.0%	24.1%
75	Sutton Road/A1033	Low	20,173	837	542	469	436	394	2.7%	56.1%
76	Marfleet Lane and Maybury Road	High	11,544	469	479	462	239	229	4.1%	98.5%
%	Exceeds EATM screening thresholds									

Table 24-18 Link Screening DBS East and DBS West Concurrently

Link ID	Link Description	Link Sensitivity	Background 2026 Annual Average Daily Traffic Flows		Forecast Peak Daily Construction Vehicle Trips		Forecast Average Daily Construction Vehicle Trips		Percentage increase (utilising peak flows)	
			All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
1	A165 Carnaby to Lissett	Low	11,238	556	20	0	13	0	0.2%	0.0%
2	A165 Lissett to Beeford	Medium	11,238	556	217	67	142	47	1.9%	12.0%
3	A165 Beeford to Brandesburton	Low	10,447	763	418	145	282	99	4.0%	19.0%
4	B1242 Lissett to Skipsea	High	2,650	100	35	34	25	24	1.3%	33.7%
5	Beeford Road	High	1,224	40	164	34	107	24	13.4%	84.6%
6	B1242 (Hornsea Road) Skipsea to End	High	2,799	104	199	67	131	47	7.1%	64.6%
7	Dunnington Lane	Low	133	56	204	78	142	52	153.1%	140.2%
8	Catfoss Road	Low	913	33	159	49	86	26	17.4%	146.6%
9	A165 Brandesburton to Leven	Negligible	11,238	556	575	194	367	125	5.1%	34.9%
10	A1035 (West Road) Leven to Catwick	Medium	7,708	241	221	84	116	34	2.9%	34.9%
11	Unnamed road north of A1035	Low	200	8	68	41	26	17	34.0%	506.4%
12	A1035 (West Road) Leven to A165	Negligible	18,557	1,247	791	278	480	159	4.3%	22.3%
13	A165 (Whitecross Road) from A1035 to Skirlaugh	Low	8,737	586	761	563	446	305	8.7%	96.0%
14	A165 through Skirlaugh	High	8,737	586	594	563	324	305	6.8%	96.0%
15	A165 from Skirlaugh to Coniston	Low	8,737	586	594	563	324	305	6.8%	96.0%
16	A165 from Coniston to Holderness Road	High	8,737	586	594	563	324	305	6.8%	96.0%

Link ID	Link Description	Link Sensitivity	Background 2026 Annual Average Daily Traffic Flows		Forecast Peak Daily Construction Vehicle Trips		Forecast Average Daily Construction Vehicle Trips		Percentage increase (utilising peak flows)	
			All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
17	A165/Holderness Road	High	26,834	696	581	563	316	305	2.2%	80.9%
18	A165/Holderness Road	High	15,560	1,149	0	0	0	0	0.0%	0.0%
19	Mount Pleasant/A1033	Low	19,465	1,344	655	642	558	550	3.4%	47.8%
20	A1033 Slip Road	Low	11,664	1,092	655	642	534	526	5.6%	58.8%
21	A1033/Hedon Road	Low	41,211	4,619	655	642	575	567	1.6%	13.9%
22	A1033/Hedon Road	Low	11,664	1,092	673	642	569	550	5.8%	58.8%
23	A1033/Hedon Road	Negligible	30,420	3,241	563	563	305	305	1.9%	17.4%
24	A63	Low	44,501	4,968	642	642	550	550	1.4%	12.9%
25	A63	Low	53,535	5,965	0	0	0	0	0.0%	0.0%
26	A63	Negligible	56,155	6,370	0	0	0	0	0.0%	0.0%
27	A63	Negligible	50,346	6,413	995	642	769	550	2.0%	10.0%
28	A15/Boothferry Road	Low	31,913	2,981	995	642	769	550	3.1%	21.5%
29	Humber Bridge	Low	31,575	2,610	306	0	190	0	1.0%	0.0%
30	A164	Negligible	19,584	1,343	1,354	642	992	550	6.9%	47.8%
31	A164	Negligible	19,584	1,343	1,354	642	992	550	6.9%	47.8%
32	A164	Low	19,584	1,343	1,583	642	1,134	550	8.1%	47.8%
33	A164	Low	34,214	1,550	1,583	642	1,134	550	4.6%	41.4%
34	A164 (Beverley Road)	Low	34,214	1,550	1,821	642	1,288	550	5.3%	41.4%
35	A164 (Beverley Road)	Low	34,214	1,550	1,798	642	1,267	539	5.3%	41.4%
36	Dunflat Road off A164	Low	1,970	37	56	26	27	11	2.9%	68.7%
37	Coppleflat Lane	Low	2,577	65	56	26	27	11	2.2%	39.0%

Link ID	Link Description	Link Sensitivity	Background 2026 Annual Average Daily Traffic Flows		Forecast Peak Daily Construction Vehicle Trips		Forecast Average Daily Construction Vehicle Trips		Percentage increase (utilising peak flows)	
			All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
38	A164	Low	23,203	991	1,337	585	785	314	5.8%	59.0%
39	B1248	Low	11,581	529	75	0	46	0	0.6%	0.0%
40	A1033/Thomas Clarkson Way	Low	20,173	837	720	642	598	550	3.6%	76.7%
45	A1033	Low	22,393	929	874	642	694	550	3.9%	69.1%
46	A1174	High	14,646	487	126	0	79	0	0.9%	0.0%
49	A1174	High	14,646	487	126	0	79	0	0.9%	0.0%
50	A164/ Woodmansey	Low	10,102	491	1,296	585	759	314	12.8%	119.2%
51	A164/Woodmansey	Low	10,102	491	1,296	585	759	314	12.8%	119.2%
52	A1174/A164	Low	16,535	847	1,422	585	838	314	8.6%	69.0%
53	A1174/A164/Swinemoor Lane	High	16,535	847	1,422	585	838	314	8.6%	69.0%
54	A1035 (Hornsea Road)	Low	17,896	992	1,377	588	818	317	7.7%	59.2%
55	A1035 (Hornsea Road)	Low	17,896	992	1,474	588	875	317	8.2%	59.2%
56	A1035 (Hull Bridge Road)	Medium	17,896	992	1,658	588	987	317	9.3%	59.2%
57	A1035/A164	Low	12,316	773	288	75	147	23	2.3%	9.7%
58	Ings Road	Low	87	2	148	66	73	27	170.0%	3,475.3%
59	A164 (Driffield Road)	Low	9,938	338	45	31	9	5	0.5%	9.2%
60	A1035 (Constitution Hill)	Low	10,614	1,008	542	168	290	56	5.1%	16.6%
61	A1035/Dog Kennel Lane	Low	15,481	1,019	480	149	255	49	3.1%	14.6%
62	A1174 (York Road)	Low	5,821	150	156	69	81	23	2.7%	46.0%
63	A1079	Negligible	20,951	1,313	1,159	475	612	198	5.5%	36.2%

Link ID	Link Description	Link Sensitivity	Background 2026 Annual Average Daily Traffic Flows		Forecast Peak Daily Construction Vehicle Trips		Forecast Average Daily Construction Vehicle Trips		Percentage increase (utilising peak flows)	
			All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
64	Killingwoldgraves Lane	Low	6,401	232	120	51	57	22	1.9%	22.0%
65	A1079/Bishop Burton	High	11,609	729	150	0	93	0	1.3%	0.0%
66	A1079	Negligible	18,817	1,035	1,073	642	846	567	5.7%	62.1%
68	Coppleflat Lane	Low	6,401	232	120	51	57	22	1.9%	22.0%
71	B1230 (Broadgate)	Medium	6,309	119	151	51	73	22	2.4%	43.0%
73	Eske Lane	Low	46	2	141	53	88	24	304.1%	2,250.1%
74	Mount Pleasant/A1033 and Stoneferry Road/A1165	Low	25,640	1,948	691	642	580	550	2.7%	33.0%
75	Sutton Road/A1033	Low	20,173	837	720	642	598	550	3.6%	76.7%
76	Marfleet Lane and Maybury Road	High	11,544	469	581	563	316	305	5.0%	120.0%
%	Exceeds EATM screening thresholds									

174. In accordance with EATM, only those links that are showing greater than 10% increase in total traffic flows for high sensitive links, or greater than 30% increase in total traffic (or HGV component) for all other links, are considered when assessing the impacts of severance and amenity.

175. Disaggregating from **Table 24-17** and **Table 24-18**, 36 of the 66 links are above the EATM screening thresholds for DBS East or DBS West In Isolation and 40 of the 67 links for DBS East or DBS West Concurrently.

176. **Table 24-19** contains a summary of those links that will be taken forward for further assessment (for the impacts of severance and amenity) and those that are screened out.

Table 24-19 Link Screening Summary

Construction Scenarios	Links Requiring Further Assessment	Links Requiring No Further Assessment
DBS East or DBS West In Isolation	5, 6, 7, 8, 10, 11, 13, 14, 15, 16, 17, 19, 20, 22, 32, 33, 34, 35, 36, 37, 38, 40, 45, 50, 51, 52, 53, 54, 55, 56, 58, 62, 71, 73, 75, 76.	1, 2, 3, 4, 9, 12, 18, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 39, 46, 49, 57, 59, 60, 61, 63, 64, 65, 66, 68, 74.
DBS East and DBS West Concurrently	4, 5, 6, 7, 8, 10, 11, 13, 14, 15, 16, 17, 19, 20, 22, 32, 33, 34, 35, 36, 37, 38, 40, 45, 50, 51, 52, 53, 54, 55, 56, 58, 62, 64, 68, 71, 73, 74, 75, 76.	1, 2, 3, 9, 12, 18, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 39, 46, 49, 57, 59, 60, 61, 63, 65, 66.

24.6.1.2 Impact 1: Severance

177. Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. Section 24.4.3 provides details of the adopted impact assessment methodology.

24.6.1.2.1 Magnitude of Impact – DBS East or DBS West In Isolation

178. **Table 24-20** contains a summary of the severance magnitude of impact for each of the screened links detailed in **Table 24-19**.

Table 24-20 Magnitude of Severance Impact – DBS East or DBS West In Isolation

Links	Magnitude of Impact	Rationale for Magnitude
5, 6, 8, 10, 11, 13, 14, 15, 16, 17, 19, 20, 22, 32, 33, 34, 35, 36, 37, 38, 40, 45, 50, 51, 52, 53, 54, 55, 56, 62, 71, 75, 76.	Negligible	Change in total traffic flow is less than 30%
7, 58, 73	High	Change in total traffic flow is greater than 90%

24.6.1.2.2 Magnitude of Impact – DBS East and DBS West Concurrently

179. **Table 24-21** contains a summary of the severance magnitude of impact for each of the screened links detailed in **Table 24-19**.

Table 24-21 Magnitude of Severance Impact – DBS East or DBS West Concurrently

Links	Magnitude of Impact	Rationale for Magnitude
4, 5, 6, 8, 10, 13, 14, 15, 16, 17, 19, 20, 22, 32, 33, 34, 35, 36, 37, 38, 40, 45, 50, 51, 52, 53, 54, 55, 56, 62, 71, 74, 75, 76.	Negligible	Change in total traffic flow is less than 30%
11	Low	Change in total traffic flows is between 30% and 60%
7, 58, 73	High	Change in total traffic flow is greater than 90%

24.6.1.2.3 Sensitivity of Receptor – All Scenarios

180. The sensitivity of each highway link is detailed in **Table 24-15** and on **Volume 7, Figure 24-5 (application ref: 7.24.1)**.

24.6.1.2.4 Significance of Effect – DBS East and DBS West In Isolation

181. **Table 24-22** summarises the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of the severance effect.

Table 24-22 Significance of Severance Effect – DBS East or DBS West In Isolation

Links	Magnitude of Impact	Sensitivity	Significance of Effect
5, 6, 14, 16, 17, 53, 76.	Negligible	High	**Minor** adverse
10, 20, 56, 71.		Medium	**Minor** adverse
8, 11, 13, 15, 19, 22, 32, 33, 34, 35, 36, 37, 38, 40, 45, 50, 51, 52, 54, 55, 62, 75.		Low	**Negligible**
7, 58, 73	High	Low	**Moderate** adverse

182. It is identified in **Table 24-22** that Links 7, 58 and 73 could potentially experience significant effects. Therefore, a more detailed assessment has been undertaken of the factors that may be influencing the magnitude of impact, to determine whether additional mitigation measures are required.

183. To contextualise the potential effects, guidance provided in the DMRB Guidance for Population and Human Health (LA112) has been referenced. LA112 states that when considering severance for walkers, cyclists and horse-riders, roads with daily vehicle flows under 4,000 vehicles per day are considered to be of low sensitivity. The assessment adopts the LA112 threshold as a proxy for severance effects and considers any link that falls below the threshold to be subject to a low magnitude of impact.

184. **Table 24-17** summarises the forecast background daily traffic flows in 2026 in the TTSA and assigned daily peak vehicle trips associated with the construction of the Projects In Isolation.

185. Links 7, 58 and 73 could experience maximum total traffic flows (i.e. Link 7, background plus the Projects) of up to 310 vehicles per day which is significantly less than the LA112 threshold and therefore the magnitude of impact is revised to low. A low magnitude of impact on receptors of low sensitivity which would result in **minor** adverse effect, which is not significant in EIA terms.

24.6.1.2.5 Significance of Effect – DBS East and DBS West Concurrently

186. A summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of the severance effect is provided in **Table 24-23**.

Table 24-23 Significance of Severance Effect – DBS East and DBS West Concurrently

Links	Magnitude of Impact	Sensitivity	Significance of Effect
4, 5, 6, 14, 16, 17, 53, 76.	Negligible	High	**Minor** adverse
10, 20, 56, 71.		Medium	**Minor** adverse
8, 13, 15, 19, 22, 32, 33, 34, 35, 36, 37, 38, 40, 45, 50, 51, 52, 54, 55, 62, 74, 75.		Low	**Negligible**
11.	Low	Low	**Minor** adverse
7, 58, 73.	High	Low	**Moderate** adverse

187. **Table 24-23** identifies that Links 7, 58 and 73 could potentially experience significant impacts and therefore a more detailed assessment has been undertaken of the factors that may be influencing the magnitude of impact, to determine whether additional mitigation measures are required.

188. To contextualise the potential effects, guidance provided in the DMRB Guidance for Population and Human Health (LA112) has been referenced. LA112 states that when considering severance for walkers, cyclists and horse-riders, roads with daily vehicle flows under 4,000 vehicles per day are considered to be of low sensitivity. This assessment adopts the LA112 threshold as a proxy for severance effects and considers any link that falls below the threshold to be subject to a low magnitude of effect.

189. **Table 24-18** summarises the forecast background daily traffic flows in 2026 in the TTSA and assigned daily peak vehicle trips associated with the construction of the Projects concurrently.

190. Links 7, 58 and 73 could experience maximum total traffic flows (i.e. Link 7, background plus the Projects) of up to 337 vehicles per day which is significantly less than the LA112 threshold and therefore the magnitude of effect is revised to low. A low magnitude of effect on a receptor of low sensitivity would result in **minor** adverse effect, which is not significant in EIA terms and therefore additional mitigation is not required.

24.6.1.3 Impact 2: Amenity

191. 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 and separation from traffic.

192. This definition also includes pedestrian fear and intimidation and can be considered to be a much broader category considering the overall relationship between pedestrians and traffic.

193. Amenity can affect a range of non-motorised users such as pedestrians, cyclists and equestrians. Section 24.4.3 provides details on the adopted impact assessment methodology for amenity.

24.6.1.3.1 Magnitude of Impact – All Scenarios

194. This section presents an assessment of the magnitude of amenity impact for each of the screened links (**Table 24-19**).

195. The amenity magnitude of impact assessment has been informed by the scale of forecast traffic increase in context with the function of the discreet highway link under consideration.

196. For the effects of amenity the percentage daily increase can sometimes exaggerate the magnitude of impact, especially when the baseline HGV flows are low. For these instances peak hour vehicle trips have been calculated to further inform the consideration amenity impacts and to aid a more detailed assessment of construction traffic characteristics within the daily demand.

197. To develop a worst case scenario, the peak demand hour flows include the assumption that employees (LVs) will arrive and depart within a single hour and that HGV movements would be one-twelfth of the daily demand.

198. The assessed magnitude of impact is derived from the evaluation of the baseline traffic flows, highway environment and the applied traffic demand. It therefore follows that the same applied demand may have a different assessed magnitude of impact when these parameters are taken into consideration.

199. The resultant amenity magnitude of impact assessment for the Projects in-isolation and concurrently is presented in **Table 24-24**.

Table 24-24 Amenity Magnitude of Impact Assessment

Link Description (Designation)	Rationale for Magnitude of Impact		Assessed Magnitude of Impact	
	In Isolation	**Concurrently**	**In Isolation**	**Concurrently**
Link 4 – B1242 Lissett to Skipsea (Local road)	Link 4 is below EATM screening thresholds for the Projects In Isolation.	The link has a base flow of 2,650 vehicle trips (including 100 HGV trips) per day and would be subject to construction traffic of up to 34 HGV trips per day. Peak daily construction traffic would result in an increase in traffic of 1.3% for all vehicles and 33.7% for HGVs.	N/A	Negligible
Link 5 – Beeford Road (Local road)	The link has a base flow of 1,224 vehicle trips (including 40 HGV trips) per day and would be subject to construction traffic of up to 30 and 34 HGV trips per day the In Isolation and Concurrent Scenarios respectively.		Low	Low
	Peak daily construction traffic would result in an increase in traffic of 13.1% for all vehicles and 74.5% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 13.4% for all vehicles and 84.6% for HGVs.		
Link 6 – B1242 (Hornsea Road) Skipsea to End (Local road)	The link has a base flow of 2,799 vehicle trips (including 104 HGV trips) per day and would be subject to construction traffic of up to 59 and 67 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Low	Low
	Peak daily construction traffic would result in an increase in traffic of 6.8% for all vehicles and 56.8% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 7.1% for all vehicles and 64.6% for HGVs.		
Link 7 – Dunnington Lane (Local road)	The link has a base flow of 133 vehicle trips (including 56 HGV trips) per day and would be subject to construction traffic of up to 56 and 78 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Medium	Medium
	Peak daily construction traffic would result in an increase in traffic of 132.9% for all vehicles and 100.6% for HGVs. Receptors along the link would experience a peak increase in flow of approximately five HGV trips per hour.	Peak daily construction traffic would result in an increase in traffic of 153.1% for all vehicles and 140.2% for HGVs. Receptors along the link would experience a peak increase in flow of approximately seven HGV trips per hour.		
Link 8 – Catfoss Road (Local road)	The link has a base flow of 913 vehicle trips (including 33 HGV trips) per day and would be subject to construction traffic of up to 43 and 49 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Medium	Medium
	Peak daily construction traffic would result in an increase in traffic of 13.7% for all vehicles and 128.7% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 17.4% for all vehicles and 146.6% for HGVs.		

