



LIGHTHOUSE GREEN FUELS PROJECT

Preliminary Environmental Information Report Chapter 16: Traffic and Transport

The Inspectorate Reference: **EN010150**

May 2024
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16. TRAFFIC AND TRANSPORT

16.1. INTRODUCTION

OVERVIEW

- 16.1.1. This Chapter reports the preliminary assessment of the likely significant effects of the Proposed Scheme with respect to Traffic and Transport during the Construction Phase, Operation Phase, and Decommissioning Phase.
- 16.1.2. The preliminary assessment is based on the current available information and should be read in conjunction with **Chapter 2: Site and Proposed Scheme Description (Volume 1)** and with respect to the relevant parts of the following chapters:
- **Chapter 5: Air Quality (Volume 1);**
 - **Chapter 6: Noise and Vibration (Volume 1);**
 - **Chapter 15: Population and Human Health (Volume 1); and**
 - **Chapter 18: Marine Navigation (Volume 1).**
- 16.1.3. This chapter is also informed and supported by the following appendices:
- **Appendix 16A: Local Cycle Routes (Volume 3);**
 - **Appendix 16B: Personal Injury Collision Data (Volume 3);**
 - **Appendix 16C: Traffic Flow Data (Volume 3);**
 - **Appendix 16D: Traffic Assumptions (Volume 3);**
 - **Appendix 16E: Construction Phase Traffic Flows (Volume 3);**
 - **Appendix 16F: Operation Phase Traffic Flows (Volume 3);**
 - **Appendix 16G: Preliminary Assessment of Construction Phase Effects (Volume 3); and**
 - **Appendix 16H: Preliminary Assessment of Operation Phase Effects (Volume 3).**
- 16.1.4. Where relevant, further assessment will be presented in the Environmental Statement (ES). This Chapter of this PEIR describes:
- The policy, legislation and technical guidance that has informed the assessment (**Section 16.2**);
 - The consultation and engagement that has been undertaken and how comments from consultees relating to Traffic and Transport have been addressed, or will be addressed (**Section 16.3**);
 - Assessment methodology and significance criteria comprising potential significant effects, identification of sensitive receptors, methods used for baseline data collection gathering and the methods used for assessment (**Section 16.4**);
 - The Study Area (**Section 16.5 and Figure 16-1 (Volume 2)**): Traffic and Transport Study Area;
 - Baseline conditions and future baseline (**Section 16.6**);

- Embedded measures relevant to Traffic and Transport (**Section 16.7**);
- Sensitivity of Receptors (**Section 16.8**);
- The preliminary assessment of likely Traffic and Transport impacts and effects (**Section 16.9**);
- Monitoring (**Section 16.11**);
- Residual Effects (**Section 16.12**);
- An outline of further work to be undertaken for the ES (**Section 16.13**); and
- Limitations and Assumptions (**Section 16.14**).

16.1.5. This preliminary Traffic and Transport assessment considers the likely impacts and effects of the Proposed Scheme on both motorised and non-motorised users (NMU) of the highway network within the defined Study Area shown in **Figure 16-1 (Volume 2)** during construction, operation and decommissioning.

16.1.6. The Proposed Scheme has the potential to affect Traffic and Transport as a result of:

- The Construction Phase/Decommissioning Phase:
 - Construction traffic - temporary increases in Heavy Goods Vehicular (HGV) traffic associated with the import and export of construction materials by road; and
 - Construction worker movements - temporary increases in Light Duty Vehicular (LDV) vehicular traffic associated with the construction workforce.
- The Operation Phase:
 - Operational Phase traffic - change in HGV traffic associated with the import and export of materials by road;
 - Operational worker movements – change in LDV traffic associated with the operation workforce; and
 - Rail Movements.

16.1.7. For the purpose of this PEIR, decommissioning impacts are anticipated to be no worse than those during the Construction Phase following the implementation of a Decommissioning Traffic Management Plan (DTMP) for the works. The Construction Phase and decommissioning have therefore been assessed together.

16.2. POLICY, LEGISLATION, AND GUIDANCE

16.2.1. The policy, legislation, and guidance relevant to the assessment of Traffic and Transport for the Proposed Scheme is detailed in **Appendix 4A: Policy, Legislation and Guidance (Volume 3)**.

16.2.2. The policy and guidance relevant to this Chapter is outlined below:

- Policy:
 - Overarching National Policy Statement for Energy (EN-1) 2023¹;
 - National Planning Policy Framework (NPPF) 2023²;

- Department for Transport (DfT) Circular 01/2022 Strategic Road Network and the delivery of sustainable development (2022)³;
- National Highways Planning for the future (2023)⁴;
- Highways England Water Preferred Policy (2019)⁵;
- Tees Valley Joint Minerals and Waste Development Plan Document (2011)⁶;
- Tees Valley Strategic Transport Plan (2020)⁷;
- Stockton-on-Tees Borough Council Local Plan (2019)⁸; and
- Redcar and Cleveland Local Plan (2018)⁹.
- Legislation:
 - Highways Act 1980¹⁰;
 - Town and Country Planning Act 1990¹¹;
 - New Roads and Street Works Act 1991¹²;
 - Traffic Management Act 2004¹³;
 - Planning Act 2008¹⁴; and
 - Local Transport Act 2008¹⁵.
- Guidance
 - Guidelines for the Environmental Assessment of Road Traffic (1993)¹⁶;
 - Environmental Assessment of Traffic and Movement (2023)¹⁷;
 - Planning Practice Guidance. Travel Plans, Transport Assessments and Statements (2014)¹⁸;
 - LA 101 - Introduction to environmental assessment (2019)¹⁹;
 - LA 103 - Scoping projects for environmental assessment (2020)²⁰;
 - LA 104 - Environmental assessment and monitoring (2020)²¹; and
 - LA 112 - Population and human health (2020)²².

16.3. SCOPING OPINION AND CONSULTATION

SCOPING OPINION

- 16.3.1. An Environmental Impact Assessment (EIA) Scoping Opinion²³ was received by the Applicant from the Planning Inspectorate (The Inspectorate) on behalf of the Secretary of State on 01 September 2023. The comments from the Inspectorate in relation to Traffic and Transport and how these requirements will be addressed by the Applicant are set out in **Table 16-1**.