Link Description (Designation)	Rationale for Magnitude of Impact		Assessed Magnitude of Impact	
	In Isolation	**Concurrently**	**In Isolation**	**Concurrently**
	Receptors along the link would experience a peak increase in flow of approximately four HGV trips per hour.	Receptors along the link would experience a peak increase in flow of approximately four HGV trips per hour.		
Link 10 – A1035 Leven to Catwick (Principal Road)	The link has a base flow of 7,708 vehicle trips (including 241 HGV trips) per day and would be subject to construction traffic of up to 73 and 84 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Negligible	Negligible
	Peak daily construction traffic would result in an increase in traffic of 2.7% for all vehicles and 30.3% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 2.9% for all vehicles and 34.9% for HGVs.		
Link 11 – An unnamed road north of Link 10	The link has a base flow of 200 vehicle trips (including eight HGV trips) per day and would be subject to construction traffic of up to 30 and 41 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Medium	Medium
	Peak daily construction traffic would result in an increase in traffic of 27.5% for all vehicles and 370.5% for HGVs. Receptors along the link would experience a peak increase in flow of approximately three HGV trips per hour.	Peak daily construction traffic would result in an increase in traffic of 34% for all vehicles and 506.4% for HGVs. Receptors along the link would experience a peak increase in flow of approximately three HGV trips per hour.		
Link 13 and 14 – A165 (Whitecross Road) from A1035 to Skirlaugh (Primary Route)	The links have a base flow of 8,737 vehicle trips (including 586 HGV trips) per day and would be subject to construction traffic of up to 462 and 563 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Low	Low
	Peak daily construction traffic would result in an increase in traffic of 7.4% for all vehicles and 78.8% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 8.7% for all vehicles and 96% for HGVs.		
Link 15 and 16- A165 from Skirlaugh (Primary Route)	The links have a base flow of 8,737 vehicle trips (including 586 HGV trips) per day and would be subject to construction traffic of up to 462 and 563 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Low	Low
	Peak daily construction traffic would result in an increase in traffic of 5.6% for all vehicles and 78.8% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 6.8% for all vehicles and 96% for HGVs.		
Link 17 - A165 Holderness Road (Primary Route)	The link has a base flow of 26,834 vehicle trips (including 696 HGV trips) per day and would be subject to construction traffic of up to 462 and 563 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Low	Low
	Peak daily construction traffic would result in an increase in traffic of 1.8% for all vehicles and 66.4% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 2.2% for all vehicles and 80.9% for HGVs.		
Link 19 - A1033 Mount Pleasant	The link has a base flow of 19,465 vehicle trips (including 1,344 HGV trips) per day and would be subject to construction traffic of up to 469 and 642 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Negligible	Negligible

Link Description (Designation)	Rationale for Magnitude of Impact		Assessed Magnitude of Impact	
	In Isolation	**Concurrently**	**In Isolation**	**Concurrently**
(A-road)	Peak daily construction traffic would result in an increase in traffic of 2.5% for all vehicles and 34.9% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 3.4% for all vehicles and 47.8% for HGVs.		
Link 20 and 22-A1033 (A-road)	The links have a base flow of 11,664 vehicle trips (including 1,092 HGV trips) per day and would be subject to construction traffic of up to 469 and 642 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Negligible	Low
	Peak daily construction traffic would result in an increase in traffic of up to 4.3% for all vehicles and 42.9% for HGVs.	Peak daily construction traffic would result in an increase in traffic of up to 5.8% for all vehicles and 58.8% for HGVs.		
Link 32 - A164 (Primary Route)	The link has a base flow of 19,584 vehicle trips (including 1,343 HGV trips) per day and would be subject to construction traffic of up to 469 and 642 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Negligible	Negligible
	Peak daily construction traffic would result in an increase in traffic of 6.9% for all vehicles and 34.9% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 8.1% for all vehicles and 47.8% for HGVs.		
Link 33, 34 and 35 - A164 (Beverley Road) (Primary Route)	The links have a base flow of 34,214 vehicle trips (including 1,550 HGV trips) per day and would be subject to construction traffic of up to 469 and 642 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Negligible	Negligible
	Peak daily construction traffic would result in an increase in traffic of up to 4.6% for all vehicles and 30.3% for HGVs.	Peak daily construction traffic would result in an increase in traffic of up to 5.3% for all vehicles and 41.4% for HGVs.		
Link 36 - Dunflat Road off A164 (Local Road)	The link has a base flow of 1,970 vehicle trips (including 37 HGV trips) per day and would be subject to construction traffic of up to 24 and 26 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Low	Low
	Peak daily construction traffic would result in an increase in traffic of 2.7% for all vehicles and 63.3% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 2.9% for all vehicles and 68.7% for HGVs.		
Link 37 - Coppleflat Lane (Local Road)	The link has a base flow of 2,577 vehicle trips (including 65 HGV trips) per day and would be subject to construction traffic of up to 24 and 26 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Negligible	Negligible
	Peak daily construction traffic would result in an increase in traffic of 2.0% for all vehicles and 35.9% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 2.2% for all vehicles and 39.0% for HGVs.		
Link 38 - A164	The link has a base flow of 23,203 vehicle trips (including 991 HGV trips) per day and would be subject to construction traffic of up to 469 and 585 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Negligible	Low

Link Description (Designation)	Rationale for Magnitude of Impact		Assessed Magnitude of Impact	
	In Isolation	**Concurrently**	**In Isolation**	**Concurrently**
(Principal Route)	Peak daily construction traffic would result in an increase in traffic of 5.0% for all vehicles and 47.3% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 5.8% for all vehicles and 59% for HGVs.		
Link 40 - A1033 Thomas Clarkson Way (Principal Road)	The link has a base flow of 20,173 vehicle trips (including 837 HGV trips) per day and would be subject to construction traffic of up to 469 and 642 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Low	Low
	Peak daily construction traffic would result in an increase in traffic of 2.7% for all vehicles and 56.1% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 3.6% for all vehicles and 76.7% for HGVs.		
Link 45 - A1033 (Principal Road)	The link has a base flow of 22,393 vehicle trips (including 929 HGV trips) per day and would be subject to construction traffic of up to 469 and 642 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Low	Low
	Peak daily construction traffic would result in an increase in traffic of 3.1% for all vehicles and 50.5% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 3.9% for all vehicles and 69.1% for HGVs.		
Link 50 and 51 - A164 Woodmansey (Principal Route)	The links have a base flow of 10,102 vehicle trips (including 491 HGV trips) per day and would be subject to construction traffic of up to 469 and 585 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Low	Medium
	Peak daily construction traffic would result in an increase in traffic of 11.1% for all vehicles and 95.6% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 12.8% for all vehicles and 119.2% for HGVs. Receptors along the link would experience a peak increase in flow of approximately 49 HGV trips per hour.		
Link 52 and 53 - A1174 / A164 (Principal Route)	The links have a base flow of 16,535 vehicle trips (including 847 HGV trips) per day and would be subject to construction traffic of up to 469 and 585 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Low	Low
	Peak daily construction traffic would result in an increase in traffic of 7.5% for all vehicles and 55.4% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 8.6% for all vehicles and 69% for HGVs.		
Link 54, 55, 56 - A1035 (Hornsea Road/Hull Bridge Road) (Primary Road)	The links have a base flow of 17,896 vehicle trips (including 992 HGV trips) per day and would be subject to construction traffic of up to 469 and 588 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Negligible	Low
	Peak daily construction traffic would result in an increase in traffic of up to 8.1% for all vehicles and 47.3% for HGVs.	Peak daily construction traffic would result in an increase in traffic of up to 9.3% for all vehicles and 59.2% for HGVs.		
Link 58 - Ings Road (Local Road)	The link has a base flow of 87 vehicle trips (including two HGV trips) per day and would be subject to construction traffic of up to 39 and 66 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Medium	High

Link Description (Designation)	Rationale for Magnitude of Impact		Assessed Magnitude of Impact	
	In Isolation	**Concurrently**	**In Isolation**	**Concurrently**
	Peak daily construction traffic would result in an increase in traffic of 143.6% for all vehicles and 2,053.6% for HGVs. Receptors along the link would experience a peak increase in flow of approximately three to four HGV trips per hour.	Peak daily construction traffic would result in an increase in traffic of 170.0% for all vehicles and 3,475.3% for HGVs. Receptors along the link would experience a peak increase in flow of approximately six HGV trips per hour.		
Link 62 - A1174 (York Road) (Principal Road)	The link has a base flow of 5,821 vehicle trips (including 150 HGV trips) per day and would be subject to construction traffic of up to 50 and 69 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Negligible	Negligible
	Peak daily construction traffic would result in an increase in traffic of 2.0% or all vehicles and 33% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 2.7% for all vehicles and 46% for HGVs.		
Link 71 – B1230 (Broadgate) (Local Road)	The link has a base flow of 6,309 vehicle trips (including 119 HGV trips) per day and would be subject to construction traffic of up to 47 and 51 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Negligible	Negligible
	Peak daily construction traffic would result in an increase in traffic of 2.2% for all vehicles and 39.7% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 2.4% for all vehicles and 43% for HGVs.		
Link 73 - Eske Lane (Local Road)	The link has a base flow of 46 vehicle trips (including two HGV trips) per day and would be subject to construction traffic of up to 38 and 53 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Medium	High
	Peak daily construction traffic would result in an increase in traffic of 267.4% for all vehicles and 1,613.3% for HGVs. Receptors along the link would experience a peak increase in flow of approximately three HGV trips per hour.	Peak daily construction traffic would result in an increase in traffic of 304.1% for all vehicles and 2,250.1% for HGVs. Receptors along the link would experience a peak increase in flow of approximately five HGV trips per hour.		
Link 74 A1033 Mount Pleasant and A1165 Stoneferry Rd (Primary Route)	Link 74 is below EATM screening thresholds for the Projects In Isolation.	The link has a base flow of 25,640 vehicle trips (including 1,948 HGV trips) per day and would be subject to construction traffic of up to 642 HGV trips per day. Peak daily construction traffic would result in an increase in traffic of 2.7% for all vehicles and 33.0% for HGVs.	N/A	Negligible
Link 75 - A1033 Sutton Road (Primary Route)	The link has a base flow of 20,173 vehicle trips (including 837 HGV trips) per day and would be subject to construction traffic of up to 542 and 642 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Low	Low
	Peak daily construction traffic would result in an increase in traffic of 2.7% for all vehicles and 56.1% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 3.6% for all vehicles and 76.7% for HGVs.		

Link Description (Designation)	Rationale for Magnitude of Impact		Assessed Magnitude of Impact	
	In Isolation	**Concurrently**	**In Isolation**	**Concurrently**
Link 76 - Marfleet Lane and Maybury Road (Primary Route)	The link has a base flow of 11,544 vehicle trips (including 469 HGV trips) per day and would be subject to construction traffic of up to 462 and 563 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.		Low	Medium
	Peak daily construction traffic would result in an increase in traffic of 4.1% for all vehicles and 98.5% for HGVs.	Peak daily construction traffic would result in an increase in traffic of 5.0% for all vehicles and 120.0% for HGVs. Receptors along the link would experience a peak increase in flow of approximately 47 HGV trips per hour.		

24.6.1.3.2 Sensitivity of Receptors – All Scenarios

200. The sensitivity of each highway link is detailed in **Table 24-15** and on **Volume 7, Figure 24-5 (application ref: 7.24.1)**.

24.6.1.3.3 Significance of Effect – DBS East or DBS West In Isolation

201. **Table 24-25** provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of amenity effect.

Table 24-25 Summary of Significance of Amenity Effects for Projects In Isolation

Links	Magnitude of amenity effect	Link sensitivity	Significance of Effect
19, 22, 32, 33, 34, 35, 37, 38, 54, 55, 62	Negligible	Low	**Negligible**
10, 20, 56, 71		Medium	**Minor** adverse
13, 15, 36, 40, 45, 50, 51, 52, 75	Low	Low	**Minor** adverse
5, 6, 14, 16, 17, 53, 76		High	**Moderate** adverse
7, 8, 11, 58, 73	Medium	Low	**Minor** adverse

24.6.1.3.4 Significance of Effect – DBS East and DBS West Concurrently

202. **Table 24-26** provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of amenity effect.

Table 24-26 Summary of Significance of Amenity Effects for Projects Concurrently

Links	Magnitude of amenity effect	Link sensitivity	Significance of Effect
19, 32, 33, 34, 35, 37, 62, 74	Negligible	Low	**Negligible**
10, 71		Medium	**Minor** adverse
4		High	**Minor** adverse

Links	Magnitude of amenity effect	Link sensitivity	Significance of Effect
13, 15, 22, 36, 38, 40, 45, 52, 54, 55, 75	Low	Low	**Minor** adverse
20, 56		Medium	**Minor** adverse
5, 6, 14, 16, 17, 53		High	**Moderate** adverse
7, 8, 11, 50, 51	Medium	Low	**Minor** adverse
76		High	**Major** adverse
58	High	Low	**Moderate** adverse

24.6.1.3.5 Mitigation and Residual Significance of Effect – All Scenarios

203. **Table 24-25** and **Table 24-26** identify that the Projects' peak daily construction traffic could result in potentially significant amenity effects upon the users of Links 5, 6, 14, 16, 17, 53 and 76 associated with the forecast increases in HGV traffic for all scenarios.

204. Potentially significant amenity impacts are also identified upon the users of Link 58 associated with an increase in peak daily HGV traffic during the construction of the Projects Concurrently.

205. Noting the temporary nature of the Projects' construction phase, preferred measures to mitigate effects upon the users of links these links would focus upon managing the intensity of peak daily HGV movements (rather than intrusive highway interventions).

206. Traffic forecasts presented in **Table 24-17** and **Table 24-18** adopt a worst case whereby it is assumed that peak construction traffic movements to each construction access all occur simultaneously. This approach ensures a worst case assessment for local roads however, for the main distributor roads that serve multiple access points, it can result in an overestimation. The **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) contains the forecast construction activities and associated HGV demand, this information is referenced to give an indication of what the maximum 'in-combination' HGV demand (impact) would be on distributors roads.

24.6.1.3.5.1 Links 5 and 6

207. Links 5 and 6 provide access for-construction traffic from the main A165 towards the section of onshore export cable route south of the village of Skipsea.

208. It is noteworthy that for both links the Projects' peak HGV traffic could lead to potentially significant amenity impacts for receptors located along these links. However, it should be noted that the assessment is based upon peak HGV flows and on average receptors would experience lower changes in HGV movements. Consideration is therefore given to the effect of average HGV flows:

- There would be less than two HGV trips per hour on Link 5 (i.e. one arrival and one departure). It is considered that this level of traffic would not lead to significant amenity effects.
- There would be three to four HGV trips per hour, i.e. up to two arrivals and two departures per hour on Link 6. It is considered that this level of HGV traffic outside of sensitive periods would not lead to significant amenity effects.

209. When considering the sensitive periods for amenity, it is noted that there is a primary school in Skipsea (located along the main B1242) which would result in a more intense period of pedestrian activity, including vulnerable road users.

210. To mitigate potentially significant amenity effects along links 5 and 6, the **OCTMP (Volume 8, application ref: 8.13)** (which is secured by DCO Requirement) contains a commitment to manage HGV trips along these links to not exceed the forecast average daily HGV demand and to restrict delivery times to avoid school start and finish times.

211. It is therefore assessed that the residual amenity effects on links 5 and 6 on would be of negligible magnitude on receptors of high sensitivity resulting in **minor** adverse residual effects.

24.6.1.3.5.2 Links 14, 16, 17 and 76

212. Links 14, 16 and 17 comprise of the main A165 that would be utilised by construction traffic traveling south from the Projects toward the ports in Hull. In addition, Link 76 comprised of the main ring road that links the ports of Hull with the A165.

213. When considering links 14, 16, 17 and 76 it is noted that these links provide the main route for construction traffic from accesses 1 to 11 to the ports of Hull. When considering the peak number of deliveries per access there could be up to 462 and 563 HGV trips per day in the In Isolation and Concurrent Scenarios respectively (accesses 1 to 11 operating concurrently at peak intensity). However, when reviewing the 'in-combination' forecast overlap of construction activities (see the **TA** in **Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**), it can be identified that accesses 1 to 11 would be operating at varying levels of delivery intensity at any given day and peak activities are unlikely to overlap. The likely in-combination peak number of deliveries on the main distributors can be derived as up to 290 and 370 HGV trips per day for the In Isolation and Concurrent Scenarios respectively.

214. Noting the background HGV flows along links 14 and 16 are 586 HGVs per day, 696 along Link 17 and 469 along Link 76 it is noteworthy that an in-combination increase of up to 370 HGVs would be significantly less than a 100% increase whereby EATM suggests may lead to a significant effect upon amenity.

215. To mitigate potentially significant amenity effects along links 14, 16, 17 and 76 the **OCTMP (Volume 8, application ref: 8.13)** (which is secured by DCO Requirement) contains a commitment to manage HGV trips along these links to not exceed 370 daily HGV trips.

216. It is therefore assessed that the residual amenity effects on links 14, 16, 17 and 76 would be of negligible magnitude on receptors of high sensitivity resulting in **minor** adverse residual effects.

24.6.1.3.5.3 Links 53

217. Link 53 comprises of the main A164 that would be utilised by construction traffic travelling south from the Projects toward the ports in Hull.

218. When considering Link 53 it is noted that this link provides the main route for construction traffic from accesses 1 to 12 to the ports of Hull. When considering the peak number of deliveries per access there could be up to 469 and 585 HGV trips per day at its peak for In Isolation and Concurrent Scenarios respectively (accesses 1 to 12 operating concurrently at peak activity). However, when reviewing the overlap of construction activities, it can be identified from the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) that the peak in-combination number of deliveries (from varying access delivery intensity) would be up to 311 and 409 HGV trips per day for In Isolation and Concurrent Scenarios respectively.

219. Noting the background HGV flows along Link 53 are 847 HGVs per day it is noteworthy that an increase of up to 409 HGVs would be less than a 50% increase and less than a 100% increase whereby EATM suggests may lead to a negative effect upon amenity.

220. To mitigate potentially significant amenity effects along Link 53 the **OCTMP (Volume 8, application ref: 8.13)** (which is secured by DCO Requirement) contains a commitment to manage HGV trips along this link to not exceed 409 daily HGV trips.

221. It is therefore assessed that the residual amenity effect on Link 53 would be of negligible magnitude on a receptor of high sensitivity resulting in **minor** adverse residual effect.

24.6.1.3.5.4 Link 58

222. It can be noted from **Table 24-25** and **Table 24-26** that potentially significant amenity effects would only occur as a result of the forecast increase in traffic from the construction of the Projects concurrently. The forecast construction traffic associated with the construction of the Projects In Isolation is forecast to result a minor adverse amenity effect upon the users of Link 58.

223. To mitigate potentially significant amenity effects along Link 58 associated with the construction of the Projects concurrently, the **OCTMP (Volume 8, application ref: 8.13)** (which is secured by DCO Requirement) contains a commitment to manage HGV trips along this link to not exceed the numbers of trips forecast for the In Isolation Scenario.

224. It is therefore assessed that the residual amenity effect on Link 58 would be of medium magnitude on a receptor of low sensitivity resulting in **minor** adverse residual effect.

24.6.1.4 Impact 3: Road Safety

225. In order to understand the potential effect of changes in traffic on the existing road safety baseline, an examination of the recorded collisions occurring within the TTSA has been undertaken in context of the development proposals.

24.6.1.4.1 Magnitude of Impact and Sensitivity of Receptors – All Scenarios

226. The initial review of the existing road safety baseline has selected areas where there are concentrations of collisions (known as collision clusters) and links with collision rates higher than the national average which may be sensitive to changes in traffic flows. Section 24.4.3.3 provides full details on the methodology for identifying these collision clusters and links where collision rates are higher than the national average.

227. A detailed review has been undertaken of the selected links to identify collision patterns, causation factors and types of road users involved to determine the sensitivity to the changes in traffic induced by the Projects' construction demand. Where the selected link review reveals a pattern of collisions that show a disproportionate involvement of larger/slower moving vehicles or the pattern of collisions could be disproportionately impacted by larger vehicles, further consideration is given to the HGV composition of the Projects' construction traffic demand when assessing the magnitude of impact. In other cases, the total construction traffic demand (LV + HGVs) is the key determinate when assessing the magnitude of impact for a selected link.

228. **Table 24-27** provides a review of the sensitivity of the selected links and the magnitude of impact of the Projects' traffic in the context of the changes in forecast daily traffic flows in 2026. Details of the percentage changes in daily traffic flows have been summarised from **Table 24-17** and **Table 24-18** for the In Isolation and Concurrent Scenarios respectively to facilitate a proportionate assessment of magnitude of impact.