Table 16-1: Summary of the EIA Scoping Opinion in relation to Traffic and Transport

Section ID	Applicant's Proposed Matter	Scoping Opinion Comments	Response
3.14.1	Movements of workers – operation	<p><i>“The Applicant proposes to scope out impacts from the movement of workers during the Operational Phase. The reasoning provided is that the Proposed Development is anticipated to generate up to 235 Full Time Equivalent (FTE) employees during operation of the Proposed Development. The Scoping Report²⁵ argues that this is not considered to significantly increase traffic generation when compared to the site’s extant planning permission.</i></p> <p><i>Although the site is subject to planning permission, as stated in paragraph 2.1.2, the construction works were suspended and therefore, no traffic movements associated with the operation of the existing planning permission currently occur across the site. The ES should assess the potential for likely significant effects to occur compared to the current baseline usage.</i></p> <p><i>In light of this the Inspectorate does not agree to scope this matter out at this stage. Accordingly, the ES should include an assessment of this matter, or evidence demonstrating the absence of a likely significant effect with reference to guidance, demonstrating agreement with the relevant consultation bodies.”</i></p>	The Applicant acknowledges the Inspectorate’s comments in relation to evidencing the assumptions that underpin this matter. This Chapter includes a preliminary assessment of the impacts from the movement of workers. The Applicant will include an assessment of this matter in the ES, or evidence demonstrating the absence of likely significant effects associated with the movement of workers during the Operation Phase with reference to guidance and demonstrate agreement with the relevant consultation bodies.
3.14.2	Movements of inputs/outputs –	<i>“The Applicant proposes to scope out movements of materials during operation on the basis that</i>	The Applicant acknowledges the Inspectorate’s opinion that the potential for

Section ID	Applicant's Proposed Matter	Scoping Opinion Comments	Response
	operation	<p><i>changes to traffic flows are not expected to change by more than 10% when compared to the site's permitted use (as stated in paragraph 18.7.13). It is stated (in paragraph 18.7.11) that the Applicant intends for all additional feedstock to be delivered by rail. However, as a contingency, up to 400,000 tonnes per annum may be transported by road to allow for instances where the use of rail is not possible.</i></p> <p><i>The quantity and type of vehicle movements required to transport up to 400,000 tonnes of feedstock per annum is not provided, nor are the HGV movements associated with the permitted use of the TV1 and TV2 facilities. Therefore, the potential for significant effects to occur is not fully understood. Furthermore, although it is the Applicant's intention for feedstock to be transported via rail, it is unclear on what mechanism will be in place to ensure that rail is utilised over road movements. Therefore, the Inspectorate does not agree to scope this matter out at this stage. Accordingly, the ES should include an assessment of these matters, or the information referred to demonstrating agreement with the relevant consultation bodies and the absence of a likely significant effect."</i></p>	<p>significant effects to occur is not fully understood in relation to the movements of inputs/outputs during the Operation Phase.</p> <p>A preliminary assessment of the quantity and type of vehicle movements required, including anticipated HGV movements, to transport up to 700,000 tonnes of Biocarbon Feedstock per annum has been included in this PEIR at Section 16.9.</p> <p>The quantity of Biocarbon Feedstock required for the Sustainable Aviation Fuel (SAF) process has increased since the scoping stage. This equates to up to 100 HGVs per day (200 two-way HGV movements) or 3 trains per day.</p> <p>As the Proposed Scheme develops and more information becomes available in relation to the movement of import/export during the Operation Phase, the Applicant will include an assessment of these matters in the ES, or the information referred to demonstrating agreement with the relevant consultation bodies and the absence of a likely significant effect.</p>
3.14.3	Decommissioning Phase	<i>"The Applicant proposes to scope out Decommissioning Phase effects on the basis that</i>	This PEIR presents the maximum anticipated number of construction workers required

Section ID	Applicant's Proposed Matter	Scoping Opinion Comments	Response
		<p><i>these would be similar to or less than the Construction Phase. As noted in paragraph 18.7.14, decommissioning works are uncertain at this stage. Indicative traffic numbers for either the construction or Decommissioning Phases are not provided within the Scoping Report²⁵ therefore no evidence is provided to support the claim that Decommissioning Phase effects would be similar to or less than Construction Phase effects. Furthermore, since the Construction Phase is scoped in on the basis that significant effects could occur, there is potential for significant effects to occur within the Decommissioning Phase.</i></p> <p><i>The Inspectorate is not in a position to scope this matter out at this stage. The ES should identify the likely traffic generated during construction and decommissioning, along with the basis for estimating traffic movements and any measures to manage the impact of traffic on the road network. Where the potential for a significant effect is identified, then this should be fully assessed within the ES."</i></p>	<p>during the Construction Phase. The current estimate is that 2,600 workers will be required at the peak of construction. Preliminary traffic flows are included in this PEIR.</p> <p>As the Proposed Scheme develops and more information becomes available in relation to the Decommissioning Phase, the Applicant will include an assessment of these matters in the ES, or the information demonstrating the absence of a likely significant effect as well as agreement with the relevant consultation bodies.</p> <p>The Applicant will provide further details in the ES in relation to traffic movements during the Decommissioning Phase and appropriate measures to manage the impacts.</p>
3.14.4	Guidance	<p><i>"Table 16-1 refers to the Guidelines for the Environment Assessment of Road Traffic (1993) by the Institute of Environmental Management and Assessment (IEMA). In July 2023 IEMA published an update to the 1993 guidance titled 'Environmental Assessment of Traffic and</i></p>	<p>The IEMA Environmental Assessment of Traffic and Movement (EATM) guidelines were published after the drafting of the EIA Scoping Report²⁵ ready for submission to the Inspectorate.</p>

Section ID	Applicant's Proposed Matter	Scoping Opinion Comments	Response
		<i>Movement'. The Applicant is advised to use the most recent guidance in its assessment."</i>	The Applicant agrees with the Inspectorate comments in relation to this matter and the Guidance that has been updated to reflect the Environmental Assessment of Traffic and Movement (2023) ²⁴ has been considered in the preparation of this PEIR and will continue to be used in the ES.
3.14.5	Strava 'heat maps'	<p><i>"The Scoping Report²⁵ states that Strava 'heat maps' will be used as a data source to understand the usage of routes by non-motorised users. It is stated that this will be supplemented by observations onsite and local knowledge.</i></p> <p><i>The ES should justify why the use of such maps is a robust data source for establishing baseline conditions, particularly considering there is potential for routes to be used by non-motorised users who may not use the Strava application. Therefore, these maps are unlikely to represent a worst-case scenario. Furthermore, these maps do not provide quantitative data of route usage."</i></p>	<p>The Applicant acknowledges the Inspectorate comment that Strava 'heat maps' may not represent a worst-case scenario.</p> <p>Quantitative data is available from Strava, however, due to the issues raised regarding the limitations of the data the Applicant will commission NMU surveys at locations to be agreed with the relevant consultation bodies and present the findings within the ES.</p> <p>The Applicant will use this data to inform the likely significant effects arising from the Traffic and Transport impacts associated with the Proposed Scheme.</p>
3.14.6	Future baseline	<i>"The assessment proposes to use the Trip End Model Program (TEMPro) to predict the level of background traffic growth at the peak year of construction. The ES should also assess the operational traffic against background traffic flows for the peak year of operation of the Proposed Development."</i>	<p>This PEIR has used TEMPro Version 8.0 growth factors in the preliminary assessment of significant effects of the Proposed Scheme during the anticipated peak year of construction during the Construction Phase and the Operation Phase opening year.</p> <p>The Applicant will continue to use TEMPro V8.0 (or subsequent releases of the software</p>

Section ID	Applicant's Proposed Matter	Scoping Opinion Comments	Response
			version) to calculate growth factors in the ES stage. The growth factors will be derived from the latest version of TEMPro at the time of preparing the ES.
3.14.7	Operational traffic movements	<i>“As noted at ID 3.14.1 and ID 3.14.2 above, the Applicant proposes to scope out operational traffic movements associated with employees and transportation of SRF feedstock. No consideration is given in the Scoping Report²⁵ to other operational traffic movements, such as exports of industrial effluent and transportation of CO2 during the five-year start-up period for the NZT Project (as stated in paragraph 2.2.17). The ES should consider operational transport movements from all elements of the operational phase, assessing a worst-case scenario where optionality is sought.”</i>	<p>The Applicant acknowledges the Inspectorates comments on operational traffic movements and consideration is given in this PEIR to other operational traffic movements, such as exports of industrial effluent and transportation of CO2 during the five-year start-up period for the Net Zero Teeside (NZT) Project.</p> <p>The ES will further develop the operational traffic assumptions from all elements of the operational phase, including assessing a worst-case scenario where optionality is sought.</p>
3.14.8	Rail movements	<i>“It is stated that the Applicant intends for the feedstock to be delivered by rail. The ES should provide numbers of rail movements associated with the operational of the Proposed Development and demonstrate that there is capacity on the rail network to accommodate the additional flows. Agreements and consents/easements may be required; the Applicant’s attention is drawn to the consultation response from Network Rail (Appendix 2 of this Opinion) in this regard.”</i>	<p>The Applicant acknowledges the Inspectorate’s comments in relation to this matter.</p> <p>The ES will provide details on the number of rail movements associated with the operation of the Proposed Scheme and impact on capacity of the rail network.</p> <p>The Applicant will consult with the relevant consultation bodies in relation to this matter including Network Rail and Office of Rail and Road (ORR).</p>

Section ID	Applicant's Proposed Matter	Scoping Opinion Comments	Response
Appendix 2: UK Health Security Agency Page 5	Traffic and transport	<p><i>“The Traffic and Transport Study Area will primarily be based upon ‘Rule 1’ and ‘Rule 2’ of the IEMA Guidelines which can be used to determine the effect of increased traffic volumes on links within the Study Area. The latest version of the IEMA guidelines should be used to form the basis of the assessment.</i></p> <p><i>It is noted that the operational aspects in relation to transport is intended to be scoped out on the basis of compliance with extant planning permission for the site. Suitable evidence should be submitted within the ES to support the assumption that vehicle movements will be within 10% of the existing planning permission conditions.”</i></p>	<p>The Applicant will conduct the Traffic and Transport assessment (TA) in accordance with the latest IEMA guidance.</p> <p>The preliminary assessment indicates operation vehicle movements are within 10% of baseline traffic flows. This will be confirmed in the ES.</p>

TECHNICAL ENGAGEMENT

16.3.2. **Table 16-2** provides a summary of the engagement and consultation undertaken to inform the Traffic and Transport assessment to date.

Table 16-2: Summary of Consultations

Body/Organisation	Consultation Date	Consultation Outcomes
Stockton-on-Tees Borough Council (STBC), Redcar and Cleveland Borough Council (RCBC), National Highways	22 March 2024	<p>Scope: An introductory scoping meeting was held with STBC, RCBC, and National Highways. The Proposed Scheme was presented, programme, Traffic and Transport Study Area, Construction Phase assumptions, and Operational Phase assumptions.</p> <p>Response/Outcome: Agreed to issue a Traffic and Transport Scoping Technical Note to all parties for a formal response.</p>

16.3.3. Further technical engagement with consultees in relation to Traffic and Transport will be undertaken post completion of statutory consultation.

16.3.4. The assessment methodology and the assumptions underpinning the assessment will be discussed further and agreed with Stockton-on-Tees Borough Council (STBC) and Redcar and Cleveland Borough Council (RCBC), as the Local Highway Authorities (LHA) the Proposed Scheme is within, and National Highways to ensure that it meets the necessary standards and guidelines. Hartlepool Borough Council (HBC) and Middlesbrough Borough Council (MBC) will also be consulted as neighbouring highway authorities.