Table 24-27 Magnitude of Road Safety Impact and Sensitivity of Receptors

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
1	A165 Carnaby to Lissett	Link 1 consists of the A165 between Wilsthorpe roundabout and Lissett. It is a rural A-road and is four miles in length. A cluster of collisions (cluster 1) is located at the junction between Link 1 and the Manor Farm access track. The collisions comprised of five rear-end shunt type collisions. An emerging pattern of rear-end shunt type collisions is identified at cluster 1. Noting the relatively low overall numbers of collisions, the link is assessed as of medium sensitivity.	Link 1 is forecast to experience an increase in total traffic of less than 1%. No HGV traffic is forecast to travel via Link 1. It is assessed that a change in total traffic of up to 1% represents a negligible magnitude of impact.	Link 1 is forecast to experience an increase in total traffic of less than 1%. No HGV traffic is forecast to travel via Link 1. It is assessed that a change in total traffic of up to 1% represents a negligible magnitude of impact.
2	A165 Lissett to Beeford	Link 2 consists of the A165 between Lissett and Beeford. It is a rural A-road and is 2.9 miles in length. A cluster of collisions (cluster 2) is located at the junction between Link 2 and Main Street (south of Lissett). The collisions comprised of three rear-end shunt type collisions and two losses of control. There is an emerging pattern of rear-end shunt type collisions within collision cluster 2. Noting the relatively low overall numbers of collisions, the link is assessed as of medium sensitivity.	Link 2 is forecast to experience an increase in total traffic of 1.8%. It is assessed that a change in total traffic of up to 1.8% represents a negligible magnitude of impact.	Link 2 is forecast to experience an increase in total traffic of 1.9%. It is assessed that a change in total traffic of up to 1.9% represents a negligible magnitude of impact.
4	B1242 Lissett to Skipsea	Link 4 consists of the B1242 between Skipsea and the A165 at Lissett. It is a rural local road and is 2.5 miles in length. During the five-year study period, there have been seven collisions recorded on the link, these comprise of two serious and five slight collisions, no fatalities were recorded. One of the collisions involved an HGV. The collisions comprised of four losses of control, one was of unknown origin, one failure to give way and one was a collision between a car and pedestrian. There is no identifiable pattern in the location of the collisions. Four of the collisions occurred during the hours of darkness with no street lighting present on the link. There is an emerging pattern of loss of control collisions and collisions occurring during the hours of darkness of along Link 4. Noting the relatively low overall numbers of collisions, the link is assessed as of medium sensitivity.	Link 4 is forecast to experience an increase in total traffic of 1.2%. It is assessed that a change in total traffic of up to 1.2% represents a negligible magnitude of impact.	Link 4 is forecast to experience an increase in total traffic of 1.3%. It is assessed that a change in total traffic of up to 1.3% represents a negligible magnitude of impact.
5	Beeford Road	Link 5 consists of the B1249 between Beeford and Skipsea, from the A165 eastwards until it meets Link 6 in Skipsea. Link 5 is a rural B-road and runs roughly east-west and is approximately 2.5 miles in length. During the five-year study period, four collisions were recorded on this link, all four were slight collisions, no serious or fatal collisions were reported. The collisions comprised of three loss of control and the other was a failure to look properly. No identifiable pattern in the location of the	Link 5 is forecast to experience an increase in total traffic of up to 13.1%. It is assessed that a change in total traffic of up to 13.1% represents a low magnitude of impact.	Link 5 is forecast to experience an increase in total traffic of up to 13.4%. It is assessed that a change in total traffic of up to 13.4% represents a low magnitude of impact.

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
		collisions was identified along the link. It can be considered that there is no significant emerging pattern of collisions along Link 5. The link is therefore assessed as of low sensitivity.		
6	B1242 (Hornsea Road) Skipsea to End	Link 6 is a continuation of the B1242 (Hornsea Road) through Skipsea village in the west and towards the coast to the east, it then turns south towards Hornsea. Link 6 is a rural B-road and is approximately one mile long. During the five-year study period three collisions were recorded on Link 6, these were all slight collisions, there were no fatal or serious collisions reported. The collisions comprised of one loss of control, one failure to look properly, and one was a rear-end shunt type collision. None of the collisions involved HGVs. There is no identifiable pattern in the location of the collisions. It is considered that there is no emerging pattern of collisions on Link 6. The link is therefore assessed as of low sensitivity.	Link 6 is forecast to experience an increase in total traffic of 6.8%. It is assessed that a change in total traffic of up to 6.8% represents a negligible magnitude of impact.	Link 6 is forecast to experience an increase in total traffic of 7.1%. It is assessed that a change in total traffic of up to 7.1% represents a negligible magnitude of impact.
8	Catfoss Road	Link 8 comprises of Catfoss Road from the A165 (Link 3) eastwards to the end of the TTSA. Link 8 is a rural local road and is 1.8 miles long. During the five-year study period there were five collisions recorded on Link 8, these comprised of four slight collisions and one serious collision, no fatal collisions were reported. The collisions comprised of two losses of control, two had unknown causes, and one was a failure to give way. Three of the five collisions occurred during the hours of darkness. There is no identifiable pattern in the location of the collisions on Link 8. It is considered that there is no significant emerging pattern of collisions on Link 8. The link is therefore assessed as of low sensitivity.	Link 8 is forecast to experience an increase in total traffic of up to 13.7%. It is assessed that a change in total traffic of up to 13.7% represents a low magnitude of impact.	Link 8 is forecast to experience an increase in total traffic of up to 17.4%. It is assessed that a change in total traffic of up to 17.4% represents a low magnitude of impact.
9	A165 Brandesburton to Leven	Link 9 consists of the A165 from Brandesburton north/south to Leven. The link is a rural A-road and 1.3-miles long. During the five-year study period, there were a total of nine collisions recorded on Link 9, these comprise of six slight collisions, two serious collisions and one fatal collision. There is also a cluster of collisions (cluster 9) located at the Leven roundabout junction between Links 9, 10, 12 and the Hornsea Road. To summarise, there were nine collisions on Link 9, with five taking place on/near Leven Roundabout. The collisions comprised of four losses of control, two collisions caused by poor lane discipline at the roundabout, a failure to give way, a failure to look properly and a rear-end shunt collision. It is considered there is no overall emerging pattern in the collisions on Link 9, however an emerging	Links 9, 10 and 12 are forecast to experience an increase in total traffic of 4.5%. It is assessed that a change in total traffic of up to 4.5% represents a negligible magnitude of impact.	Links 9, 10 and 12 are forecast to experience an increase in total traffic of 5.1%. It is assessed that a change in total traffic of up to 5.1% represents a negligible magnitude of impact.

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
		pattern of loss of control collisions is identified at the Leven roundabout. The link is therefore assessed as of high sensitivity.		
10	A1035 Leven to Catwick	Link 10 consists of the A1035 from the Leven Roundabout. Link 10 is a rural A-road and is 1.9 miles long. During the five-year study period seven collisions were recorded on Link 10, two were serious and five were slight collisions; no fatal collisions were recorded. Two clusters of collisions are located on the link, cluster 3 is located at the Leven Roundabout (detailed in Link 9) and cluster 4 is located at the junction of Link 10 and Catwick Lane. The collisions comprised of three rear-end shunt type collisions, two failures to give way, one loss of control and an overtaking incident. It is considered that there is no identifiable pattern of collisions on Link 10, however at cluster 4 (on Link 10) there have been three rear-end shunt type collisions and one loss of control, this could indicate a slight emerging patter of rear-end shunt type collisions at the location. Noting the relatively low overall numbers of collisions at cluster 4, the link is assessed as of medium sensitivity.	Link 10 is forecast to experience an increase in total traffic of 2.7%. It is therefore assessed that a change in total traffic of up to 2.7% represents a negligible magnitude of impact.	Link 10 is forecast to experience an increase in total traffic of 2.9%. It is therefore assessed that a change in total traffic of up to 2.9% represents a negligible magnitude of impact.
12	A1035 (West Road) Leven to A165	Link 12 consists of the A165 between the Leven roundabout and the White Cross roundabout. It is a rural A-road and is four miles in length. There are two clusters of collisions (cluster 3 and 5) located on Link 12, cluster 3 is considered under Link 9. Cluster 5 is located at the White Cross Roundabout junction between Links 12, 13 and 14. The collisions at Cluster 5 (located along Link 12) comprise of: four loss of control collisions, four rear-end shunts and two failures to give way. A high proportion of collisions involved motorcyclists. It is considered that there is an emerging pattern of rear end shunt and loss of control type collisions occurring at collision Cluster 5 on Link 12. The link is therefore assessed as of high sensitivity.	Link 12, 13 and 14 are forecast to experience an increase in total traffic of up to 7.4%. It is assessed that a change in total traffic of up to 7.4% represents a negligible magnitude of impact.	Link 12, 13 and 14 are forecast to experience an increase in total traffic of up to 8.7%. It is assessed that a change in total traffic of up to 8.7% represents a negligible magnitude of impact.
14	A165 through Skirlaugh	Link 14 consists of the A165 from the north of Skirlaugh to the south of Skirlaugh. Link 14 is a rural A-road and is 0.6 miles long. During the five-year study period there have been two collisions reported along Link 14, one collision was reported as serious and one as a slight collision, no fatal collisions were recorded on this link. The two collisions comprised of: a loss of control by a motorcyclist and a serious rear end shunt collision on approach to a mini roundabout. It is considered that there is no emerging patterns of collisions on link 14. The link is therefore assessed as of low sensitivity.	Link 14 is forecast to experience an increase in total traffic of 5.6%. It is assessed that a change in total traffic of up to 5.6% represents a negligible magnitude of impact.	Link 14 is forecast to experience an increase in total traffic of 6.8%. It is assessed that a change in total traffic of up to 6.8% represents a negligible magnitude of impact.

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
15	A165 from Skirlaugh to Coniston	Link 15 consists of the A165 from the south of Skirlaugh to the north of Coniston. Link 15 is a rural A-road and is 2.6 miles long. During the five-year study period there have been 11 collisions recorded along Link 15, four were serious collisions and seven were slight collisions, no fatal collisions were recorded on this link. There have been 11 collisions during the study period, these comprised of seven losses of control, two collisions involving cyclists and two rear-end shunt type collisions. It can be considered that there is a pattern of emerging of loss of control collisions on this link. The link is therefore assessed as of high sensitivity.	Link 15 is forecast to experience an increase in total traffic of 5.6%. It is assessed that a change in total traffic of up to 5.6% represents a negligible magnitude of impact.	Link 15 is forecast to experience an increase in total traffic of 6.8%. It is assessed that a change in total traffic of up to 6.8% represents a negligible magnitude of impact.
16	A165 from Coniston to Holderness Road	Link 16 consists of the A165 between Coniston and A165/Main Road/Shannon Road roundabout. Link 16 is a rural A-road and is two miles long. During the five-year study period there were a total of 11 collisions recorded on Link 16. These 20 collisions comprised of one fatal collision, six serious collisions and 13 slight collisions. Link 16 also contains collision cluster 6, which is located at the roundabout junction with Link 17. The collisions comprised of: eight failures to give way, three rear-end shunt type collisions, three losses of control, one failure to look properly and one collision with a pedestrian. It can be considered that there is a pattern of emerging of failure to give-way type collisions on this link. These collisions are located at side roads (with the A165) and cluster 6. The link is therefore assessed as of high sensitivity.	Link 16 and 17 are forecast to experience an increase in total traffic of up to 5.6%. It is assessed that a change in total traffic of up to 5.6% represents a negligible magnitude of impact.	Link 16 and 17 are forecast to experience an increase in total traffic of up to 6.8%. It is assessed that a change in total traffic of up to 6.8% represents a negligible magnitude of impact.
17	A165/Holderness Road	Link 17 consists of the A165 between the A165/B1237/Diadem Grove roundabout and the A165/Main Road/Shannon Road roundabout. Link 17 is an urban A-road and is 1.4 miles long. During the five-year study period there were a total of 55 collisions reported, these comprised 40 slight collisions, 14 serious collisions and one fatal collision. The collisions comprised of: 16 failures to give way leading to collisions between vehicles at junctions, 15 collisions between cars and cyclists not at crossings, eight rear-end shunt type collisions, four collisions between a car and a cyclist crossing at designated crossings, three losses of control, a person became destabilised due to a bus starting suddenly, a collision between a car and an HGV failing to give way when changing lanes, a collision caused by a car reversing onto the carriageway, and a collision between two cars with no cause reported. It is considered that	The types of existing collisions on Link 17 involving cyclists could be disproportionately impacted by vehicle composition, therefore consideration is given to the change in HGV traffic as well as the change in total traffic.	
			Link 17 is forecast to experience an increase in total traffic of 1.8% and HGV traffic of up to 66.4%. It is assessed that a change in total traffic of up to 1.8% and HGV traffic of 66.4% represents a medium magnitude of impact.	Link 16 is forecast to experience an increase in total traffic of 2.2% and HGV traffic of up to 80.9%. It is assessed that a change in total traffic of up to 2.2% and HGV traffic of 80.9% represents a medium magnitude of impact.

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
		there is a slight emerging pattern of vehicles colliding with cyclists on Link 17. The link is therefore assessed as of medium sensitivity.		
18	A165/Holderness Road	Link 18 comprises of A165/Holderness Road between the Mount Pleasant/Holderness Road junction to the A165/B1237/Diadem Grove roundabout. Link 18 is an urban A-road and is 1.4 miles long. During the five-year study period there were 147 collisions recorded on Link 18. These consisted of one fatal, 28 serious and 118 slight collisions. The collisions reported on Link 18 comprise: • 49 collisions between vehicles and pedestrians / cyclists in locations which were not designated crossings; • 42 failures to give way leading to collisions between vehicles at junctions; • 28 rear-end shunts; • nine collisions where bus passengers fell (when on the bus) due to the bus stopping abruptly; • seven collisions between vehicles and pedestrians / cyclists at crossings; • three collisions caused by vehicles reversing onto/on the carriageway; • three collisions which occurred during overtakes; • two losses of control collisions; • two collisions caused by car doors being opened into the path of cyclists; • one collision involving a cyclist colliding with the rear of a parked car; and • one collision involving a cyclist losing control and falling off the bicycle. It can be considered that there is a pattern of collisions along this link involving collisions between cars and cyclists where cars have failed to give way to cyclists when entering the main road from side roads. The link is therefore assessed to be of high sensitivity.	No traffic is forecast to travel via Link 18 and therefore no impact is forecast.	

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
19	Mount Pleasant/A1033	Link 19 consists of the A1033 between the Mount Pleasant North roundabout and the Holderness Road junction. Link 19 is an urban A-road and is 0.3 miles long. During the five-year study period a total of 33 collisions were recorded on Link 19 (including two collision clusters), of which, ten were serious and 23 were slight collisions; no fatal collisions were recorded. There is also two clusters of collisions, cluster 9 located at the junction between Links 18, 19 and 74 and cluster 10, which is located at the Mount Pleasant North Roundabout junction. The collisions comprised of: 14 rear-end shunt type collisions, 14 failures to give way, seven collisions involving cars colliding with crossing cyclists and pedestrians, two collisions caused by poor lane discipline, one collision between a cyclist and an HGV on the carriageway, one loss of control and two collisions with reasons not given in the data. There is no significant emerging pattern in the location and type of collisions on this link. It can be considered that there is a pattern of emerging of failure to give-way and rear end shunt collisions on this link. The link is therefore assessed as of high sensitivity.	Link 19 is forecast to experience an increase in total traffic of 2.5%. It is assessed that a change in total traffic of up to 2.5% represents a negligible magnitude of impact.	Link 19 is forecast to experience an increase in total traffic of 3.4%. It is assessed that a change in total traffic of up to 3.4% represents a negligible magnitude of impact.
20	A1033 Slip Road	Link 20 consists of the A1033/Hedon Road which acts as a slip road for the A63. It is an urban A-road and is 0.6 miles long. During the five-year study period there have been a total of 27 collisions recorded on Link 20, ten were serious and 17 were slight collisions, no fatal collisions were reported. There are also two clusters of collisions (clusters 10 and 11), cluster 10 is located at the junction with Link 20 (detailed in Link 19) and cluster 11 located at the Southcoates Roundabout junction between Links 20, 21 and 23. The collisions comprised of: eight rear-end shunt type collisions, six failures to give way, five losses of control, three failures to give way when changing lanes, one head-on collision, two collisions between a car and cyclist, one driver driving the wrong way down the road, leading to a collision and one collision with no cause given in the data. It can be considered that there is a pattern of rear-end shunts, failure to give way and loss of control collisions on this link. The link is therefore assessed as of high sensitivity.	Link 20 is forecast to experience an increase in total traffic of 4.1%. It is assessed that a change in total traffic of up to 4.1% represents a negligible magnitude of impact.	Link 20 is forecast to experience an increase in total traffic of 5.6%. It is assessed that a change in total traffic of up to 5.6% represents a negligible magnitude of impact.
24	A63	Link 24 consists of the A63 between the middle of the Mount Pleasant roundabouts and the Mytongate roundabout. Link 24 is an urban A-road	The types of existing collisions on Link 24 involving pedestrians and cyclists could be disproportionately impacted by vehicle composition, therefore consideration is given to the change in HGV traffic as well as the change in total traffic.	

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
		and is 1.5 miles in length. Link 24 also contains collision clusters 12, 13 and 14. Cluster 12 consists of the roundabout junction between Link 24 and A1165, cluster 13 comprises the priority junction between Link 24 and Market Place and cluster 14 comprises the priority junction between Link 24 and Dagger Lane and cluster 15 at the priority junction between Link 24 and Mytongate. During the five-year study period there have been 63 collisions recorded, these comprise of: 14 serious collisions, 48 slight collisions; no fatalities were recorded. The collisions comprised of: 15 rear-end shunt type collisions, ten failures to give way, ten collisions between motorised vehicles and cyclists / pedestrians away from designated crossings, eight collisions between motorised vehicles and cyclists / pedestrians at designated crossings, seven loss of control collisions, six collisions caused by drivers failing to adhere to traffic signals, three collisions which occurred for unknown reasons, two collisions which occurred during overtaking manoeuvres and two collisions between vehicles due to poor lane discipline. It is considered that there is a pattern of collisions between vehicles and pedestrians / cyclists, rear end shunts, failures to obey traffic signals loss of control collisions on this link. The link is therefore assessed as of high sensitivity. National Highways are currently constructing improvements known as 'A 63 Castle Street improvements' due to be completed by 2025 (Prior to the commencement of the Projects) (National Highways, 2017). One of the stated aims of the A63 Castle Street improvements is to improve safety. Prior to the commencement of the Projects the link sensitivity would therefore be expected to be reduced to low.	Link 24 is forecast to experience an increase in total traffic of 1.1% and HGV traffic of up to 9.4%. It is assessed that a change in in HGV traffic of up to 9.4% represents a low magnitude of impact.	Link 24 is forecast to experience an increase in total traffic of 1.4% and HGV traffic of up to 12.9%. It is assessed that a change in in HGV traffic of up to 12.9% represents a low magnitude of impact.
26	A63	Link 26 consists of the A63 between the St Andrew's Quay roundabout and the A15 junction. Link 26 is a A-road and is 6.7 miles long. Link 26 also contains collision cluster 16. During the five-year study period there have been a total of four collisions at cluster 16. Collision cluster 16 is located, 2km east of the junction with the A15. There have been one fatal, one serious and two slight collisions. The collisions comprised of: three rear-end shunt type collisions and a loss of control collision. It is considered that there is an emerging pattern of rear-end shunt type collisions at collision cluster 16. Noting the relatively low overall numbers of collisions, the link is therefore assessed as of medium sensitivity.	No traffic is forecast to travel via Link 18 and therefore no impacts are forecast.	

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
28	A15/Boothferry Road	Link 28 consists of the A15/Boothferry road from the exit / entry slips of the A63 to the Wingfield Farm Roundabout. Link 28 is a A-road and is approximately 0.9 miles long. During the five-year study period there were nine collisions recorded on this link, four serious and four slight collisions; no fatal collisions were recorded. There is also a cluster of collisions (cluster 18, detailed in Link 29) located at the roundabout junction between Links 28, 29 and 30. The collisions comprised of: five rear-end shunt type collisions, four losses of control (including driving on the wrong side of the road), two incorrect uses of lanes on a roundabout and one failure to give way. It is considered that there is an emerging pattern of rear end shunt and loss of control collisions on the A15/Ferriby Road roundabout. The link is therefore assessed to be of high sensitivity.	Link 28 is forecast to experience an increase in total traffic of 2.5%. It is assessed that a change in total traffic of up to 2.5% represents a negligible magnitude of impact.	Link 28 is forecast to experience an increase in total traffic of 3.1%. It is assessed that a change in total traffic of up to 3.1% represents a negligible magnitude of impact.
29	Humber Bridge	Link 29 consists of the A15/Humber Bridge from midway across the bridge north until the Wingfield roundabout. The link includes the toll booths for the Humber Bridge crossing. During the five-year study period there were 44 collisions (including clusters 17 and 18) recorded on Link 29, 19 were slight and two were serious collisions, no fatal collisions were reported. There are also two clusters of collisions located on link 29, cluster 17 is located at the toll booths and cluster 18 is located at the roundabout junction between Links 28, 29 and 30. The collisions comprised of 17 rear-end shunt type collisions, two failures to look properly, one failure to give way and one collision with a failed toll barrier. It is considered that there is an emerging pattern of rear-end shunt type collisions on this link. The link is therefore assessed to be of high sensitivity.	Link 29 is forecast to experience an increase in total traffic of up to 0.9%. (no HGV traffic is proposed to utilise Link 29). It is assessed that a change in traffic of up to 0.9% represents a negligible magnitude of impact.	Link 29 is forecast to experience an increase in total traffic of up to 1%. (no HGV traffic is proposed to utilise Link 29). It is assessed that a change in traffic of up to 1% represents a negligible magnitude of impact.
30	A164	Link 30 consists of the A164 northwards from the Wingfield Farm roundabout until the roundabout which connects to the B1231. Link 30 is a rural A-road and is one mile long. In the five-year study period there were a total of nine collisions recorded on this link, all nine have been slight collisions; no fatal or serious collisions were reported. Link 30 also contains collision cluster 17, reported under Link 29. The collisions comprised of six rear-end shunt type collisions, two losses of control and one failure to give way. It is considered that there is an emerging pattern of rear-end shunt type collisions on this link. The link is therefore assessed to be of high sensitivity.	Link 30 is forecast to experience an increase in total traffic of 5.8%. It is assessed that a change in total traffic of up to 5.8% represents a negligible magnitude of impact.	Link 30 is forecast to experience an increase in total traffic of 6.9%. It is assessed that a change in total traffic of up to 6.9% represents a negligible magnitude of impact.