16.3.5. Following consultation with STBC, RCBC, HBC, MBC, and National Highways and receipt of further comments from the Inspectorate, the methodology to assess the Traffic and Transport impacts arising from the Proposed Scheme will be refined further with the full analysis presented in the ES.

16.3.6. Statements of Common Ground (SoCG) will be prepared in relation to the Traffic and Transport impacts with the relevant authorities and organisations.

16.4. ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

16.4.1. The preliminary Traffic and Transport assessment of the Proposed Scheme has been undertaken in line with the legislation, policy, and guidance in **Section 16.2**.

POTENTIAL SIGNIFICANT EFFECTS

16.4.2. At the EIA Scoping Stage, it was proposed to scope out the following elements:

- Traffic and Transport movements during the Operation Phase; and
- Traffic and Transport movements during the Decommissioning Phase.

16.4.3. The EIA Scoping Opinion²³ included a request to scope in these elements, including rail movements during the Operation Phase, as the available information was not sufficient to rule out the potential for significant effects to occur. Therefore, in accordance with the Scoping Opinion²³ these elements have been considered in this Chapter.

16.4.4. As identified in the EIA Scoping Report²⁵, the following environmental effects are susceptible to change and are considered to be potentially significant and have been considered further in this Chapter:

- Severance: severance is the perceived division that can occur within a community when it becomes separated by major transport infrastructure. The term is used to describe a complex series of factors that separate people from places and other people.
- Pedestrian Delay (incorporating delay to all NMUs: the ability of people to cross roads as a result of changes in traffic volume, composition and speed, the level of pedestrian activity, visibility and general physical conditions. Pedestrian delay and severance are closely related effects and be grouped together.
- NMU Amenity: NMU amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by changes in traffic flow, traffic composition and pavement width/separation from traffic.
- Fear and Intimidation: a further environmental impact that affects people is the fear and intimidation created by all moving objects. The extent of fear and intimidation is dependent on the total volume of traffic, the heavy vehicle composition, the speed these vehicles are passing, and the proximity of traffic to people.
- Road Safety: the risk of accidents occurring where the Project is expected to produce a change in the character of traffic.
- Hazardous loads.

16.4.5. The following environmental effect will be considered as part of the preparation of the ES at the next stage:

- Driver Delay: traffic delays to non-development traffic.
- Road Safety Audits: The standard and prescribed Road Safety Audits (GG119 – Road Safety Audit DMRB) will be used to review the road safety attributes of any proposed engineering changes in the adopted highway prior to submission of the ES, if considered appropriate.

SENSITIVE RECEPTORS

16.4.6. In the context of this PEIR, sensitive receptors are considered to be users of the local highway network to whom the transport impacts of the Proposed Scheme from its construction, operation, and decommissioning may be perceptible.

16.4.7. The following sensitive receptors have been identified and will be considered in this Chapter:

- **Motorised Users** – Motorised users of the surrounding highway network, including motorists and freight vehicles;
- **Non-Motorised Users** – NMU, such as pedestrians and cyclists, of the surrounding highway network;
- **Public Rights of Way (PRoW) and non-designated public routes users** - pedestrians, cyclists, equestrians (and vulnerable groups);
- **Public Transport Users**; and
- **Emergency Services.**

16.4.8. In addition, the EATM identifies special interests that should be considered when defining sensitive receptor geographic locations. The sensitive locations inform the assessment of effect significance when development traffic is assigned to the network and includes:

- People at home;
- People at work;
- Sensitive and/or vulnerable groups (including young age, older age income; health status; social disadvantage; and access and geographic factors);
- Locations with concentrations of vulnerable users (e.g. hospitals, places of worship, schools);
- Retail areas;
- Recreational areas;
- Tourist attractions;
- Collision clusters and routes with road safety concerns; and
- Junctions and highway links at (or over) capacity.

16.4.9. The EATM guidance indicates that sensitive receptors within the agreed Study Area should be assigned to the nearest highway link, and the relationship with the highway environment examined to understand the sensitivity of those receptors to change.

Section 16.8 classifies the sensitivity of the links within the Study Area with regards to the above considerations and this sensitivity to change is used in the assessment of significance.

BASELINE DATA COLLECTION

16.4.10. A desk study has been undertaken which has included a review of the strategic and local road network, public transport networks, PRoW network, and accident data within the Study Area for the Proposed Scheme.

16.4.11. A summary of the organisations that have supplied data, together with the nature of that data is outlined in **Table 16-3**.

Table 16-3: Baseline Data Collection

Data Type	Data Source	Data Provided
Census	Census 2011	'Location of usual residence and place of work by method of travel to work' for the category 'Driving Car or Van'. The Middle Layer Super Output Area (MSOA) 'Stockton-on-Tees 003'.
Ordnance Survey (OS) Mapping	Bing maps allows access to Ordnance Survey Mapping	1:50,000 and 1:25,000 Ordnance Survey Mapping of the Study Area.
Google Traffic	Google maps website	Data on congestion on local roads and junctions within the Study Area.
Google Street View	Google maps website	Street View Imagery.
Personal Injury Collision Data	Traffic and Accident Data Unit	Personal Injury Collision (PIC) data within the Study Area for 2015-2023.
PRoW Definitive Map	STBC website	PRoW information from the online STBC definitive map.
PRoW Definitive Map	RCBC website	PRoW information from the online RCBC definitive map.
Traffic Data	Department for Transport (DfT) website	Historic data from the DfT permanent count locations at identified Highways Links.
Bus Service Information	Stagecoach website	Bus Service information for the local area.
National Cycle Network (NCN) Map	Sustrans website	Overview of the NCN within the Study Area.
Local Cycle Maps	Tees Valley Cycle Map	Overview of the local cycle network within the Study Area.
DfT – Trip End Model Presentation Programme (TEMPro) data	The National Trip End Model (NTEM) forecasts the growth in trip origin-destinations (or productions-attractions) up to 2051 for use in transport modelling. The NTEM includes planning data to allow for traffic growth as a result of new development. The TEMPro software allows users to view the NTEM dataset and has been used to	Traffic growth rates for the Study Area.