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
32	A164	Link 32 consists of the A164 between the A164/B1232/Albion Lane roundabout and the A164/Castle Road roundabout. Link 32 is a rural A-road and is 0.9 miles long. During the five-year study period there have been a total of 15 collisions reported, three have been serious collisions and 13 have been slight collisions; no fatal collisions were reported. Link 32 also contains collision clusters 19 and 20. There are also two clusters of collisions on Link 32, cluster 19 is located at the Willerby Hill Roundabout junction and cluster 20 is located on the roundabout junction between Link 32 and Castle Road. The collisions comprised of six losses of control, four rear-end shunt type collisions, two failures to give way, one collision caused by poor lane discipline, one collision with a cyclist and one collision with no cause given in the data. It is considered that there is a pattern of rear end shunts and loss of control collisions on this link. The link is therefore assessed as of high sensitivity.	Link 32 is forecast to experience an increase in total traffic of 6.9%. It is assessed that a change in total traffic of up to 6.9% represents a negligible magnitude of impact.	Link 32 is forecast to experience an increase in total traffic of 8.1%. It is assessed that a change in total traffic of up to 8.1% represents a negligible magnitude of impact.
35	A164 (Beverley Road)	Link 35 consists of the A164 (Beverley Road) between Dunflat Road and midway over the A1079 bridge (where Link 35 becomes Link 38). Link 35 is a rural A-road and is one mile long. In the five-year study period, there were 19 collisions reported on Link 35, seven were serious collisions and 12 were slight collisions; no fatal collisions were recorded. There is also a cluster of collisions (cluster 21) located at the priority junction between the A1079 and the A164 (northbound carriageway). The collisions comprised of 14 rear-end shunt type collisions and five losses of control. It can be considered that there is an emerging pattern of rear-end shunt type collisions all along Link 35. The link is therefore assessed as of high sensitivity.	Link 35 is forecast to experience an increase in total traffic of 4.5%. It is assessed that a change in total traffic of up to 4.5% represents a negligible magnitude of impact.	Link 35 is forecast to experience an increase in total traffic of 5.3%. It is assessed that a change in total traffic of up to 5.3% represents a negligible magnitude of impact.
36	Dunflat Road off A164	Link 36 consists of 0.5 miles of Dunflat Road from the A164 until Coppleflat Lane. There has been one collision on Link 36 within the five-year study period. The collision that took place on Link 36 was a slight collision and was a loss of control by a car driver who collided with the verge. The link is therefore assessed as of negligible sensitivity.	Link 36 is forecast to experience an increase in total traffic of 2.7%. It is assessed that a change in total traffic of up to 2.7% represents a negligible magnitude of impact.	Link 36 is forecast to experience an increase in total traffic of 2.9%. It is assessed that a change in total traffic of up to 2.9% represents a negligible magnitude of impact.

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
37	Coppleflat Lane	Link 37 consists of Coppleflat Lane from Link 36 (Dunflat Road) until the junction with Links 68 (Coppleflat Lane), 69 (B1230) and 71 (Broadgate/B1230). Link 37 is a rural unclassified road and is 1.4 miles long. In the five-year study period, there have been four collisions reported on Link 37, one was a serious collision and three were slight collisions, there were no fatal collisions reported. The collisions comprised of: two collisions due to vehicles crossing the centreline on curves, one loss of control and one rear end shunt. There is no identifiable pattern in the location of the collisions along Link 37. The link is therefore assessed as of low sensitivity.	Link 37 is forecast to experience an increase in total traffic of 2.0%. It is assessed that a change in total traffic of up to 2.0% represents a negligible magnitude of impact.	Link 37 is forecast to experience an increase in total traffic of 2.2%. It is assessed that a change in total traffic of up to 2.2% represents a negligible magnitude of impact.
38	A164	Link 38 consists of the A164 between the centre of the A1079 junction bridge (north from Link 35) until the A164/Victoria Road/Wingfield Way roundabout. Link 38 is a A-road and is 0.4 miles long. During the five-year study period there have been a total of ten collisions recorded on Link 38, one serious collision and nine slight collisions; no fatal collisions were reported. There is also a cluster of collisions on Link 38 (cluster 22), which is located at the roundabout junction between the A164 and Link 51. The collisions comprised of: seven rear-end shunt type collisions, two losses of control and one collision involving a cyclist. It can be considered that there is a pattern of rear end shunts on this link. The link is therefore assessed as of high sensitivity. East Riding of Yorkshire Council are planning to commence construction of the A164 and Jocks Lodge improvement scheme (East Riding of Yorkshire Council, 2023) in early 2024 due to be completed prior to the commencement of the Projects in 2026. One of the main aims of the A164 and Jocks Lodge improvement scheme is to improve capacity and safety. Prior to the commencement of the Projects the link sensitivity would therefore be expected to be reduced to low.	Link 38 is forecast to experience an increase in total traffic of 5%. It is assessed that a change in total traffic of up to 5% represents a negligible magnitude of impact.	Link 38 is forecast to experience an increase in total traffic of 5.8%. It is assessed that a change in total traffic of up to 5.8% represents a negligible magnitude of impact.

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
40	A1033/Thomas Clarkson Way	Link 40 comprises the A1033 from the Ennerdale roundabout to the Roebank roundabout. Link 40 is an urban A-road and is 0.9 miles long. There is also two clusters of collisions on Link 40, cluster 23 which is located at the roundabout junction between Links 40 and 75 and collision cluster 24 which is located at the roundabout junction between Links 40 and 45. During the five-year study period there have been 19 collisions recorded, two have been serious collisions and 17 have been slight collisions; no fatalities were recorded within the collision clusters. The collisions comprise of: seven failures to give way, six rear-end shunt type collisions, four collisions between cars and cyclists and two collisions caused by poor lane discipline. It is considered that there is an emerging pattern of failing to give way and of rear-end shunt type collisions within the clusters on Link 40. The link is therefore assessed as of high sensitivity.	Link 40 is forecast to experience an increase in total traffic of 2.7%. It is assessed that a change in total traffic of up to 2.7% represents a negligible magnitude of impact.	Link 40 is forecast to experience an increase in total traffic of 3.6%. It is assessed that a change in total traffic of up to 3.6% represents a negligible magnitude of impact.
45	A1033	Link 45 comprises the A1033 from the Roebank roundabout to the Dunswell Roundabout. Link 45 is an urban A-road and is 0.7 miles long. During the five-year study period there were a total of 45 collisions recorded, three serious and 42 slight collisions. No fatal collisions were reported. There are also two clusters of collisions on Link 45, cluster 24 (reported under Link 40), located at the roundabout junction with Link 40 and cluster 25, which is located at the roundabout junction with Links 46 and 63. The collisions comprised of: 23 rear-end shunt type collisions, seven collisions with pedestrians / cyclists not at a designated crossing, five collisions with users of a pedestrian crossing, four collisions caused by poor lane discipline, three failures to give way and three losses of control. It can be considered that there is an emerging pattern of rear-end shunts at clusters on Link 45. The link is therefore assessed as of high sensitivity.	Links 45, 46 and 63 are forecast to experience an increase in total traffic of 4.9%. It is assessed that a change in total traffic of up to 4.9% represents a negligible magnitude of impact.	Links 45, 46 and 63 are forecast to experience an increase in total traffic of 5.5%. It is assessed that a change in total traffic of up to 5.5% represents a negligible magnitude of impact.
46	A1174	Link 46 comprises of the A1174 between the Dunswell roundabout north to the crossroads between the A1174 (north to south), Ferry Lane and Long Lane. Link 46 is a rural A-road and is 1.8 miles long. There is also a cluster of collisions on Link 46 (cluster 25, detailed in Link 45), which is located at the roundabout junction between Links 45, 46 and 63. During the five-year study period there have been a total of 11 collisions reported on the link, (excluding collision cluster 25). Two serious and 15 slight collisions were recorded; no fatal collisions were reported. The collisions comprised of: three losses of control, two rear-end shunt type collisions, two failures to give way, two collisions between cars and cyclists, one collision between right turning cars and, one involving a	Link 46 is forecast to experience an increase in total traffic of 0.8% (no HGV traffic is anticipated on Link 46). It is assessed that a change in total traffic of up to 0.8% represents a negligible magnitude of impact.	Link 46 is forecast to experience an increase in total traffic of 0.9% (no HGV traffic is anticipated on Link 46). It is assessed that a change in total traffic of up to 0.9% represents a negligible magnitude of impact.

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
		pedestrian and a cyclist colliding. It is considered that there is no identifiable pattern of collisions at this location. The link is therefore assessed as of low sensitivity.		
49	A1174	Link 49 consists of the A1174 from the northern end of Link 46 (crossroads with Ferry Lane and Long Lane) to the A1174/A164/Eastfields Road roundabout. Link 49 is a rural A-road and is 1.4 miles long. During the five-year study period there have been a total of 12 collisions recorded on Link 49, two were serious collisions and ten were slight collisions; there were no fatal collisions recorded. The collisions comprised of: four rear-end shunt type collisions, three failures to give way, two losses of control, two collisions involving cyclists, one collision involving a pedestrian on the footway and one head-on collision. It can be considered that there is an emerging pattern of rear-end shunts on this link. The link is therefore assessed as of high sensitivity.	Link 49 is forecast to experience an increase in total traffic of 0.8% (no HGV traffic is anticipated on Link 46). It is assessed that a change in total traffic of up to 0.8% represents a negligible magnitude of impact.	Link 49 is forecast to experience an increase in total traffic of 0.9% (no HGV traffic is anticipated on Link 46). It is assessed that a change in total traffic of up to 0.9% represents a negligible magnitude of impact.
51	A164/Woodmansey	Link 51 consists of the A164 between the A164/Victoria Road/Wingfield Way roundabout and A164/Ward Way roundabout, this link is 0.5 miles long. This link was recently redesigned to incorporate two new roundabouts, the A164/Ward Way roundabout and the A164/Lincoln Way roundabout. During the five-year study period there were a total of four collisions recorded on Link 51, one collision was serious and the remaining three slight. No fatal collisions were recorded. Link 51 also contains collision cluster 22 (reported within Link 38) which is located at the roundabout junction between Link 51 and Link 38. The collisions comprised of: two rear-end shunt type collisions and two losses of control (one of which involved pedestrians being collided with). It is considered that there is no identifiable pattern in the location of the collisions on Link 51. The link is therefore assessed as of low sensitivity.	Link 38 and 51 are forecast to experience an increase in total traffic of up to 11.1%. It is assessed that a change in total traffic of up to 11.1% represents a low magnitude of impact.	Link 38 and 51 are forecast to experience an increase in total traffic of up to 12.8%. It is assessed that a change in total traffic of up to 12.8% represents a low magnitude of impact.
55	A1035 (Hornsea Road)	Link 55 comprises the A1035 (Hornsea Road) between the priority junction with Meaux Lane and the priority junction with Eske Lane. Link 55 is a rural A-road and is 1.3 miles long. During the five-year study period there have been nine collisions recorded on Link 55, two of these were fatal, one was serious and six were slight collisions. The collisions comprised: four rear-end shunt type collisions, four failures to give way and a loss of control by a cyclist. It is considered that there is a pattern of rear-end shunt type collisions and failures to give way on this link. The link is therefore assessed as of high sensitivity.	Link 55 is forecast to experience an increase in total traffic of 7.2%. It is assessed that a change in total traffic of up to 7.2% represents a negligible magnitude of impact.	Link 55 is forecast to experience an increase in total traffic of 8.2%. It is assessed that a change in total traffic of up to 8.2% represents a negligible magnitude of impact.

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
57	A1035/A164	Link 57 comprises the A1035 between the Swinemoor Roundabout and the Driffield Road Roundabout. Link 57 is a rural A-road and is 1.8 miles long. During the five-year study period there have been 10 collisions recorded on Link 57, three were serious collisions and seven were slight collisions. There were no fatal collisions recorded. The collisions comprised of: three failures to give way by car drivers emerging from side roads onto Link 57, two rear-end shunt type collisions, a failure to give way between two cars changing lanes, a serious collision involving a cyclist falling from their bicycle, a loss of control collision by a car driver when performing an overtaking manoeuvre, a failure to give way when exiting a side road leading to a rear end shunt type collision between two cars and a collision between two cars with no other information given. It is considered that there is a slight emerging pattern of collisions caused by drivers failing to give way when exiting side roads. The link is therefore assessed as of medium sensitivity.	Link 57 is forecast to experience an increase in total traffic of 2.1%. It is assessed that a change in total traffic of up to 2.1% represents a negligible magnitude of impact.	Link 57 is forecast to experience an increase in total traffic of 2.3%. It is assessed that a change in total traffic of up to 2.3% represents a negligible magnitude of impact.
59	A164 (Driffield Road)	Link 59 comprises the A164 (Driffield Road) from Driffield Road roundabout north to the edge of the TTSA. Link 59 is a rural A-road and is 0.4 miles long. There is also a collision cluster on Link 59 (cluster 26) located at the roundabout junction between Links 58 and 69. During the five-year study period there have been nine collisions reported on Link 59 (including collision cluster 26), six serious and three slight; no fatalities have been reported. The collisions comprised of: three rear-end shunt type collisions, three losses of control, two collisions whilst vehicles performed overtaking manoeuvres, and a failure to give way. It is considered that there is no significant emerging pattern on this link. The link is therefore assessed as of low sensitivity.	Link 59 is forecast to experience an increase in total traffic of 0.3%. It is assessed that a change in total traffic of up to 0.3% represents a negligible magnitude of impact.	Link 59 is forecast to experience an increase in total traffic of up to 0.5%. It is assessed that a change in total traffic of up to 0.5% represents a negligible magnitude of impact.
60	A1035 (Constitution Hill)	Link 60 comprises the A1035 (Constitution Hill) between the Driffield Road roundabout and the Dog Kennel Lane roundabout. Link 60 is a rural A-road and is one mile long. During the study period there were a total of six collisions reported on Link 60, one was a serious collision and five were slight collisions, no fatal collisions were reported. The collisions comprised of: two collisions with cyclists, two collisions with oncoming traffic, one loss of control, and one rear-end shunt type collision. It can be considered that there is no pattern in the location or type of collisions on Link 60. The link is therefore assessed as of low sensitivity.	Link 60 is forecast to experience an increase in total traffic of 4.7%. It is assessed that a change in total traffic of up to 4.7% represents a negligible magnitude of impact.	Link 60 is forecast to experience an increase in total traffic of 5.1%. It is assessed that a change in total traffic of up to 5.1% represents a negligible magnitude of impact.

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
61	A1035/Dog Kennel Lane	Link 61 consists of the A1035/Dog Kennel Lane between the Dog Kennel Lane roundabout and Killingwoldgraves roundabout. Link 61 is a rural A-road and is 1.1 miles long. There are two clusters of collisions on Link 61, cluster 27 is located on Link 61 600m south of the Dog Kennel Lane Roundabout and cluster 28 is located at the roundabout junction between Links 61, 62, 63, 64 and 65. During the five-year study period there have been 20 collisions recorded on Link 61 (inclusive of both clusters), five have been serious and 15 have been slight collisions; there have been no fatal collisions recorded. The collisions comprised of: 11 losses of control, five rear-end shunt type collisions, three failures to give way and a collision caused by poor lane discipline. It can be considered that there is an emerging pattern of loss of control and rear end shunt type collisions on Link 61. The link is therefore assessed as of high sensitivity.	Link 61, 62, 63, 64 and 65 are forecast to experience an increase in total traffic of up to 2.9% It is assessed that a change in total traffic of up to 2.9% represents a negligible magnitude of impact.	Link 61, 62, 63, 64 and 65 are forecast to experience an increase in total traffic of up to 3.1% It is assessed that a change in total traffic of up to 3.1% represents a negligible magnitude of impact.
62	A1174 (York Road)	Link 62 is the A1174 (York Road) between the Killingwoldgraves roundabout eastwards to the edge of the TTSA on the outskirts of Beverley. Link 62 is a rural A-road and is 1.3 miles long. Link 62 also contains collision cluster 28 (outlined in Link 61). During the five-year study period, there were a total of four collisions on Link 62 (excluding collision cluster 28), all four were slight collisions, no serious or fatal collisions were recorded. The collisions comprised of: two losses of control, one collision between a car and a pedestrian and one collision between a car and an animal. It is considered that there is no significant emerging pattern of collisions along Link 62. The link is therefore assessed as of low sensitivity.	Link 62 is forecast to experience an increase in total traffic of 2.0%. It is assessed that a change in total traffic of up to 2.0% represents a negligible magnitude of impact.	Link 62 is forecast to experience an increase in total traffic of 2.7%. It is assessed that a change in total traffic of up to 2.7% represents a negligible magnitude of impact.
65	A1079/Bishop Burton	Link 65 comprises the A1079 westwards from the Killingwoldgraves roundabout until the western edge of the TTSA in Bishop Burton. Link 65 is a rural A-road and is 0.7 miles long. Link 65 also contains collision cluster 28 (outlined in Link 61). During the five-year study period, there were a total of two collisions reported on Link 65 (excluding those occurring at collision cluster 28). All collisions were slight; no serious or fatal collisions were reported. During the study period there were two collisions on Link 65, comprising two failures to give way. It is considered there is no significant pattern of the type and location of collisions. The link is therefore assessed as of low sensitivity.	Link 65 which is forecast to experience an increase in total and HGV traffic of 0.6% It is assessed that a change in total and HGV traffic of up to 0.6% represents a negligible magnitude of impact.	Link 65 which is forecast to experience an increase in total and HGV traffic of 1.3%. It is assessed that a change in total and HGV traffic of up to 1.3% represents a negligible magnitude of impact.
74	Mount Pleas-ant/A1033 and	Link 74 comprises the A1033 Mount Pleasant and the A1165/Stoneferry Road between the A164/A1033 junction (Link 18	The types of existing collisions on Link 74 involving cyclists could be disproportionately impacted by vehicle composition. However, the Stoneferry	

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
	Stoneferry Road/A1165	and Link 19) and the Holwell Road/Sutton Road roundabout. It is an urban A-road and is 2.1 miles long. There are also five collision clusters present on Link 74, these are: collision cluster 10 (detailed in Link 19), collision cluster 24 (detailed in Link 40), collision cluster 29 located at the roundabout junction between Link 74 and Ferry Lane, collision cluster 30 located at the roundabout junction between Link 74, West Carr Lane and the B1237, and collision cluster 31 located at the roundabout junction between Links 74 and 75. During the five-year study period there have been 44 collisions recorded within the clusters detailed on this link nine have been serious and 35 have been slight collisions; there have been no fatal collisions recorded. To summarise, there have been 44 collisions reported during the five-year study period. These collisions comprised: • 11 rear-end shunt type collisions; • eight failures to give way which led to collisions with cyclists, eight losses of control; • five collisions caused by poor lane discipline on roundabouts; • four collisions with crossing pedestrians / cyclists; • three collisions with causes not given in the data; • two collisions between vehicles and cyclists on a roundabout; • one collision caused by a driver driving the wrong way around a roundabout; • one collision during an overtake; and • one failure to give way. It is considered there is an emerging pattern of collision with cyclists and rear-end shunt type collisions on Link 74. The link is therefore assessed as of high sensitivity. Hull City Council have recently completed improvements along Link 74 known as 'Stoneferry Road Corridor improvements. One of the main aims of the Stoneferry Road Corridor improvements is to improve safety (Hull City Council, 2019). Prior to the commencement of the Projects the link sensitivity would therefore be expected to be reduced to low.	Road Corridor improvements are proposed to address these existing road safety issues.	
			Link 74 is forecast to experience an increase in total traffic of 2.0%. It is assessed that a change in total traffic of up to 2.0% represents a negligible magnitude of impact.	Link 74 is forecast to experience an increase in total traffic of 2.7%. It is assessed that a change in total traffic of up to 2.7% represents a negligible magnitude of impact.
75	Sutton Road/A1033	Link 75 comprises the A1033 Sutton Road between the Holwell Road/Sutton Road roundabout and the Sutton Road/Ennerdale (A1033) roundabout. Link 75 is an urban A-road and is 0.5 miles long. There are also two collision clusters on Link 75, cluster 23 (which is detailed in Link 40) and cluster 31 (which is detailed in Link 74). During the five-year study period there have been a total of 12 collisions reported on Link 75	The types of existing collisions on Link 75 involving cyclists and pedestrians could be disproportionately impacted by vehicle composition. However, the Stoneferry Road Corridor improvements are proposed to address these existing road safety issues.	
			Link 75 is forecast to experience an increase in total traffic of 2.7%.	Link 75 is forecast to experience an increase in total traffic of 3.6%.

Link ID.	Link name	Description and sensitivity	Magnitude of Impact – In Isolation	Magnitude of Impact – Concurrently
		(omitting those in collision clusters 23 and 31); two were fatal and 13 were slight collisions. The collisions comprised of: six collisions with pedestrians / cyclists, five rear-end shunt type collisions, two collisions which occurred for unknown reasons, two failures to give way and one failure to look. It can be considered that there is an emerging pattern of collisions with cyclists / pedestrians on this link. The link is therefore assessed as of high sensitivity. Hull City Council have recently completed improvements along Link 75 known as 'Stoneferry Road Corridor improvements. One of the main aims of the Stoneferry Road Corridor improvements is to improve safety (Hull City Council, 2019). Prior to the commencement of the Projects the link sensitivity would therefore be expected to be reduced to low.	It is assessed that a change in total traffic of up to 2.7% represents a negligible magnitude of impact.	It is assessed that a change in total traffic of up to 3.6% represents a negligible magnitude of impact.
76	Marfleet Lane and Maybury Road	Link 76 comprises Maybury Road and Marfleet Avenue, between the A1033 and A165. Link 76 is an urban B-road and is approximately 1.7 miles long and has a collision rate above the national average. During the study period, there has been a total of 53 collisions recorded along Link 76 these comprise 43 slight collisions and ten serious collisions; there were no fatal collisions recorded. There was also four clusters of collisions recorded (Clusters 32, 33, 34 and 35). Cluster 32 is located at the roundabout junction with Links 21 and 22, Cluster 33 is located at the junction with Preston Road, Cluster 34 is located at the junction with Staveley Road and Cluster 35 is located at the junction with Hopewell Road The collisions comprise: 18 collisions between pedestrians/cyclists and cars away from designated crossings (including crossings at the give-way lines), nine rear-end shunt type collisions, eight collisions between pedestrians/cyclists and cars at designated crossings, eight failures to give way leadings to collisions between cars, three loss of control collisions, three collisions caused by car drivers failing to adhere to traffic signals and colliding with other cars, two collisions involving cars colliding with mobility scooters, one head-on collision involving a car driving on the wrong side of the road during a police incident, and one collision between a car and a bicycle with no causation given. It can be considered that there is an emerging pattern of collisions between cars and pedestrians/cyclists on Link 76. The link is therefore assessed as of high sensitivity.	The types of existing collisions on Link 76 involving pedestrians and cyclists could be disproportionately impacted by vehicle composition, therefore consideration is given to the change in HGV traffic as well as the change in total traffic.	
			Link 75 is forecast to experience an increase in total traffic of 4.1% and HGV traffic of up to 98.5%. It is assessed that a change in total traffic of up to 4.1% and HGV traffic of up to 98.5% represents an overall medium magnitude of impact.	Link 75 is forecast to experience an increase in total traffic of 5.0% and HGV traffic of up to 120%. It is assessed that a change in total traffic of up to 5.0% and HGV traffic of up to 120% represents an overall medium magnitude of impact.

24.6.1.4.2 Significance of Effect – DBS East or West In Isolation

229. **Table 24-28** provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of road safety effect.

Table 24-28 Significance of Road Safety Effect – DBS East or West In Isolation

Links	Link Sensitivity	Magnitude of Road Safety Impact	Significance of Effect
36.	Negligible	Negligible	**Negligible**
6, 14, 37, 38, 46, 51, 59, 60, 62, 65, 74, 75.	Low	Negligible	**Negligible**
5, 8, 24.		Low	**Minor** adverse
1, 2, 4, 10, 26, 57.	Medium	Negligible	**Minor** adverse
17.		Medium	**Moderate** adverse
9, 12, 15, 16, 18, 19, 20, 28, 29, 30, 32, 35, 40, 45, 49, 55, 61.	High	Negligible	**Minor** adverse
76		Medium	**Major** adverse

24.6.1.4.3 Significance of Effect – DBS East and West Concurrently

230. **Table 24-29** provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of road safety effect.

Table 24-29 Significance of Road Safety Effect – DBS East and West Concurrently

Links	Link Sensitivity	Magnitude of Road Safety Impact	Significance of Effect
36.	Negligible	Low	Negligible
6, 14, 37, 38, 46, 51, 59, 60, 62, 65, 74, 75.	Low	Negligible	**Negligible**

Links	Link Sensitivity	Magnitude of Road Safety Impact	Significance of Effect
5, 8, 24.		Low	**Minor** adverse
1, 2, 4, 10, 26, 57.	Medium	Negligible	**Minor** adverse
17		Medium	**Moderate** adverse
9, 12, 15, 16, 18, 19, 20, 28, 29, 30, 32, 35, 40, 45, 49, 55, 61	High	Negligible	**Minor** adverse
76		Medium	**Major** adverse

24.6.1.4.4 Mitigation and Residual Significance of Effect – All Scenarios

231. **Table 24-28** and **Table 24-29** identify potentially significant road safety effects along Link 17 (the A165 Holderness Road) and Link 76 (Marfleet Lane and Maybury Road). These effects primarily relate to the potential for an increase in HGV traffic to impact upon a link with a pattern of collisions between vehicles and pedestrians / cyclists.

232. Noting the temporary nature of the Projects' construction phase it is proposed that mitigation measures would focus upon management measures, rather than physical highway improvements.

233. Section 24.6.1.3.5.2 outlines mitigation measures to reduce potential amenity effects upon links 14, 16 and 76 by capping daily HGV trips. It can be observed from **Volume 7, Figure 24-1 (application ref: 7.24.1)** that traffic passing along these links would also travel via Link 17. These measures would therefore equally assist in reducing peak HGV trips along Link 17.

234. In addition to capping HGV trips along links 17 and 76 it is also proposed that all HGV drivers would be provided with enhanced inductions highlighting the potential risks along this link.

235. These mitigation measures are outlined within the **OCTMP (Volume 8, application ref: 8.13)** which is secured by a DCO Requirement.

236. Noting the commitments to managing HGV trips along links 17 and 76 it is considered that it is more appropriate to focus upon the change in total residual traffic than HGV traffic. It is assessed that a change in total traffic of up to 2.2% on Link 17 and 5.0% on Link 76 would result in a negligible residual road safety effect.

237. It is therefore assessed that the residual road safety effects on links 17 and 76 would be of negligible magnitude on a receptors of high and medium sensitivity resulting in a **minor** adverse residual effect.

24.6.1.5 Impacts 4, 5 and 6: Driver Delay

238. The driver delay impact assessment is sub-divided into three discrete impacts each of which have the potential to induce significant effects on highway network users. These impacts are:

- Impact 4: Driver Delay (Capacity) – delays induced by the highway networks' lack of spare capacity to accommodate additional traffic flows;
- Impact 5: Driver Delay (Highway Geometry) – delays induced by constrained road space forcing vehicles to slow or stop to traverse the highway network; and
- Impact 6: Driver Delay (Road Closures) – delays to diverted traffic re-routing on the highway network due to road closures necessitated by 'open cut' trenching to install the Projects' Onshore Export Cables across the public highway.

24.6.1.6 Impact 4 Driver Delay (Capacity)

239. The EATM screening thresholds do not apply to the impact of Driver Delay. The impact is defined as potentially significant when the highway network surrounding the development under consideration is at or close to capacity (congested).

240. The relevant highway authorities have been engaged to identify which parts of the highway network within the TTSA are congested and therefore have the potential to exhibit significant driver delay effects when construction traffic demand is introduced.

241. Section 24.4.3.3.3 outlines that the relevant highway authorities have identified 17 junctions (that they consider to be sensitive to increases in the Projects' traffic flow.

242. Junctions 14 to 17 identified by East Riding of Yorkshire Council have been assessed for baseline conditions and with the Projects' construction traffic added to determine the sensitivity value, the magnitude of impact and the resultant significance of effect.

243. Section 24.4.3.3.3 outlines a different approach to the consideration of driver delay effects upon those junctions (junctions 1 to 13) in the jurisdiction of National Highways and Hull City Council has been agreed. In summary, National Highways and Hull City Council have advised that capacity assessments should be secured post DCO determination to include (undetermined) changes in baseline conditions, resultant from a major highway scheme. Therefore, no further assessment of driver delay (capacity) is presented for junctions 1 to 13.

244. A commitment to considering driver delay effects upon junctions 1 to 13 is captured within the **OCTMP (Volume 8, application ref: 8.13)**, which is secured by DCO Requirement.

24.6.1.6.1 Magnitude of Impact and Sensitivity of Receptors – All Scenarios

245. The detailed traffic derivation, baseline traffic flows, baseline models and model inputs/outputs used to inform the assessment of junction capacity at junctions 14 to 17 is contained in the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**).

246. **Table 24-30** summarises sensitive junctions' modelled outputs and the associated driver delay magnitude of impact for the Projects.

247. When reporting junction performance for non-signalised roundabouts (junctions 14, 16 and 17), reference is made within **Table 24-30** to the junction's Level of Service (LoS), which provides an indication of how the junction is operating from A to F, defined as (TRL, 2023):

- A – Free flow
- B – Reasonably free flow
- C – Stable flow
- D – Approaching unstable flow
- E – Unstable flow
- F – Forced or breakdown flow

248. When reporting junction performance for the signalised roundabout (junction 15), reference is made within **Table 24-30** to the junctions Practical Reserve Capacity (PRC) as a measure of how the junction is performing. In summary, PRC is a measure of how much additional traffic could pass through a junction whilst maintaining a maximum degree of saturation of 90% on all arms.

249. Full junction modelling outputs are provided within the supporting **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**). In summary, the assessment considers the following:

- The highest period for background traffic flows for the junction, i.e. morning and evening peak hours;
- The highest period for the Projects' construction traffic flows, i.e. the highest daily construction traffic demand;
- A quarter of the Projects' construction employees could travel during the network peak hour; and
- A twelfth of the Projects' construction HGV traffic travels in the network peak hours.

Table 24-30 Summary of Junction Sensitivity and Magnitude of Effects – Driver Delay (Capacity)

Junction ID	Link Description	Summary of Junction Modelling
Junction 14	Junction of the A164, A1035 and A1174 (Swinemoor Lane Roundabout).	The **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) shows that the existing junction operates with a LoS of C in the morning peak and a LoS of F in the evening peak and that by 2026 the LoS in the morning would be C and F in the evening peak. The existing junction is therefore assessed to be of medium to high sensitivity. The **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) shows that with the addition of the Projects' construction traffic the junction would operate with a LoS of F in both the morning and evening peak hours for both the In Isolation and Concurrent construction scenarios. Noting that the change in traffic upon the links 53, 56 and 57 upon the approach to Junction 14 is less than 10% of junction throughput (**Table 24-17** and **Table 24-18**) it is reasoned that the magnitude of impact is low.

Junction ID	Link Description	Summary of Junction Modelling
Junction 15	Junction of the A164, B1232 and Albion Lane (Papa's Roundabout).	The **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) shows that the proposed junction improvements being constructed by the East Riding of Yorkshire Council at Junction 15 would mean that by 2026 the PRC in the morning peak would be 3.7% and – 1.4% in the evening peak, i.e. the junction would perform with minimal spare capacity in the morning peak and just over 90% capacity in the evening peak. The proposed junction is therefore assessed to be of medium to high sensitivity. The **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) shows that with the addition of the Projects' construction traffic the junction would operate with a negative PRC in both the morning and evening peak hours for both the In Isolation and Concurrent construction scenarios. Noting that the change in traffic upon the links 31 and 32 upon the approach to Junction 15 is less than 10% of junction throughput (**Table** 24-17 and **Table 24-18**) it is reasoned that the magnitude of impact is low.

Junction ID	Link Description	Summary of Junction Modelling
Junction 16	Junction of the A1079, A1035, A1174 and Killingwoldgraves Lane (Killingwoldgraves Roundabout).	The **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) shows that the existing junction operates with a LoS of C in the morning peak and evening peak and that by 2026 the LoS in the morning would continue to operate with a LoS of C. The existing junction is therefore assessed to be of medium sensitivity. The **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) shows that with the addition of the Projects' construction traffic for both the In Isolation and Concurrent construction scenarios the junction would continue to operate with a LoS of C the morning peak and E in the evening peak. Noting that there would be no change in the LoS in the morning peak the magnitude of impact is assessed to be low. During the evening peak the LoS is however forecast to change from C to E, therefore the magnitude of impact is assessed medium.
Junction 17	Junction of the A1079, A1033 and A1774 Lane (Dunswell Roundabout).	The **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) shows that the existing junction operates with a LoS of F in the morning peak evening peak and that by 2026 the LoS remain as F. The existing junction is therefore assessed to be of high sensitivity. The **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**) shows that with the addition of the Projects' construction traffic the junction would continue to operate with a LoS of F in both the morning and evening peak hours for both the In Isolation and Concurrent construction scenarios. Noting that the change in traffic upon the links 45 and 66 upon the approach to Junction 17 is less than 10% (**Table 24-17** and **Table 24-18**) it is reasoned that the magnitude of impact is low.

24.6.1.6.2 Significance of Effect

250. **Table 24-31** provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of the driver delay (capacity) effect.

Table 24-31 Significance of Driver Delay (Capacity)

Junction ID	Magnitude of Impact	Sensitivity	Significance of Effect
14	Low	High	**Moderate** adverse
15	Low	High	**Moderate** adverse
16	Low (morning peak)	Medium	**Minor to Moderate** adverse
	Medium (evening peak)		
17	Low	High	**Moderate** adverse

24.6.1.6.3 Mitigation and Residual Significance of Effect – All Scenarios

251. **Table 24-30** identifies that all junctions are operating at or above capacity without the addition of the Projects' construction traffic flows and that even with the additional of reflectively low increases in total traffic there could be a potentially significant magnitude of effect. **Table 24-31** therefore identifies that there could a potentially significant driver delay effect upon all four junctions during the morning and evening network peak hours.

252. Noting the temporary nature of the Projects' construction phase, preferred measures to mitigate effects upon these junctions has focused upon demand management measures (rather than intrusive highway interventions).

253. To reduce the potential for significant effects to occur the **OCTMP (Volume 8, application ref: 8.13)** which is secured by a DCO Requirement includes a commitment to ensure that employee trips are managed during the network peak hours. This would be achieved through avoidance or demand management, or a combination of both.

254. The following plates (**Plate 24-1** to **Plate 24-3**) demonstrate that if the majority of employee trips were scheduled to arrive before 07:45 in the morning and depart after 17:30 in the evening (thus avoiding network peaks) the combined traffic flows (background plus Projects' peak employee traffic demand) would be less than the background flows in the network peak hours.

255. Alternatively if arrivals and departures are required during the network peak hours, this could potentially be accommodated through demand management measures e.g. the use of minibuses to reduce vehicle trips.

256. The final choice of mitigation would be agreed with the relevant highway authorities through the development of the CTMP. This approach is outlined within the **OCTMP (Volume 8, application ref: 8.13)** which is secured by a DCO Requirement.

257. With the application of these measures (or a combination), the residual magnitude of impact is assessed as negligible on receptors of medium to high sensitivity resulting in a **minor adverse** residual effect.