Data Type	Data Source	Data Provided
	derive traffic growth factors between years, e.g. from baseline year to forecast year.	
Network Rail Map	Network Rail website	Details of active rail lines in the Study Area.
Site Visit	In-person Site Visit.	A Site Visit has been undertaken to corroborate the baseline conditions and observe traffic conditions, quality of bus stop infrastructure, condition of footways, vehicle restrictions for example, during the AM Peak Hour, Inter-peak hours and PM Peak Hour within the Traffic and Transport Study Area.

16.4.12. The description of the baseline conditions presented in **Section 16.6** is based on the currently available data from within the Study Area.

Data Limitations

16.4.13. The preparation of the ES Chapter will likely be supplemented by the following data sources:

- Traffic Counts:
 - Junction Turning Counts (JTCs) at junctions within the Study Area (**Figure 16-1 (Volume 2)**) during 2024 during a neutral month for a 24-hour period on a weekday.
 - Automatic Traffic Counts (ATCs) on selected connecting highway links during 2024 during a neutral month for one week.
 - NMU Surveys for selected routes during a neutral month.

16.4.14. This data will also inform updated assessments for Air Quality and Noise and Vibration. See **Chapter 5: Air Quality (Volume 1)** and **Chapter 6: Noise and Vibration (Volume 1)** of this PEIR for further details.

ASSESSMENT METHODOLOGY

16.4.15. The environmental effects of traffic generated by the Proposed Scheme have been preliminarily assessed with reference to the Design Manual for Roads and Bridges (DMRB), EATM, and other guidance as detailed in **Section 16.2** of this Chapter. In accordance with this guidance, environmental effects of Traffic and Transport including severance, pedestrian delay (incorporating delay to all NMU), NMU amenity, fear and intimidation, road safety and driver delay associated with the Proposed Scheme are required to be assessed.

- 16.4.16. Preliminary assessments for severance and pedestrian delay (incorporating delay to all NMU), NMU amenity, fear and intimidation and a high-level assessment of road safety associated with the Proposed Scheme are presented within this Chapter. The effects of driver delay will be assessed in the Transport Assessment (TA) that will accompany the ES.
- 16.4.17. The preliminary assessments for severance and pedestrian delay (incorporating delay to all NMU), NMU amenity, and fear and intimidation will also be updated and included in the ES. A detailed assessment of road safety will be undertaken as part of the accompanying TA. The updates to these assessments will be informed by additional baseline traffic data and informed by consultation with the relevant consultation bodies.
- 16.4.18. For the purposes of this Chapter, it is assumed that construction materials will be delivered by road (smaller equipment and materials) and by water (larger modules and equipment), as set out in further detail in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**.
- 16.4.19. In relation to road, it is assumed that that up to 60 HGVs (60 in/60 out) will be required during the peak of the Construction Phase. In addition, it is anticipated up to 2,600 construction workers will be required to support the construction of the Proposed Scheme. This is greater than the anticipated 750 construction workers originally reported in the EIA Scoping Report²⁵.
- 16.4.20. Transport movements by water are considered in **Chapter 18: Marine Navigation (Volume 1)**.
- 16.4.21. During the Construction Phase it is anticipated that there will be a requirement for the transportation of Abnormal Indivisible Loads (AIL). This will include up to 250 loads by Self Propelled Modular Transport (SPMT) from either Wilton Engineering Wharf (Option 1) or Clarence Wharf (Option 2). Further details are provided on this is set out in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**. The ES will confirm the maximum number of AIL required and the types of vehicles required. Any mitigation measures required to facilitate the delivery of AIL will be detailed in the ES and the likely significant effects assessed.
- 16.4.22. The preliminary assessment set out in this Chapter has considered the existing Traffic and Transport conditions around the Site and has assessed the network and corridor performance in relation to a number of receptors. This is based on existing data from a range of sources detailed later in this section of the report.
- 16.4.23. The preliminary assessment also sets out the findings of trip estimates from the Proposed Scheme, the mode split of all vehicle trips, and the likely distribution across the transport network.
- 16.4.24. Any likely significant environmental effects relating to noise and vibration and air pollution, generated by traffic from the Proposed Scheme, are considered in **Chapter 5: Air Quality (Volume 1)** and **Chapter 6: Noise and Vibration (Volume 1)** of this PEIR.
- 16.4.25. The traffic impacts of Site decommissioning works are uncertain at this stage. However, it is anticipated that they would be similar to or less than the Construction Phase.

Further details will be provided in the ES as more information on the Proposed Scheme become available. A DTMP would be prepared at the time of decommissioning.

ASSESSMENT SCENARIOS

16.4.26. The following assessment scenarios for the Construction Phase and Operation Phase have been considered for this PEIR to establish the preliminary effects:

- **Construction Phase:**
 - **2024 Baseline** – these are the DfT Traffic Flows for the locations shown in **Figure 16-4 (Volume 2)** with traffic growth applied using TEMPro;
 - **2026 Baseline** – these are the DfT Traffic Flows for the locations shown in **Figure 16-4 (Volume 2)** with traffic growth applied using TEMPro;
 - **2026 Do Minimum** – this is the 2026 Baseline scenario plus committed development; and
 - **2026 Do Something** – this is the 2026 Do Minimum scenario plus the peak of construction traffic associated with the Proposed Scheme.
- **Operation Phase:**
 - **2028 Baseline** – these are the DfT Traffic Flows for the locations shown in **Figure 16-4 (Volume 2)** with traffic growth applied using TEMPro;
 - **2028 Do Minimum** – this is the 2026 Baseline scenario plus committed development; and
 - **2028 Do Something** – this is the 2028 Do Minimum scenario plus operation traffic associated with the Proposed Scheme.

16.4.27. The years for each of the assessment scenarios identified above have been based on the latest version of the Programme Schedule available at the time of preparing this Chapter. The indicative construction schedule is set out in **Figure 2-4 (Volume 2)** contained in **Chapter 2: Site and Proposed Scheme Description (Volume 1)** which identifies that the Construction Phase will be between Q4 2025 and Q3 2028, with the highest intensity elements of the work focused in 2026. **Figure 2-4 (Volume 2)** contained in **Chapter 2: Site and Proposed Scheme Description (Volume 1)** also identifies that the Operation Phase opening year is anticipated to be 2028.