Plate 24-1 Traffic Flows Through Junction 14, Swinemoor Lane Roundabout

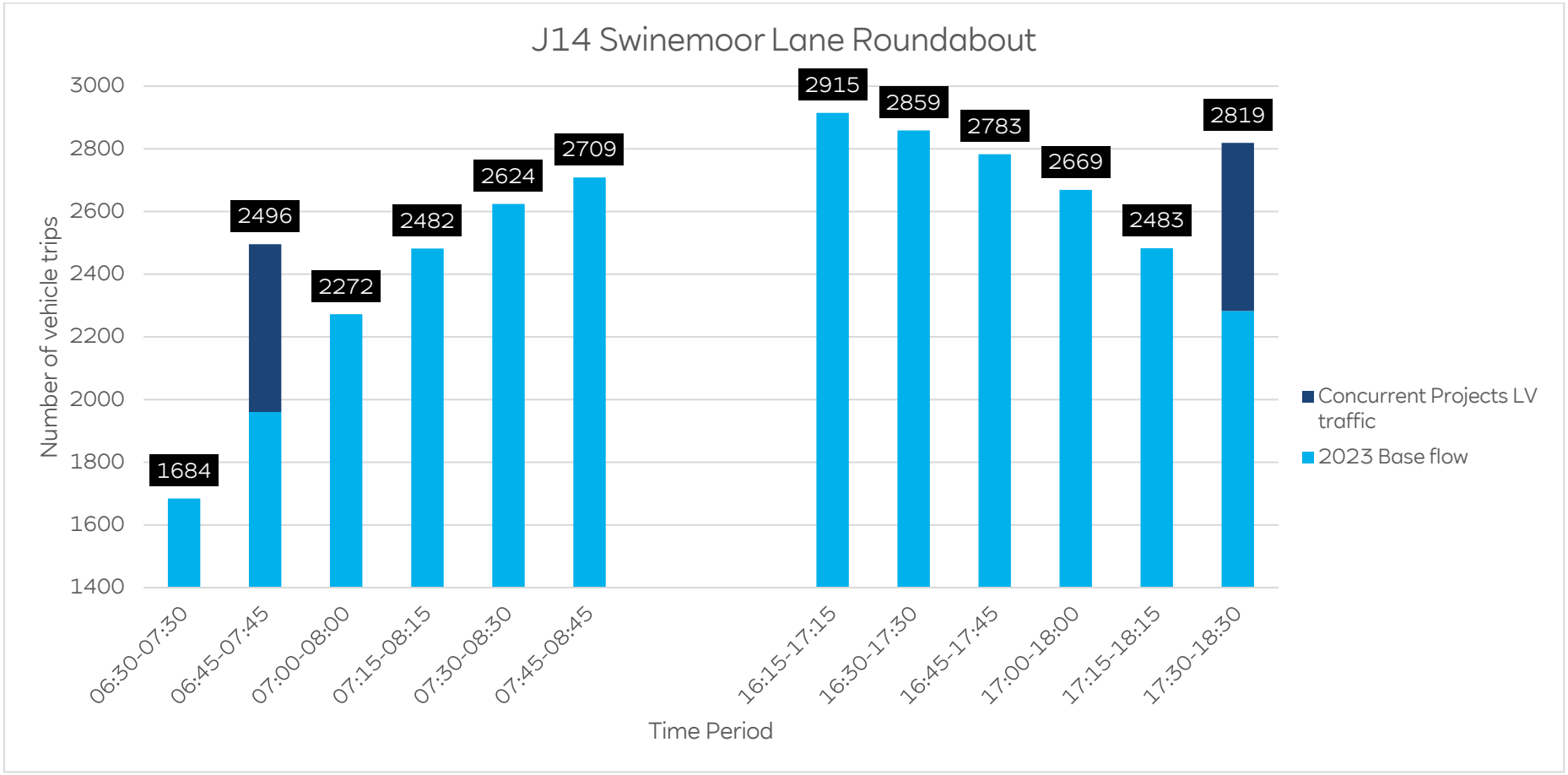


Plate 24-2 Traffic Flows Through Junction 16, Killingwoldgraves Roundabout

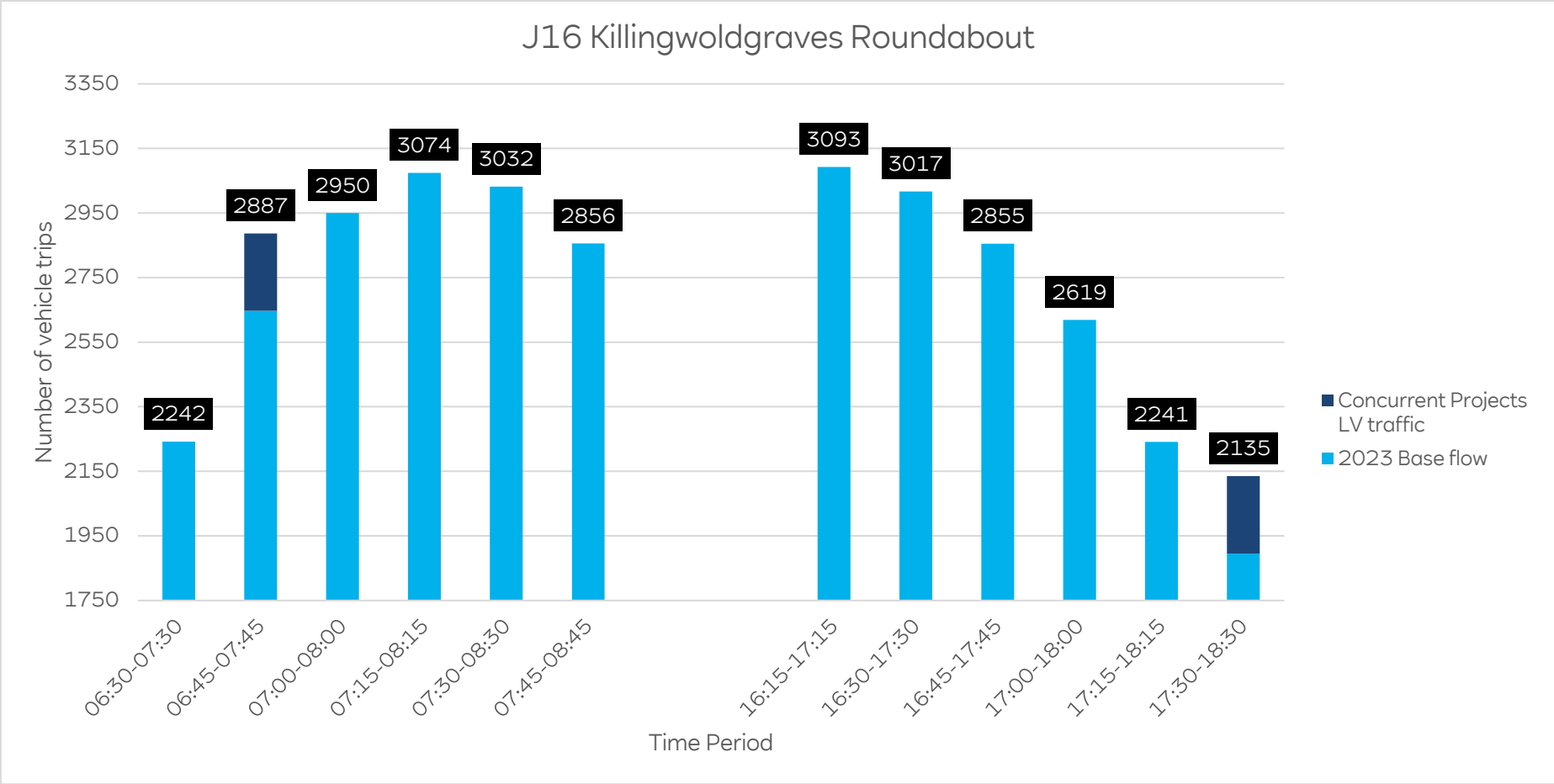
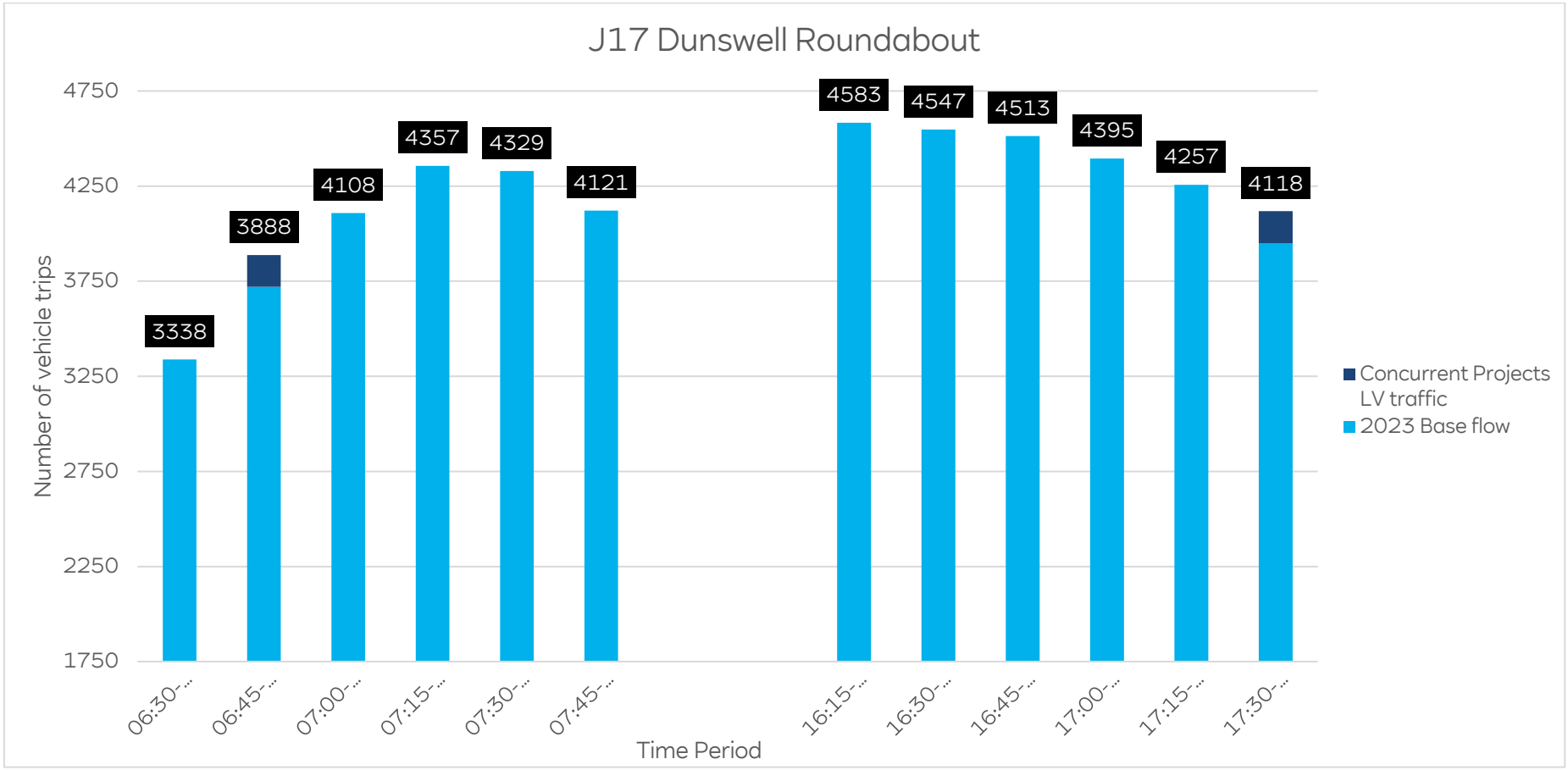


Plate 24-3 Traffic Flows Through Junction 17, Dunswell Roundabout



24.6.1.7 Impact 5 Driver Delay (Highway Geometry)

258. Driver Delay (Highway Geometry) impacts are considered to have the potential for significant effects where the highway network within the TTSA is of constrained width to prevent two vehicles from passing (therefore leading to potential delays associated with waiting and manoeuvring). A review of all links has been undertaken (section 24.4.3.3) to identify any links that are of 'constrained width', defined as roads less than 5.5m wide.

24.6.1.7.1 Magnitude of Impact and Sensitivity of Receptors – All Scenarios

259. **Table 24-32** provides a summary of the magnitude of impact and sensitivity of the five links identified as of constrained width in the context of the changes in forecast daily traffic flows in 2026. Details of the changes in daily traffic flows have been extrapolated from **Table 24-17** and **Table 24-18**.

Table 24-32: Magnitude of Driver Delay (Highway Geometry) Impact and Sensitivity of Receptors – All Scenarios

Link ID	Link Description	Background Link Characteristics and Sensitivity	Magnitude of Impact – Projects In Isolation	Magnitude of Impact – Projects Concurrently
7	Dunnington Lane leading east from the A165	The Projects' construction traffic would be required to travel approximately 0.8km along Dunnington Lane to access AC2. Dunnington Lane is on average approximately 4.0m wide and currently allows two LVs to pass slowly. There are also approximately four formalised passing places, approximately every 200m apart. The link currently accommodates 133 total vehicle trips a day of which 56 are HGV trips. The link is therefore assessed to be of low sensitivity.	Peak daily increase in LV trips on Link 7 would be 121 per day, equivalent to approximately 61 arrivals in the morning and 61 departures in the evening. Peak daily increase in HGV trips on Link 7 would be 56 (equivalent to five an hour), there is a baseline of 56 HGV trips on Link 7 (approximately five an hour), which would amount to a total of 112 HGV trips on Link 7. This would be equivalent to ten HGV trips per hour. Considering the existing and forecast levels of HGV use the magnitude of impact is assessed as high.	Peak daily increases in LV trips on Link 7 would be 126 per day, equivalent to approximately 63 arrivals in the morning and 63 departures in the evening. Peak daily increases in HGV trips on Link 7 would be 78 (equivalent to seven an hour), there is a baseline of 56 HGV trips on Link 7 (approximately five an hour), which would amount to a total of 134 HGV trips on Link 7. This would be equivalent to 11 HGV trips per hour. Considering the existing and forecast levels of HGV use the magnitude of impact is assessed as high.
8	Catfoss Road from junction with A164 eastwards	The Projects' construction traffic would be required to travel approximately 2.9km along Catfoss Road to access AC3. Catfoss road is over 5.5m wide for the first 2.1km eastwards along the link and is around 4.4m wide after for 800m. The entirety of Link 8 is wide enough for two LVs to pass one another, however after the road narrows two HGVs would be unable to pass each other. The link currently accommodates 913 total vehicle trips a day of which 33 are HGV trips. The link is therefore assessed to be of medium sensitivity.	Peak daily increases in LV trips on Link 8 would be 82 per day, equivalent to approximately 41 arrivals in the morning and 41 departures in the evening. Peak daily increases in HGV trips on Link 8 would be 43 (equivalent to four an hour), there is a baseline of 33 HGV trips on Link 8 (approximately three an hour), which would amount to a total of 76 HGV trips on Link 8. This would be equivalent to six HGV trips per hour. Considering the existing levels of HGV traffic, the magnitude of impact is assessed as medium.	Peak daily increases in LV trips on Link 8 would be 110 per day, equivalent to approximately 55 arrivals in the morning and 55 departures in the evening. Peak daily increases in HGV trips on Link 8 would be 49 (equivalent to four an hour), there is a baseline of 33 HGV trips on Link 8 (approximately three an hour), which would amount to a total of 82 HGV trips on Link 8. This would be equivalent to seven HGV trips per hour. Considering the existing levels of HGV traffic, the magnitude of impact is assessed as medium.

Link ID	Link Description	Background Link Characteristics and Sensitivity	Magnitude of Impact – Projects In Isolation	Magnitude of Impact – Projects Concurrently
11	Unnamed Road north of the A1035 (West Road) opposite Catwick Heads	The Projects' construction traffic would be required to travel approximately 350m along Link 11 to access AC4. Link 11 is between 5m and 5.5m wide and currently allows two LVs to pass each other or an HGV to pass an oncoming LV. The link currently accommodates 200 total vehicle trips a day, of which eight are HGV trips. The link is therefore assessed to be of medium sensitivity.	Peak daily increases in LV trips on Link 11 would be 25 per day, equivalent to approximately 13 arrivals in the morning and 13 departures in the evening. Peak daily increases in HGV trips on Link 11 would be 30 (equivalent to three an hour), there is a baseline of eight HGV trips on Link 11 (approximately one an hour), which would amount to a total of 38 HGV trips on Link 11. This would be equivalent to three HGV trips per hour. Considering the existing levels of HGV traffic the magnitude of impact is assessed as medium.	Peak daily increases in LV trips on Link 11 would be 27 per day, equivalent to approximately 14 arrivals in the morning and 14 departures in the evening. Peak daily increases in HGV trips on Link 11 would be 41 (equivalent to four an hour), there is a baseline of eight HGV trips on Link 11 (approximately one an hour), which would amount to a total of 49 HGV trips on Link 11. This would be equivalent to four HGV trip1s per hour. Considering the existing levels of HGV traffic the magnitude of impact is assessed as medium.
58	Ings Road north of the A1035	The Projects' construction traffic would be required to travel approximately 150m along Ings Road to access AC12. Ings Road is approximately 4.5m wide and currently allows two LVs to pass. The link currently accommodates 87 total vehicle trips a day, two of which are HGV trips. The link is therefore assessed to be of medium sensitivity.	Peak daily increases in LV trips on Link 58 would be 86 per day, equivalent to approximately 43 arrivals in the morning and 43 departures in the evening. Peak daily increases in HGV trips on Link 58 would be 39 (equivalent to three an hour). There is a baseline of two HGV trips on Link, which would amount to a total of 41 HGV trips on Link 58. This would be equivalent to three to four HGV trips per hour. Considering the forecast increase in HGV traffic the magnitude of impact is assessed as high.	Peak daily LV trips on Link 58 would be 82 per day, equivalent to approximately 41 arrivals in the morning and 41 departures in the evening. Peak daily increases in HGV trips on Link 58 would be 66 (equivalent to six an hour). There is a baseline of two HGV trips on Link 58 (approximately one an hour), which would amount to a total of 68 HGV trips on Link 58. This would be equivalent to six HGV trips per hour. Considering the forecast increase in HGV traffic the magnitude of impact is assessed as high.
73	Eske Lane	The Projects' construction traffic would be required to travel approximately 700m along Eske Lane to access AC10. Eske Lane is approximately 3.1m wide, with two passing places along the road. This would currently allow two LVs to pass slowly. The link currently accommodates 46 total vehicle trips a day, of which two are HGV trips. The link is therefore assessed to be of medium sensitivity.	Peak daily increase in LV trips on Link 73 would be 86 per day, equivalent to approximately 43 arrivals in the morning and 43 departures in the evening. Peak daily increase in HGV trips on Link 73 would be 38 (equivalent to three an hour), there is a baseline of two HGV trips on Link 73 per day, which would amount to a total of 40 HGV trips on Link 73. This would be equivalent to three to four HGV trips per hour. Considering the forecast increase in HGV traffic the magnitude of impact is assessed as high.	Peak daily increase LV trips on Link 73 would be 88 per day, equivalent to approximately 44 arrivals in the morning and 44 departures in the evening. Peak daily increase in HGV trips on Link 73 would be 53 (equivalent to four an hour), there is a baseline of two HGV trips on Link 73 per day, which would amount to a total of 55 HGV trips on Link 73. This would be equivalent to five HGV trips per hour. Considering the forecast increase in HGV traffic the magnitude of impact is assessed as high.

24.6.1.7.2 Significance of Effect – All Scenarios

260. **Table 24-33** provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of the driver delay effect.

Table 24-33 Significance of Driver Delay (Highway Geometry) – All Scenarios

Links	Magnitude of Impact – Projects In Isolation	Magnitude of Impact – Projects Concurrently	Sensitivity	Significance of Effect – Projects In Isolation	Significance of Effect – Projects Concurrently
7	High	High	Low	**Moderate** adverse	**Moderate** adverse
8	Medium	Medium	Medium	**Moderate** adverse	**Moderate** adverse
11	Medium	Medium	Medium	**Moderate** adverse	**Moderate** adverse
58	High	High	Medium	**Major** adverse	**Major** adverse
73	High	High	Medium	**Major** adverse	**Major** adverse

24.6.1.7.3 Mitigation and Residual Significance of Effect – All Scenarios

261. **Table 24-33** identifies that the Projects' construction traffic could result in potentially significant driver delay (highway geometry) effects upon the users of Links 7, 8, 11, 58 and 73 associated with the forecast increases in HGV traffic.

262. **Table 24-34** details mitigation measures that would be applied to reduce the potentially significant adverse driver delay (highway constraints) effects. Mitigation measures are broadly divided into 'hard' engineering (e.g. passing places or carriageway widening) or where feasible, the use of escort vehicles to intercept oncoming traffic and call through the HGV to safely reach a destination point without conflict. *Safety at Street Works and Roadworks, A Code of Practice, (Department for Transport, 2014)* contains 'Stop Works' or 'Temporary Obstruction' traffic control provisions and legally permits vehicular traffic to be stopped (subject to conditions being met) for 2 minutes and 15 minutes respectively.

263. Hard engineering and escort vehicle mitigation measures are outlined within the **OCTMP (Volume 8, application ref: 8.13)** which is secured by a DCO Requirement.

Table 24-34 Potential Mitigation Measures for Driver Delay (Highway Geometry) – All Scenarios

Links	Potential Mitigation Measures
7	The link is identified to be wide enough to allow two LVs to pass and has existing passing places to allow a limited number of HGVs to pass. The increase in HGV traffic however could result in conflict between HGVs if the passing places are blocked by existing HGV movements. To accommodate the forecast increase in HGV traffic it would be proposed to extend the existing passing places to provide additional space for HGVs to wait.
8	The link is identified to be wide enough to allow two LVs to pass and the majority of the link would also allow two HGVs to pass (with the exception of the final 800m). To accommodate the additional HGV traffic new passing places would be provided along the final 800m of the link to allow two HGVs to pass or alternatively an escort vehicle would be used to guide HGVs along the link and hold back conflicting HGV traffic.
11	The link is identified to be wide enough to allow two LVs to pass but would not be wide enough to allow two HGVs to pass. To accommodate the additional HGV traffic, localised road widening would be provided along the link to allow two HGVs to pass, or alternatively an escort vehicle would be used to guide HGVs along the link and hold back conflicting HGV traffic.
58	The link is identified to be wide enough to allow two LVs to pass but would not be wide enough to allow two HGVs to pass. Works to widen Ings Road (Link 58) are proposed as part of a proposal for a new Household Waste Centre. Should planning permission be granted for the Household waste centre and improvements be implemented, the road would be wide enough for the Projects' construction traffic and no additional mitigation measures would be required. In the event that the improvements to Ings Road are not implemented in time for the commencement of construction of the Projects the following measures are proposed. To accommodate the forecast HGV traffic, the road would be widened, or an escort vehicle would be used to guide HGVs along the link and hold back conflicting HGV traffic.

Links	Potential Mitigation Measures
73	The link is approximately 700m long and currently provided with two passing places which would allow two LVs to pass but would not allow HGVs to pass. To accommodate the additional HGV traffic new passing places would be provided and the existing passing places widened, or an escort vehicle would be used to guide HGVs along the link and hold back conflicting HGV traffic.

264. Following the implementation of the proposed additional mitigation measures outlined in **Table 24-34** the magnitude of impact is assessed as low on receptors of low to medium sensitivity resulting in a **minor** adverse residual effect.

24.6.1.8 Impact 6 Driver Delay (Road Closures)

265. During the cable installation works, Onshore Export Cables would need to be installed across a number of minor public roads using open-cut trenching techniques. To provide a safe working area for the installation it would be proposed to close the roads for a short period of time (up to two weeks) irrespective of the Development Scenario.

266. The exception to the strategy to close the roads is at Park Lane where **Table 24-3** outlines embedded mitigation measures to ensure access is maintained. Access would be maintained either through the use of trenchless crossing technology e.g. HDD or through shuttle working (e.g. the use of traffic signals to alternate flows on a one-way section of road).

267. Access through the closures would be maintained for pedestrians and cyclists at all times.

24.6.1.8.1 Magnitude of Impact and Sensitivity of Receptors – All Scenarios

268. **Table 24-35** provides a summary of the magnitude of impact and sensitivity of all open-cut Onshore Export Cable Corridor crossings required during the onshore export cable installation works. The location of the proposed road crossings are highlighted on **Volume 7, Figure 24-3 (application ref: 7.24.1)**.

269. In assessing the sensitivity and magnitude of impact, consideration has been given to the volume of traffic (taken from the **TA** in **Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**), the additional delay drivers would experience if a road were closed or access restricted, and also, if the road crossing impacts scheduled bus services.

Table 24-35 Magnitude of Driver Delay (Road Closures) Impact and Sensitivity

Crossing Location	Daily Traffic Flows	Bus Route	Sensitivity	Alternative Diversion route	Magnitude of Impact	Rationale
Bewholme Lane	<500 *	No	Bewholme Lane has relatively few receptors along it and is a narrow road, with no cycle lanes, footway or scheduled bus services. The link is therefore assessed as of low sensitivity.	Traffic could be diverted to the A165 and Skipsea Road (Beeford Road) which is of a higher classification and could therefore be expected to accommodate an increase in traffic. This diversion would result in an additional two minutes of journey time.	Low	A suitable alternative route exists which would add up to two minutes additional journey time.
Dunnington Lane	<500 *	No	Dunnington Lane is a narrow, single-tracked road which would potentially have a low traffic flow. There is no footway, cycle lane or scheduled bus service present. The link is therefore assessed as of low sensitivity.	Traffic could be diverted to the B1249 and A165 which are of a higher classification and could therefore be expected to accommodate an increase in traffic. This diversion would result in an additional two minutes of journey time.	Low	A suitable alternative route exists which would add up to two minutes additional journey time.
Billings Lane	<500 *	No	Billings Lane is a narrow single lane road, there is no cycle lane, footway or schedule bus services present. The link is therefore assessed as of low sensitivity.	Traffic could be diverted to the Catfoss Road which is wider and the same classification and could therefore be expected to accommodate an increase in traffic. This diversion would result in an additional 1-2 minutes of journey time.	Low	A suitable alternative route exists which would add up to two minutes additional journey time.
Catfoss Road	913	No	Catfoss Road has relatively low daily traffic flows, there is no scheduled bus service, footway or cycleway present. The link is therefore assessed as of low sensitivity.	A diversion of traffic to a road of similar or higher classification and width would result in traffic being diverted to the A1035, through Hornsea and onto the B1242. A diversion via the A1035 would result in an additional journey time of 12 minutes.	High	A suitable alternative route exists; however, this would add an additional 12 minutes of journey time.
Harsell Lane	<500 *	No	Harsell Lane is a narrow single lane road, there is no scheduled bus service, footway or cycleway present. The link is therefore assessed as of low sensitivity.	Traffic could be diverted to the A1035 which is of a higher classification and could therefore be expected to accommodate an increase in traffic. This diversion would result in an additional one minute of journey time.	Negligible	A suitable alternative route exists which would add up to one additional minute of journey time.
Catwick Heads Lane	<500 *	No	Catwick Heads Lane is a narrow single-track road, there is has no scheduled bus service, footway or cycleway present. The link is therefore assessed as of low sensitivity.	Traffic could be diverted to the A1035 and B1243 which are of a higher classification and could therefore be expected to accommodate an increase in traffic. This diversion would result in an additional two minutes of journey time.	Low	A suitable alternative route exists which would add up to two minutes additional journey time.
Rise Lane	<500 *	No	Rise Lane is a narrow single lane road, there is no scheduled bus service, footway or cycleway	Traffic could be diverted to the A1035 and B1243 which are of a higher classification and could	Low	A suitable alternative route exists which would add up to

Crossing Location	Daily Traffic Flows	Bus Route	Sensitivity	Alternative Diversion route	Magnitude of Impact	Rationale
			present. The link is therefore assessed as of low sensitivity.	therefore be expected to accommodate an increase in traffic. This diversion would result in an additional two minutes of journey time.		two minutes additional journey time.
Riston Road	<500 *	No	Riston Road is a narrow single lane road, there is no scheduled bus service, footway or cycleway present. The link is therefore assessed as of low sensitivity.	Traffic could be diverted to the A1035 and A165 which are of a higher classification and could therefore be expected to accommodate an increase in traffic. This diversion would result in an additional one minute of journey time.	Negligible	A suitable alternative route exists which would add up to one additional minute of journey time.
Park Lane	<500 *	No	Park Lane is a narrow single lane road, there is no scheduled bus services present. The link however provides access to the existing National Grid Electricity Transmission substation at Creyke Beck. The link is therefore assessed as of high sensitivity.	The use of temporary traffic signals to maintain a single lane of traffic would not be expected to result in significant delays.	Negligible	A single lane of traffic would be maintained via the use of temporary traffic signals.
Notes: * Estimated flows						

24.6.1.8.2 Significance of Effect – All Scenarios

270. **Table 24-36** provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of the driver delay effect.

Table 24-36 Significance of Driver Delay (Road Closures) – All Scenarios

Crossing Location	Magnitude of Impact	Sensitivity	Significance of Effect
Bewholme Lane	Low	Low	**Minor** adverse
Dunnington Lane	Low	Low	**Minor** adverse
Billings Lane	Low	Low	**Minor** adverse
Catfoss Road	High	Low	**Moderate** adverse
Harsell Lane	Negligible	Low	**Negligible**
Catwick Heads Lane	Low	Low	**Minor** adverse
Rise Lane	Low	Low	**Minor** adverse
Riston Road	Negligible	Low	**Negligible**
Park Lane	Negligible	High	**Minor** adverse

24.6.1.8.3 Mitigation and Residual Significance of Effect – All Scenarios

271. It is identified in **Table 24-36** that the temporary closure of Catfoss Road to install the Projects' Onshore Export Cables could result in potentially significant driver delay (road closure) effects upon the users of this link.

272. Prior to the commencement of construction, the Applicants would undertake further site investigation works to establish the potential to use trenchless crossing technology e.g. HDD at this location. If trenchless crossing technology e.g. HDD cannot be used at this location, the following mitigation measures are proposed:

- Temporarily widening of the road to allow the works to be undertaken in two stages, thereby maintaining one lane for traffic, with traffic controlled via signal control;

- Working with East Riding of Yorkshire Council and local stakeholders to agree an appropriate time to undertake the works (e.g. during school holidays); and
- Implementation of advanced signing to assist drivers in finding alternative routes.

273. These mitigation measures are outlined within the **OCTMP (Volume 8, application ref: 8.13)** which is secured by a DCO Requirement.

274. Following the implementation of the proposed additional mitigation measures in relation to the potential closure of Catfoss Road, the magnitude of impact is assessed as low on a receptor of low sensitivity resulting in a **negligible** residual effect.

24.6.2 Potential Effects During Operation

275. The Onshore Converter Stations would not be manned; however, access would be required periodically for routine maintenance activities, estimated at an average of one visit per week. Unscheduled maintenance or emergency repair visits would typically involve a very small number of vehicles, typically Light Vehicles (e.g. vans). Infrequently, equipment may be required to be replaced, then the use of an occasional HGV may be utilised, depending on the nature of the repair. Inspection and minor servicing may be required for the electrical plant, but it is anticipated that the Onshore Converter Stations will require minimal scheduled maintenance and operation activities. The proposed operational access strategy for the Onshore Converter Stations is outlined in the **TA** (**Volume 7, Appendix 24-2 (application ref: 7.24.24.2)**).

276. Maintenance of the onshore cable is expected to be minimal. During operation, periodic testing of the cable is likely to be required (every two to five years). This would require access to the Link Boxes at defined inspection points along the onshore export cable route. This will involve attendance by up to three Light Vehicles, such as vans, in a day at any one location. The vehicles would gain access using existing field accesses and side accesses as agreed with landowners to reach the relevant sections of the cable.

277. Considering the activities listed, no significant traffic and transport effects are anticipated during the operational phase. Therefore, as confirmed by the Planning Inspectorate in their scoping opinion and as agreed with the relevant highway authorities (detailed in **Volume 7, Appendix 24-1 (application ref: 7.24.24.1)**), no operational scenarios have been assessed within this traffic and transport impact assessment.

24.6.3 Potential Effects During Decommissioning

278. No decision has been made regarding the final decommissioning policy for the onshore substation, as it is recognised that industry best practice, rules and legislation change over time. However, the Onshore Converter Station equipment will likely be removed and reused or recycled.

279. It is expected the Onshore Export Cables will be removed from ducts and recycled, with the transition pits and ducts left in-situ.

280. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan would be provided.

281. It is anticipated that the effects of decommissioning will be no greater in nature than those identified during construction (section 24.6.1).

24.7 Monitoring Requirements

282. An **OCTMP (Volume 8, application ref: 8.13)** is provided in support of the DCO application and will be further developed and agreed with stakeholders prior to construction.

283. The **OCTMP (Volume 8, application ref: 8.13)** provides details of the proposed approach to monitoring of traffic movements associated with the construction of the Projects, as secured in DCO Requirement 14. In summary, these include commitments to monitoring and reporting of:

- Vehicle numbers against agreed targets;
- Transgressions of HGVs from routes;
- Accidents and near misses;
- Highway condition; and
- Complaints.

24.8 Cumulative Effects Assessment

284. Cumulative effects can be defined as incremental effects on that same receptor from other proposed and reasonably foreseeable schemes and developments in combination with the Projects. This includes all schemes that result in a comparative effect that is not intrinsically considered as part of the existing environment and is not limited to offshore wind projects.

285. The overarching method followed in identifying and assessing potential cumulative effects is set out in **Volume 7, Chapter 6 EIA Methodology (application ref: 7.6)** and **Volume 7, Appendix 6-1 Onshore Cumulative Assessment (application ref: 7.6.6.1)**. The approach is based upon the Planning Inspectorate Advice Note Seventeen: Cumulative Effects Assessment (PINS 2017). The approach to the CEA is intended to be specific to DBS Projects and takes account of the available knowledge or the environment and other activities around the Onshore Development Area.

286. The CEA has followed a four-stage approach developed from the Planning Inspectorate Advice Note Seventeen. These stages are set out in **Table 1-2** of **Volume 7, Appendix 6-1 Onshore Cumulative Assessment (application ref: 7.6.6.1).** Stage four of this process, the CEA assessment is undertaken in two stages. The first step in the CEA is the identification of which residual impacts assessed for the Projects on their own have the potential for a cumulative impact with other plans, projects and activities. This information is set out in **Table 24-37** which sets out the potential impacts assessed in this chapter and identifies the potential for cumulative effects to arise, providing a rationale for such determinations. Only potential impacts assessed as minor adverse or above are included in the CEA. Those assessed as negligible are not taken forward as there is no potential for them to contribute to a cumulative impact.

287. It is noted in section 24.3.3.2 that assessed effects are greatest for DBS East and DBS West concurrently (as opposed to DBS East or DBS West In Isolation). Therefore, in order to present a proportionate CEA (and consider a worst case scenario), traffic flows for DBS East and DBS West concurrently are used herein.

Table 24-37 Potential Cumulative Effects

Potential Impact	Potential for Cumulative Effects	Justification
Construction		
Impact 1: Severance	Yes	Plans and projects currently in planning have potential to have cumulative effects on upon links 4, 5, 6, 7, 10, 11, 14, 16, 17, 53, 56, 58, 71, 73 and 76.
Impact 2: Amenity	Yes	Plans and projects currently in planning have potential to have cumulative effects on upon links 4 to 8, 10, 11, 13 to 17, 20, 22, 36, 38, 40, 45, 50 to 56, 58, 71, 75 and 76.
Impact 3: Road Safety	Yes	Plans and projects currently in planning have potential to have cumulative effects on upon links 1, 2, 4, 5, 8, 9, 10, 12, 15 to 20, 24, 26, 28, 29, 30, 32, 35, 40, 45, 49, 55, 57, 61 and 76.
Impact 4: Driver Delay (Capacity)	Yes	Plans and projects currently in planning have potential to have cumulative effects on upon junctions 14 to 17.
Impact 5: Driver Delay (Highway Geometry)	Yes	Plans and projects currently in planning have potential to have cumulative effects on upon links 7, 8, 11, 58 and 73.
Impact 6: Driver Delay (Road Closures)	Yes	Plans and projects currently in planning have potential to have cumulative effects on upon Bewholme Lane, Dunnington Lane, Billings Lane, Catfoss Road, Catwick Heads Lane, Rise Lane and Park Lane.
Operation & Maintenance		
No significant traffic and transport effects are anticipated during the operational phase and as agreed with the relevant highway authorities, no operational scenarios have been assessed within this traffic and transport impact assessment.		
Decommissioning		

Potential Impact	Potential for Cumulative Effects	Justification
The detail and scope of the decommissioning works would be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. As such, cumulative effects during the decommissioning phase are assumed to be the same as those identified during the construction phase.		

288. The second stage of the CEA is a project specific assessment of the potential for any significant cumulative effects to arise due to the construction and maintenance of the Projects. To do this, a short list of schemes for CEA has been produced relevant to traffic and transport following the approach outlined in **Volume 7, Appendix 6-1 (application ref: 7.6.6.1).** The second stage of this assessment is only undertaken if the first stage identifies that cumulative effects are possible.

289. The CEA has been based on information available on each potential scheme (e.g. as set out on the East Riding of Yorkshire Council and Hull City Council planning portals and the Planning Inspectorate website) as of January 2024. It is noted that the other scheme details available may change in the period up to construction or may not be available in detail at all. The assessment presented here is therefore considered to be conservative, with the level of impacts expected to be reduced compared to those presented here.

290. A total of six schemes have been identified for inclusion on the short list of projects to be assessed cumulatively for traffic and transport. Schemes that have not been considered as resulting in likely cumulative significant effects for traffic and transport are as a result of the following broad considerations:

- No traffic and transport assessment (e.g. a TA or ES have not been provided in support of the planning application for the scheme).
- The scheme is a residential development and as such, changes in traffic flows would be captured within the baseline traffic forecasts as part of TEMPRo.
- Where there would be no temporal overlap between the Projects and other schemes; or

- Where there is no spatial overlap between the Projects' TTSA and the other development's TTSA.

291. Summary information on the short list schemes progressing through this exercise (i.e. the short list of other schemes) for assessment on traffic and transport is provided below in **Table 24-38.** This presents the scenarios whereby the Projects and the other schemes/developments that have been identified on the short list of schemes screened for traffic and transport, as listed in **Table 24-38**, could potentially result in cumulative effects for traffic and transport.

Table 24-38 Short List of Scheme Considered Within the Traffic and Transport Cumulative Effects Assessment

Scheme Name	Tier	Discussion
A164 and Jock Lodge Junction Improvement Scheme (JLJIS)	1	Construction of the JLJIS commenced in late 2023/early 2024 and is due for completion by late 2026. There is therefore the potential for an overlap with the Projects which could commence construction in 2026 (at the earliest). The application for the JLJIS includes a TA that considers the impacts upon driver delay. The TA demonstrates that the JLJIS will offer an improvement in road safety and substantial improvements in journey time (capacity). Noting that the assessment of the Projects is based upon current baseline it can be reasoned that cumulative effects occurring as a result of the overlap of the Projects' construction phase and the operational phase for the Jocks Lodge improvement scheme would be no greater than assessed within the Projects' primary assessment (section 24.6.1). The TA for the JLJIS considers the number of construction vehicles required and states that there will be up to 144 HGV trips via A164 towards the A63/M62. No assessment of construction traffic effects is presented beyond these statements of construction numbers. Notwithstanding, it can be noted from **Table 24-17** that background daily traffic flows on the A164 south of the JLJIS (Link 34) would be approximately 34,214 vehicles of which 1,550 would be HGVs. It can therefore be calculated an additional 144 two-way HGV movements would represent a 0.4% increase in total traffic and 9.2% increase in HGV traffic. The changes in traffic associated with the construction of the JLJIS are therefore significantly less than 30% threshold whereby EATM suggest significant adverse effects may be experienced. The scheme's construction traffic would therefore be reasoned to result in negligible environmental impacts. Therefore, by definition, these negligible effects would not

Scheme Name	Tier	Discussion
		give rise to a significant cumulative effect with the Projects. Noting that no assessment of construction effects is presented within the JLJIS TA and that stated flows are below EATM screening thresholds it is reasoned that the cumulative effects would be negligible and no further assessment is presented.
Proposed Beverley Household Recycling Centre [1] (NB: Application refused, however expected to go to appeal and included within CEA)	3	A TA and supplementary transport note are submitted in support of the proposed Beverley Household Recycling Centre. The TA and transport note includes an assessment of the scheme's operational phase upon the impacts of road safety upon links 52, 53, 57, 58 and 60 and driver delay (capacity) upon five junctions, namely: • Ings Road and the A1035; • A1035 and A164 • Lockwood Road (west) and A1035; • Lockwood Road (east) and A1035; and • A1035, A164, Hull Bridge Road (Swinemoor Lane Roundabout). It can be noted from **Table 24-37** that there is potential for cumulative road safety effects from the Projects and proposed Beverley Household Recycling Centre on Link 57 and driver delay (capacity) effects upon Junction 14 (Swinemoor Lane Roundabout). With regard to

[1] The Applicants are aware that the Proposed Beverley Household Recycling Centre application has been refused however kept in CEA longlist due to professional judgement and stakeholder request.

Scheme Name	Tier	Discussion
		driver delay, the primary assessment presented within section 24.6.1 includes changes in traffic flows associated with this scheme, therefore no further assessment of cumulative driver delay effects is presented. No assessment is presented upon the impacts of severance, amenity and driver delay (highway geometry). However, it is noteworthy that the proposed Beverley Household Recycling Centre would provide for Ings Road to be widened to allow for two-way traffic, and access for pedestrians and cyclists will be enhanced by the provision of a crossing of the main the A1035 and a new footway/cycleway alongside Ings Road.
Heron Lakes Main Road Routh East Riding Of Yorkshire HU17 9SL	1	A TA is submitted in support of the application for an extension to the Heron Lake Caravan Park. The TA includes an assessment of the scheme's operational phase upon the impacts of road safety upon Link 54 and driver delay (capacity) upon the junction of the caravan park with the A1035. It can be noted from **Table 24-37** that neither Link 54 nor the junction with the A1035 are identified as having the potential for cumulative effects. Therefore, it is assessed that there would be no cumulative effects between the Projects and the proposed Extension to Heron Lakes Caravan Park.
Creyke Beck Substation Extension and the proposed Birkhill Wood National Grid Substation	2	National Grid have undertaken preliminary consultation on the schemes in 2023 and have identified that they aim to submit a planning application in 2024. No information with regard to potential traffic and transport effects has been provided to date, however the Applicants have sought detail from National Grid with regard to likely vehicle numbers. National Grid have advised that there could be a peak of up to 66 HGV trips and 20

Scheme Name	Tier	Discussion
(NB: These projects have been considered together)		employee vehicle trips per day (86 total vehicle trips) accessing on to the A1079 (Link 66). It can be noted from **Table 24-17** that background daily traffic flows on the A1079 would be approximately 18,817 vehicles of which 1,035 would be HGVs. It can therefore be calculated an additional 86 two-way HGV movements would represent a 0.5% increase in total traffic and 6.4% increase in HGV traffic. The changes in traffic associated with the construction of the substations are therefore significantly less than the 30% threshold whereby EATM suggest significant adverse effects may be experienced. It is therefore reasoned that construction traffic would result in negligible environmental effects. Therefore, by definition, these negligible effects would not give rise to a significant cumulative effect with the Projects.
Hornsea Four Offshore Windfarm (HP4)	1	An ES traffic and transport chapter and traffic and transport technical report are submitted in support of the application for HP4. The ES includes an assessment of HP4's construction phase upon the impacts of severance, amenity, road safety and driver delay. A review of the HP4 application documents has been undertaken to identify where there could be a spatial overlap between the respective TTSA for the Projects and HP4 and any common links. Where links are common, a comparison has been undertaken to identify if there are impacts where effects are 'not significant' for HP4 or negligible for the Projects as by definition there would be no cumulative effect. This screening exercise has been completed for all impacts and is summarised below:

Scheme Name	Tier	Discussion
		• **Impact 1 Severance:** A review of where there is the potential for cumulative severance effects on common links has identified that Link 14 (HP4 Link 103), Link 16 (HP4 Link 101) and Link 53 (HP4 Link 70) have the potential to experience significant cumulative severance effects. • **Impact 2 Amenity:** A review of where there is the potential for cumulative amenity effects on common links has identified that Link 36 (HP4 Link 61) and Link 45 (HP4 Link 98) have the potential to experience significant cumulative amenity effects. • **Impact 3 Road Safety:** A review of where there is the potential for cumulative road safety effects on common links has not identified the potential for significant cumulative road safety effects. • **Impact 4 Driver Delay (Capacity):** The ES for HP4 does not include an assessment of capacity effects and instead outlines that assessment would be undertaken as part of discharging the CTMP Requirement. It is therefore not possible to undertake a CEA with HP4 for Impact 4. • **Impact 5 Driver Delay (Highway Geometry):** This impact is referred to as Driver Delay (Local roads) within the assessment for HP4. A review of the respective assessments identifies that there are no common links.

Scheme Name	Tier	Discussion
		• **Impact 6 Driver Delay (Road Closures):** No assessment of the effect of road closures is presented by HP4 and HP4 identify that all main roads will be crossed by a trenchless crossing technology e.g. HDD. Noting the commitments by HP4 to cross roads by HDD it is assessed that there is no potential for cumulative driver delay (road closure) effects to occur.

24.8.1 Detailed Cumulative Effects Assessment

24.8.1.1 Introduction

292. **Table 24-38** identifies that there is the potential for significant cumulative effects between the construction of Hornsea Project Four (HP4) offshore windfarm and the Projects and the operational phase of proposed Beverley Household Recycling Centre from Ings Road and the construction of the Projects.

293. The following sections therefore consider the potential for cumulative effects upon each of the identified cumulative impacts.