16.4.28. It is anticipated that the 2028 Do Something scenario will assume that the Proposed Scheme will not be connected to the NZT project from the beginning of the Operation Phase as it is not certain that NZT will be operational and connected to the Proposed Scheme from the beginning of the Operation Phase of the Proposed Scheme. This is considered to be the reasonable worst-case scenario. Additional alternative sensitivity scenarios may also need to be included as part of the ES to test a range of scenarios.

SENSITIVITY OF RECEPTOR

Non-Motorised Users

16.4.29. A desktop exercise has been undertaken (supplemented by a site visit) to classify the sensitivity of the routes within the Study Area based on the guidance contained in

DMRB LA104 and EATM. For example, if the route passes a school, care home or similar it would have a higher sensitivity due to the presence of vulnerable users. Similarly, if the route runs through the middle of a town or village, it will have a higher sensitivity than if there was limited direct access to frontage development.

16.4.30. In accordance with Table 3.2N in DMRB 'LA 104 - Environmental assessment and monitoring', the sensitivity of the affected receptors will be assessed on a scale of high, medium, low and negligible in the context of the sensitivity of the road links within the Study Area. **Table 16-4** contains the environmental value and description used in this assessment.

Table 16-4: Environmental Value (Sensitivity) and Descriptions

Value (Sensitivity) of receptor / resource	Typical Description
Very High	Very high importance and rarity, international scale and very limited potential for substitution.
High	High importance and rarity, national scale, and limited potential for substitution.
Medium	Medium or high importance and rarity, regional scale, limited potential for substitution.
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

16.4.31. The sensitivity of a road link, or the immediate area through which it passes including PRow, is defined by the type of user groups who may use it. Vulnerable users include elderly residents and children. It is also necessary to consider footpath and cycle route networks that cross the roads within the Study Area. The sensitivity has been informed from a desktop study, in addition to local knowledge and a site visit. A review of the sensitivity will be undertaken at the ES Stage which will be informed by results of the NMU surveys and site visits.

Motorised Users

16.4.32. The sensitivity of a junction will be classified in relation to the baseline operation performance of the junction. The level of traffic a junction can theoretically accommodate without incurring significant delays and/or congestion, the 'capacity', is compared to the level of traffic which is typically travelling through that junction. This relationship between capacity and traffic flow is assessed by the metric of 'Ratio of Flow to Capacity' (RFC). It is typically recognised that a maximum RFC value of 0.85 is desirable²⁶. If the RFC is greater than this, but below 1.00, this suggests that the traffic flow is approaching capacity and at risk of queues building. Where an RFC exceeds 1.00, the junction is exceeding theoretical capacity.

16.4.33. The sensitivity of a junction will be assigned according to the rationale in **Table 16-5**.

Table 16-5: Junction Sensitivity

	RFC Value				
	> 0.50	0.50 – 0.70	0.70 – 0.85	0.85 – 1.00	> 1.00
Sensitivity	Negligible	Low	Medium	High	Very High

16.4.34. Prior to the preparation of the ES, the sensitivity of the receptors will be agreed with the LHA and National Highways, taking into account locally specific issues.

MAGNITUDE OF IMPACT

16.4.35. The traffic generated by the Proposed Scheme will be used to assess the impacts on the key links and junctions on the surrounding network. The likely effects of the Proposed Scheme in environmental terms will be evaluated in accordance with the IEMA EATM guidelines.

16.4.36. The guidelines acknowledge that for many effects, there are no simple rules or formulae which define appropriate thresholds and therefore there is a need for interpretation and the application of professional judgement on the part of the assessor, backed up by data or quantified information wherever possible.

Severance and Pedestrian Delay (incorporating delay to all non-motorised users)

16.4.37. Severance occurs in a community when a major artery separates people from places and other people. Severance occurs from difficulty of crossing a road or where the road itself creates a physical barrier. Severance can be caused to pedestrians or motorists. EATM states that historical guidance published by the DfT suggested changes in total traffic flow of 30%, 60% and 90% result in slight, moderate, and substantial changes in severance respectively. EATM notes that this guidance no longer appears in DfT guidance but has not been superseded by subsequent changes and is established through planning case law. On this basis, it is considered appropriate to continue using these indicators to assess severance. **Table 16-6** contains how the magnitude of impacts on receptors shall be reported within this preliminary assessment with respect to severance.

Table 16-6: Magnitude of Impact (Severance)

	Magnitude of Impact (degree of change)				
	No Change	Negligible	Minor	Moderate	Major
Severance Pedestrian Delay	No change in traffic flow	Change in total traffic flow of <30%	Change in total traffic flow of 30% to 60%	Change in total traffic flow of 61% to 90%	Change in total traffic flow of >90%

Non-motorised User Amenity

16.4.38. NMU amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition, pavement width and separation between vehicles and pedestrians. The impact manifests itself in fear and intimidation, exposure to noise and vehicle emissions. EATM states that historical guidance published by the DfT suggested that a doubling or halving of total traffic flow or the HGV composition could lead to perceptible adverse or beneficial impacts upon NMU amenity. EATM notes that this guidance no longer appears in DfT guidance but has not been superseded by subsequent changes and is established through planning case law. On this basis, it is considered appropriate to continue using these indicators to assess NMU amenity **Table 16-7** contains how the magnitude of impacts on receptors shall be reported within this preliminary assessment with respect to NMU amenity.

Table 16-7: Magnitude of Impact (NMU Amenity)

	Magnitude of Impact				
	No Change	Negligible	Minor	Moderate	Major
NMU Amenity	No change in traffic flow	Changes in traffic flow (or HGV component) <30%	Changes in traffic flow (or HGV component) >30 and <50%	Changes in traffic flow (or HGV component) of 50% to 100%	Changes in traffic flow (or HGV component) of >100%

Fear and Intimidation

16.4.39. The IEMA EATM state guidelines state that the extent of fear and intimidation is dependent on the total volume of traffic, the heavy vehicle composition, the speed that these vehicles are passing and the proximity of traffic to people. EATM provides a weighted system to provide an approximation of the likelihood of pedestrian fear and intimidation. The degree of hazard is assessed with reference to the established thresholds (a, b and c) (see Table 16-8) and a score is provided for each combination on a highway link under consideration (see **Table 16-9**). The magnitude of impact is

approximated with reference to changes in the level of fear and intimidation from baseline conditions (see **Table 16-10**).