24.8.1.2 Cumulative Impact 1: Severance

294. Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. Section 24.4.3 provides full details on the adopted impact assessment methodology for severance.

295. The potential for significant cumulative severance effects between the Projects and HP4 for links 14, 16, and 53 is identified in **Table 24-38**.

296. In order to evaluate if there could be potentially significant cumulative severance effects, a summary is provided in **Table 24-39** of the forecast changes in background traffic flows from the Projects and HP4.

297. In order to consider an initial worst case, the numbers presented in **Table 24-39** represent the worst case period for both the Projects and HP4, i.e. an overlap of the two peak periods rather than a consideration of the average changes in traffic flows.

Table 24-39 Significance of Cumulative Severance Effect

Link ID *	Link Description	Link Sensitivity	Background 2026 Annual Average Daily Traffic Flows	Forecast Peak Daily Construction Vehicle Trips – Projects	Forecast Daily Construction Vehicle Trips – HP4	Percentage increase (Projects + HP4)
14 (103)	A165 through Skirlaugh	High	8,737	594	358	10.9%

Link ID *	Link Description	Link Sensitivity	Background 2026 Annual Average Daily Traffic Flows	Forecast Peak Daily Construction Vehicle Trips – Projects	Forecast Daily Construction Vehicle Trips – HP4	Percentage increase (Projects + HP4)
16 (101)	A165 from Coniston to Holderness Road	High	8,737	594	358	10.9%
53 (70)	A1174/A164/Swinemoor Lane	High	16,535	1,422	721	13%
Notes						
*	Number in brackets is the HP4 assigned link number					

298. It can be identified from **Table 24-39** that the changes in total traffic flows on all links would be significantly less than 30%, therefore the magnitude of effect is assessed as negligible on receptors of high sensitivity resulting in a **minor adverse** residual cumulative effect.

24.8.1.3 Cumulative Impact 2: Amenity

299. 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 and separation from traffic. It can impact a range of non-motorised users such as pedestrians, cyclists and equestrians. Full details are provided in section 24.4.3 on the adopted impact assessment methodology for amenity.

300. It is identified in **Table 24-38** that there is the potential for significant cumulative amenity effects between the Projects and HP4 for links 36 and 45 (Dunflat Road and the A1033, respectively).

24.8.1.3.1 Link 36 – Dunflat Road

301. It is identified in **Table 24-24** that Link 36 has a base flow of 1,970 vehicle trips (including 37 HGV trips) per day and would be subject to construction traffic of up to 26 HGV trips per day at its peak and 11 on average. The peak level of traffic was assessed to result in a low magnitude of impact upon a link of low sensitivity resulting in a minor adverse effect.

302. A review of the ES for HP4 identifies that HP4's construction phase could generate a peak of up to 33 HGV trips and an average of 14 HGV trips via Link 36 (noted as Link 61 by HP4).

303. It is assessed that an overlap of the peak periods for both the Projects and HP4 could result in an additional 60 HGV trips per day via Link 36, equivalent to 162% increase in HGV traffic or approximately five HGV trips per hour. This level of HGV traffic upon a road with a baseline of three HGV trips per hour would be assessed to result in a medium magnitude of impact.

304. A medium magnitude of impact on a receptor of low sensitivity would be assessed to result in a **minor adverse** cumulative amenity effect.

24.8.1.3.2 Link 45 – A1033

305. It is identified in **Table 24-24** that Link 45 has a base flow of 22,393 vehicle trips (including 929 HGV trips) per day and would be subject to construction traffic of up to 642 HGV trips per day at its peak and 550 on average.

306. The peak level of traffic was assessed to result in a low magnitude of impact upon a link of low sensitivity resulting in a **minor** adverse effect.

307. A review of the ES for HP4 identifies that HP4's construction phase could generate a peak of up to 838 HGV trips and an average of 379 HGV trips via Link 45 (notated as Link 98 by HP4).

308. It is assessed that an overlap of the peak periods for both the Projects and HP4 could result in an additional 1,480 HGV trips per day via Link 45, equivalent to an 159% increase in HGV traffic. This level of HGV traffic on a road with 929 HGV trips per day would be assessed to result in a medium magnitude of impact. It should also be noted that the average flows for the Projects and HP4 combined would be significantly lower.

309. A medium magnitude of impact on a receptor of low sensitivity would be assessed to result in a **minor adverse** cumulative amenity effect.

24.8.1.4 Cumulative Impact 3: Road Safety

310. In order to understand the potential cumulative effects of changes in traffic on the existing road safety baseline, an examination of the recorded collisions occurring within the TTSA has been undertaken in context of the development proposals.

311. It is identified in **Table 24-38** that there is the potential for significant cumulative road safety effects between the Projects and the proposed Beverley Household Recycling Centre on Link 57 – A1035/A164.

312. It can be noted from **Table 24-27** that during the five-year road safety study period there have been 10 collisions recorded on Link 57 and a slight emerging pattern of collisions caused by drivers failing to give way when exiting side roads is identified. The link is therefore assessed as of medium sensitivity.

313. It is identified in **Table 24-27** that there could be a total change in traffic of up to 2.3% (equivalent to 288 vehicles), which was assessed to represent a negligible magnitude of impact.

314. The review of the TA for the proposed Beverley Household Recycling Centre identifies that: "*it is considered that there are not any existing road safety issues pertinent to the development of the site*".

315. The review of the TA for the proposed Beverley Household Recycling Centre identifies that there could be an additional 928 vehicles on Link 57 (A1035/A164), therefore the percentage change would increase from 2.8% to 9.9%. A change in total traffic of less than 10% would be assessed to result in a negligible to low magnitude of impact upon a receptor of medium sensitivity.

316. The residual cumulative road safety effects upon Link 57 (A1035/A164) is therefore assessed as no greater than **minor** adverse.

24.8.1.5 Summary of Findings from Cumulative Effects Assessment

317. The CEA for traffic and transport has not identified the potential for any significant cumulative effects.

24.9 Interactions

318. The effects identified and assessed in this chapter have the potential to interact with each other. The areas of potential interaction between effects are presented in **Table 24-40**. This provides a screening tool for which effects have the potential to interact. **Table 24-40** provides an assessment for each receptor (or receptor group) as related to these impacts.

319. Impacts 1 (severance) and 2 (amenity) are considered to be closely related and of a similar nature, and it is identified in **Table 24-40** that traffic would impact upon similar receptor groups (pedestrians, cyclists and equestrians). Therefore, the maximum forecast effect for impacts 1 or 2 would not be exceeded due to interactions. However, there is potential for impacts 1 and 2 to collectively interrelate with impact 4 (road safety). This inter-relationship is identified in **Table 24-40** .

320. It is identified in **Table 24-40** that impacts 4 (driver delay – capacity), 5 (driver delay – highway geometry) and 6 (driver delay – road closures) are also considered to be closely related and have potential to interact with each other to increase driver delay significance.

321. **Volume 7, Appendix 24-4 (application ref: 7.24.24.4)** contains a detailed assessment of the identified interactions (impacts 1, 2 and 4, plus impacts 4, 5 and 6) and concludes that there are no significant interactions between impacts from the construction of the Projects on traffic and transport.

322. An assessment is provided in **Table 24-40** for each receptor (or receptor group) as related to these impacts. No lifetime assessment is undertaken as the operational impacts have been scoped out of the assessment.

Table 24-40 Interactions Between Impacts – Screening

Potential Interactions Between Impacts						
Construction						
	Impact 1: Severance	Impact 2: Amenity	Impact 3: Road Safety	Impact 4: Driver Delay (Capacity)	Impact 5: Driver Delay (Highway Geometry)	Impact 6: Driver Delay (Road Closures)
Impact 1: Severance		Yes	Yes	No	No	No
Impact 2: Amenity	Yes		Yes	No	No	No
Impact 3: Road Safety	Yes	Yes		No	No	No
Impact 4: Driver Delay (Capacity)	No	No	No		Yes	Yes
Impact 5: Driver Delay (Highway Geometry)	No	No	No	Yes		Yes
Impact 6: Driver Delay (Road Closures)	No	No	No	Yes	Yes	
Operation						
No significant effects						
Decommissioning						
Decommissioning strategies have not yet been finalised; however, the inter-relationship between impacts are expected to be no greater than those of construction.						

24.10 Inter-relationships

323. In order to address the environmental effects of the Projects as a whole, this section establishes the interactions between traffic and transport 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.

324. The inter-relationships, which are considered relevant to traffic and transport, are summarised in **Table 24-41,** and the sections where these have been considered within this chapter are identified. The traffic and transport metrics established in this chapter have been used to inform the related chapters.

Table 24-41 Traffic and Transport Inter-relationships

Topic and Description	Related Chapter	Where Addressed in this Chapter	Rationale
Construction			
Impact 1: Severance and Impact 2: Amenity	**Volume 7, Chapter 25 Noise (application ref: 7.25)**	Section 24.6.1.2 and 24.6.1.3	Traffic has the potential to increase noise disturbance temporarily.
	Volume 7, Chapter 26 Air Quality (application ref: 7.26)		Traffic has the potential to temporarily affect air quality and impact upon local residents.
	Volume 7, Chapter 27 Human Health (application ref: 7.27)		The implications of changes in construction activities affecting highway safety and access as well as other PRoW and cycle routes and impact upon population health.
	Volume 7, Chapter 28 Socio-Economics (application ref: 7.28)		Traffic associated with construction may impact the local demography.

Topic and Description	Related Chapter	Where Addressed in this Chapter	Rationale
Impact 3: Road Safety	**Volume 7, Chapter 28 Socio-Economics (application ref: 7.28)**	Section 24.6.1.4	Traffic associated with construction may impact the local demography.
Impact 4 to 5: Driver Delay	**Volume 7, Chapter 26 Air Quality (application ref: 7.26)**	Section 24.6.1.4.2	Traffic has the potential to temporarily affect air quality and impact upon local residents.
Operation			
No significant effects.			
Decommissioning			
Decommissioning strategies have not yet been finalised; however, the effects are expected to be no greater than those of construction.			

24.11 Summary

325. This chapter has assessed the potential effects of the onshore infrastructure of the Projects on the surrounding traffic sensitive receptors.

326. This chapter has been developed with regard to the legislative and policy framework outlined in section 24.4.1 and further informed by consultation with East Riding of Yorkshire Council, Hull City Council and National Highways.

327. Traffic demand has been forecast by applying a first principles approach to generate traffic volumes from an understanding of material quantities and personnel numbers. This traffic demand has been assigned to access locations serving the Projects and applying a package of embedded mitigation to minimise the significance of effects.

328. In accordance with national guidance, a TTSA has been identified, baseline conditions established and sensitive receptors within the TTSA identified. The TTSA area was screened to identify routes that could be potentially adversely affected by the Projects' traffic generation.

329. A total of 66 highway links across 150km of highway network within the TTSA have been assessed for the impacts of amenity, severance, road safety and driver delay. With the application of additional mitigation measures (as appropriate) the residual effect upon all receptors was assessed to be not significant in EIA terms as shown in **Table 24-42**.

Table 24-42 Summary of Potential Likely Significant Effects on Traffic and Transport

Potential Impact	Receptor	Magnitude of Impact	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect
Construction (DBS East or DBS West In Isolation)						
Impact 1: Severance	Links: 5, 6, 14, 16, 17, 53, 76.	Negligible	High	**Minor** adverse	n/a	Negligible to **Minor** adverse
	Links 10, 20, 56, 71.		Medium	**Minor** adverse		
	Links: 8, 11, 13, 15, 19, 22, 32, 33, 34, 35, 36, 37, 38, 40, 45, 50, 51, 52, 54, 55, 62, 75.		Low	Negligible		
	Links: 7, 58, 73	Low	Low	**Minor** adverse		
Construction (DBS East or DBS West concurrently)						
Impact 1: Severance	Links: 4, 5, 6, 14, 16, 17, 53, 76.	Negligible	High	**Minor** adverse	n/a	Negligible to **Minor** adverse
	Links 10, 20, 56, 71.		Medium	**Minor** adverse		
	Links: 8, 13, 15, 19, 22, 32, 33, 34, 35, 36, 37, 38, 40, 45, 50, 51, 52, 54, 55, 62, 74, 75.		Low	Negligible		
	Links: 7, 11, 58, 73	Low	Low	**Minor** adverse		
Construction (DBS East or DBS West In Isolation)						
Impact 2: Amenity	Links: 10, 20, 56, 71	Negligible	High	**Minor** adverse	To mitigate potentially significant amenity effects along links 5, 6, 14, 16, 17, 53 and 76 the **OCTMP** (**Volume 8, application ref: 8.13**) (which is secured by DCO Requirement 14) contains a commitment to manage HGV trips along these links to levels where significant effects would not occur.	Negligible to **Minor** adverse
			Medium	**Minor** adverse		
	Links 19, 22, 32, 33, 34, 35, 37, 38, 54, 55, 62.		Low	Negligible		
	Links: 5, 6, 14, 16, 17, 53, 76.	Low	High	**Moderate** adverse		

Potential Impact	Receptor	Magnitude of Impact	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect
	Links: 13, 15, 36, 40, 45, 50, 51, 52, 75		Low	**Minor** adverse	The OCTMP also includes additional controls to restrict HGV trips via links 5 and 6 during school start and finish times.	
	Links: 7, 8, 11, 58, 73	Medium	Low	**Minor** adverse		
Construction (DBS East and DBS West concurrently)						
Impact 2: Amenity	Links: 4	Negligible	High	**Minor** adverse	To mitigate potentially significant amenity effects along links 5, 6, 14, 16, 17, 53, 58 and 76 the **OCTMP (Volume 8, application ref: 8.13)** (which is secured by DCO Requirement) contains a commitment to manage HGV trips along these links to levels where significant effects would not occur. The OCTMP also includes additional controls to restrict HGV trips via links 5 and 6 during school start and finish times.	Negligible to **Minor** adverse
	Links: 10, 71		Medium	**Minor** adverse		
	Links: 19, 32, 33, 34, 35, 37, 62, 74		Low	Negligible		
	Links: 13, 15, 22, 36, 38, 40, 45, 52, 54, 55, 75	Low	Low	**Minor** adverse		
	Links: 20, 56		Medium	**Minor** adverse		
	Links: 5, 6, 14, 16, 17, 53		High	**Moderate** adverse		
	Links: 7, 8, 11, 50, 51	Medium	Low	**Minor** adverse		
	Link 76		High	**Major** adverse		
	Link 58	High	Low	**Moderate** adverse		
Construction (DBS East or DBS West In Isolation)						
Impact 3: Road Safety	Link 36	Negligible	Negligible	Negligible	n/a	Negligible
	Links: 5, 8, 24	Low	Low	**Minor** adverse	n/a	**Minor** adverse
	Links: 6, 14, 37, 38, 46, 51, 59, 60, 62, 65, 74, 75	Negligible		Negligible	n/a	Negligible

Potential Impact	Receptor	Magnitude of Impact	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect
	Link 17	Medium	Medium	**Moderate** adverse	To mitigate potentially significant road safety effects along Link 17 the **OCTMP (Volume 8, application ref: 8.13)** (which is secured by DCO Requirement 14) contains a commitment to reduce HGV trips along this link. The OCTMP also includes additional commitments to enhanced driver inductions.	**Minor** adverse
	Links: 1, 2, 4, 10, 26, 57	Negligible		**Minor** adverse	n/a	**Minor** adverse
	Links: 9, 12, 15, 16, 18, 19, 20, 28, 29, 30, 32, 35, 40, 45, 49, 55, 61	Negligible	High	**Minor** adverse	n/a	**Minor** adverse
	Link 76	Low to Medium	High	**Major** adverse	To mitigate potentially significant road safety effects along Link 76 the **OCTMP (Volume 8, application ref: 8.13)** (which is secured by DCO Requirement 14) contains a commitment to reduce HGV trips along this link. The OCTMP also includes additional commitments to enhanced driver inductions.	**Minor** adverse
Construction DBS East and DBS West Concurrently						
Impact 3: Road Safety	Link 36	Low	Negligible	Negligible	n/a	Negligible
	Links: 5, 8, 24	Low	Low	**Minor** adverse	n/a	**Minor** adverse
	Links: 6, 14, 37, 38, 46, 51, 59, 60, 62, 65, 74, 75	Negligible		Negligible	n/a	Negligible

Potential Impact	Receptor	Magnitude of Impact	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect
	Link 17	Medium	Medium	**Moderate** adverse	To mitigate potentially significant road safety effects along link 17 the **OCTMP (Volume 8, application ref: 8.13)** (which is secured by DCO Requirement) contains a commitment to reduce HGV trips along this link. The OCTMP also includes additional commitments to enhanced driver inductions.	**Minor** adverse
	Links: 1, 2, 4, 10, 26, 57	Negligible		**Minor** adverse	n/a	**Minor** adverse
	Links: 9, 12, 15, 16, 18, 19, 20, 28, 29, 30, 32, 35, 40, 45, 49, 55, 61	Negligible	High	**Minor** adverse	n/a	**Minor** adverse
	Link 76	Low to Medium	High	**Major** adverse	To mitigate potentially significant road safety effects along Link 76 the **OCTMP (Volume 8, application ref: 8.13)** (which is secured by DCO Requirement) contains a commitment to reduce HGV trips along this link. The OCTMP also includes additional commitments to enhanced driver inductions.	**Minor** adverse
Construction (All Scenarios)						
Impact 4: Driver Delay (Capacity)	Junctions 1 – 13	The **OCTMP (Volume 8, application ref: 8.13)** (which is secured by DCO Requirement 14) includes a commitment to submitting further assessment of traffic flows through sensitive junctions in advance of construction to inform an agreement whether further mitigation may be required. This approach was agreed with National Highways and Hull City Council, noting that there is significant traffic reassignment through the junctions currently and that there would be greater certainty regarding a number of the Projects' traffic variables, such as the origin of supply chain and employees. Any mitigation measures would be agreed with National Highways and Hull City Council to ensure that residual effects are not significant. Mitigation measures would be applied on a hierarchical basis with travel planning measures (e.g. use of minibuses or staggering shift times) being preferred to engineering measures (e.g. junction improvements).				

Potential Impact	Receptor	Magnitude of Impact	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect
	Junction 14	Low	High	**Moderate** adverse	To mitigate potentially significant driver delay effects through junctions 14 to 17 the **OCTMP (Volume 8, application ref: 8.13)** (which is secured by DCO Requirement 14) contains a commitment to manage employee trips through these junctions during the network peak hours.	**Minor** adverse
	Junction 15	Low	High	**Moderate** adverse		
	Junction 16	Low – Medium	Medium	**Minor to Moderate** adverse		
	Junction 17	Low	High	**Moderate** adverse		
Construction (All Scenarios)						
Impact 5: Driver Delay (Highway Geometry)	Link 7	High	Low	**Moderate** adverse	To mitigate potentially significant driver delay effects the **OCTMP (Volume 8, application ref: 8.13)** (which is secured by DCO Requirement 14) contains a commitment to: • Link 7: Extension of existing passing places or the use of an escort vehicle. • Link 8: New passing places or the use of an escort vehicle. • Link 11: Localised road widening or the use of an escort vehicle. • Link 58: Road widening or the use of an escort vehicle. • Link 73: New / widening of passing places or the use of an escort vehicle.	**Minor** adverse
	Link 8	Medium	Medium	**Moderate** adverse		
	Link 11	Medium	Medium	**Moderate** adverse		
	Link 58	High	Medium	**Major** adverse		
	Link 73	High	Medium	**Major** adverse		
Construction (All Scenarios)						
Impact 6: Driver Delay (Road Closures)	Bewholme Lane, Dunnington Lane, Billings Lane, Catwick Heads Lane and Rise Lane	Low	Low	**Minor** adverse	n/a	Negligible to **Minor** adverse

Potential Impact	Receptor	Magnitude of Impact	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect
	Catfoss Road	High		**Moderate** adverse	To mitigate potentially significant driver delay effects along Catfoss Road the **OCTMP (Volume 8, application ref: 8.13)** (which is secured by DCO Requirement 14) contains a commitment to either use of trenchless crossing technology e.g. HDD or alternatively to temporarily widen the road to allow shuttle working.	
	Park Lane	Negligible	High	**Minor** adverse	n/a	
	Harsell Lane and Riston Road	Negligible	Low	**Negligible**	n/a	
Operation						
No significant effects.						
Decommissioning						
The detail and scope of the decommissioning works would be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A Decommissioning Plan would be provided prior to any decommissioning commencing onshore.						

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RWE Renewables UK Dogger Bank South (West) Limited

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Windmill Hill Business Park

Whitehill Way

Swindon

Wiltshire, SN5 6PB