Table 16-8: Fear and Intimidation Degree of Hazard

Average traffic flow over 18-hour day – all vehicles/hour 2-way (a)	Total 18-hour heavy vehicle flow (b)	Average vehicle speeds (c)	Degree of hazard score
+1,800	+3,000	-> 40	30
1,200 – 1,800	2,000 – 3,000	30 – 40	20
600 – 1,200	1,000 – 2,000	20 – 30	10
<600	<1,000	<20	0

Table 16-9: Levels of Fear and Intimidation

Level of fear and intimidation	Total hazard score (a) + (b) + (c)
Extreme	71+
Great	41 – 70
Moderate	21 – 40
Small	0 - 20

Table 16-10: Magnitude of Impact (Fear and Intimidation)

Magnitude of impact	Change in step/traffic flows (AADT) from baseline conditions
High	Two step changes in level
Medium	One step change in level, but with >400 veh increase in average 18hr All Vehicle (AV) two-way all vehicles flow; and/or >500 Heavy Vehicle (HV) increase in total 18hr HV flow.
Low	One step change in level with <400 veh increase in average 18hour AV two-way all vehicle flow; and/or <500 HV increase in total 18hr HV flow.
Negligible	No change in step changes
No Change	No observable impact.

Public Transport

16.4.40. There is no formal or published guidance for the assessment of effects on the public transport network. Accordingly, professional judgement will be applied to determine the sensitivity of the receptor and the magnitude of impact on the public transport network. For the purpose of this assessment, the following factors will be taken into consideration:

- changes in bus and rail capacity;
- enhancements to existing routes/services;
- new routes/services; and
- changes to the connectivity/waiting facilities of public transport interchanges.

16.4.41. Together the sensitivity of the receptor and magnitude of the impact will be used to determine the significance of effect. The impact of the Proposed Scheme on the public transport network and effect to public transport users will be grouped with driver delay and considered together.

Driver Delay

16.4.42. The use of industry standard junction capacity modelling programmes (Junctions 10 and LINSIG) provides a methodology to quantify junction delay. Driver delay is only likely to be significant where the existing Study Area highway network is at or close to capacity. In accordance with EATM (2023), this approach is considered to be appropriate to assess driver delay.

16.4.43. Magnitude of impact derived using professional judgment informed by the increase in vehicle delay and whether a junction is at, or close to capacity. At this stage, the impact on driver delay has not been assessed. Impacts to local network performance will be assessed in the TA and impacts to driver delay presented in the ES.

Road Safety

16.4.44. Road safety is assessed by the frequency and severity of injury accidents that are attended by the police and recorded in official accident statistics. Intensification of use or changes in the composition of traffic has the potential to have an effect on collision rates. The examination of recent collision statistics on routes within the Study Area will highlight any hotspots that need further examination.

16.4.45. The PIC records for the local highway network will be examined for the five-year period prior to the onset of the Covid-19 pandemic to allow for a full road safety analysis to be undertaken which is unaffected by the Covid-19 pandemic, along with obtaining all PIC records since then to ensure a comprehensive analysis has been undertaken. In accordance with EATM, this approach is considered to be appropriate to assess road safety.

16.4.46. Magnitude of impact derived using professional judgment informed by the frequency and severity of recorded collisions within the Study Area and the forecast increase in traffic.

Road Safety Audits

- 16.4.47. The IEMA EATM (2023) guidelines state that the standard and prescribed Road Safety Audits (GG 119 – Road Safety Audit DMRB) should be used to review the road safety attributes of any proposed engineering changes in the adopted highway prior to submission. No engineering changes in the adopted highway are proposed at this stage.

Hazardous Loads

- 16.4.48. The assessment of hazardous loads has been based upon the nature of hazardous loads being transported and the number of movements anticipated to illustrate the potential and likely effect of a catastrophic event.
- 16.4.49. Hazardous loads are assessed on the basis set out within the IEMA Major Accidents and Disasters Guidance (2020), when it is determined to be a low-likelihood/high-consequence event. Events assessed to be low-consequence (i.e., leaks and spills at construction sites) are not in the scope of major accidents and/or disaster assessments as they do not meet the definition, and hence will be assessed under other criteria.

SIGNIFICANCE CRITERIA

- 16.4.50. The traffic generated by the Proposed Scheme has been used to assess the preliminary impacts on the key links and junctions on the surrounding network. The significance of the Traffic and Transport related environmental effects is a function of the magnitude of change associated with the Proposed Scheme and the sensitivity of the affected receptor. The significance of effect will be reported using the classifications and matrix for significance basis set out in **Table 16-11** and

16.4.52. Table 16-12.

16.4.53. **Table 16-11** and **Table 16-12** combines sensitivity with the magnitude of impact (degree of change), classifying the effects as negligible, minor, moderate or major (adverse or beneficial). The significance matrices are based on Table 3.8.1 from LA104 (Highways England, 2020b) and adjusted where required.

Table 16-11: Significance Matrix (Severance, Pedestrian Delay, NMU Amenity, Driver Delay)

		Magnitude of Impact (degree of change)				
		No Change	Negligible	Minor	Moderate	Major
Environmental Value (Sensitivity)	Very High	Neutral	Slight	Moderate	Large	Very Large
	High	Neutral	Slight	Moderate	Moderate	Large
	Medium	Neutral	Neutral	Slight	Moderate	Moderate
	Low	Neutral	Neutral	Slight	Slight	Moderate
	Negligible	Neutral	Neutral	Neutral	Neutral	Slight

Table 16-12: Significance Matrix (Fear and Intimidation)

		Magnitude of Impact (degree of change)				
		No Change	Negligible	Low	Medium	High
Environmental Value (Sensitivity)	Very High	Neutral	Slight	Moderate	Large	Very Large
	High	Neutral	Slight	Moderate	Moderate	Large
	Medium	Neutral	Neutral	Slight	Moderate	Moderate
	Low	Neutral	Neutral	Slight	Slight	Moderate
	Negligible	Neutral	Neutral	Neutral	Neutral	Slight

16.4.54. The assessment of the significance of environmental effects shall also cover the following factors:

1. The receptors/resources (natural and human) which would be affected and the pathways for such effects;
2. The geographic importance, sensitivity or value of receptors/resources;
3. The duration (long or short-term); permanence (permanent or temporary) and changes in significance (increase or decrease);
4. Reversibility - e.g. is the change reversible or irreversible, permanent or temporary;
5. Environmental and health standards (e.g. local air quality standards) being threatened; and
6. Feasibility and mechanisms for delivering mitigating measures, e.g. Is there evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment?

16.4.55. 'Significant effects' comprise residual effects that are within the moderate, large or very large categories for the purposes of this EIA; neutral or slight effects are 'not significant'.

16.5. STUDY AREA

- 16.5.1. The spatial scope of assessment for the Proposed Scheme has taken into account key roads that would be affected by predicted traffic generation associated with the Construction, Operation, and Decommissioning Phases.
- 16.5.2. The extent of the Study Area has primarily been defined by the distribution and assignment of traffic associated with the Construction Phase of the Proposed Scheme, given that Traffic and Transport impacts are predicted to be greatest during the Construction Phase. The initial traffic generation estimates for the Construction Phase and Operational Phase are outlined in **Section 16.9** of this technical Chapter and further details are included in **Appendix 16-D: Traffic Assumptions (Volume 3)**.
- 16.5.3. The Study Area will be reviewed and amended, if required, as further information is made available and the Proposed Scheme's Traffic and Transport characteristics are

fully developed (including cumulative impacts and AILs) and in response to feedback from consultation.

- 16.5.4. Any amendments to the Study Area will primarily be based upon 'Rule 1' and 'Rule 2' of the IEMA Guidelines which can be used to determine the effect of increased traffic volumes on links within the Study Area, as described below:
- Rule 1 - Include highway links where traffic flows (or HGV flows) are predicted to increase by more than 30%; and
 - Rule 2 - Include any other specifically sensitive areas where traffic flows (or HGV flows) are predicted to increase by 10% or more.
- 16.5.5. Any changes to the Study Area will be agreed with the relevant highway authority as part of the technical engagement at the next stage.
- 16.5.6. The proposed Traffic and Transport Study Area is set out in **Figure 16-1 (Volume 2)** and comprises the following junctions and connecting highway links:
- Junction 1 – A178, Seaton Carew Road/Huntsman Drive Junction;
 - Junction 2 – A1046, Port Clarence Road/A178, Seaton Carew Road Junction;
 - Junction 3 – A1046, Haverton Hill Road/A1046, Clarence Street/B1275, Hope Street Junction;
 - Junction 4 – B1275, Robson Street/Hope Street Junction;
 - Junction 5 – A1046, Haverton Hill Road/New Road Junction;
 - Junction 6 – A19 Portrack Interchange;
 - Junction 7 – B1275, Belasis Avenue/Greenwood Road/Coxwold Way Roundabout;
 - Junction 8 – A1027/Wolviston Road/Central Avenue Double Roundabout;
 - Junction 9 – A19 Norton Interchange;
 - Junction 10 – A19/A139 Junction;
 - Junction 11 – A1185/A178, Seaton Carew Road (Seal Sands Roundabout);
 - Junction 12 – A1185/Marsh House Avenue Junction;
 - Junction 13 – A689/A1185/A19 Southbound Off-Slip Roundabout; and
 - Junction 14 – A19/Wolviston Interchange.
- 16.5.7. The Study Area for the Proposed Scheme includes road links affected by the Proposed Scheme which are set out as follows:
- Link 1 – Huntsman Drive (East of Main Site Access);
 - Link 2 – Huntsman Drive (Between Main Site Access and N+P Subcoal Production Teesside);
 - Link 3 – Huntsman Drive (Between N+P Subcoal Production Teesside and Koppers Road);
 - Link 4 – Huntsman Drive (Between Koppers Road and Navigator Terminal Access);
 - Link 5 – Huntsman Drive (Between and Navigator Terminal Access and A178, Seaton Carew Road);

- Link 6 – A178, Seaton Carew Road (Between Huntsman Drive and A1185/A178, Seaton Carew Road (Seal Sands Roundabout));
- Link 7 – A178, Seaton Carew Road (North of Seal Sands Roundabout);
- Link 8 – A1185 (Between A1185/A178, Seaton Carew Road (Seal Sands Roundabout) and Saltholme North Power Station);
- Link 9 – A1185 (Between Saltholme North Power Station and Cowpen Woodland);
- Link 10 – A1185 (Between Cowpen Woodland and Marsh House Avenue);
- Link 11 – Marsh House Avenue;
- Link 12 – A1185 (Between Marsh House Avenue and A689, Stockton Road/A1185 Roundabout);
- Link 13 – Wolviston Road;
- Link 14 – A689, Stockton Road;
- Link 15A – A19/Wynyard Park Southbound Off-Slip;
- Link 15B – A19 Wolviston Interchange Northbound On-Slip;
- Link 16 – A689 (Between A689, Stockton Road/A1185 Roundabout and A689/Wolviston Services Roundabout);
- Link 17 – A689 (West of A689/Wolviston Services Roundabout);
- Link 18 – A19 Mainline (North of A19 Wolviston Interchange);
- Link 19 – A689, Coal Lane (West of A19 Wolviston Interchange);
- Link 20 – A178, Seaton Carew Road (Between A178 Seaton Carew Road/Huntsman Drive and A1046, Port Clarence Road/A178, Seaton Carew Road Junction);
- Link 21 – A1046, Port Clarence Road (Adjacent to High Clarence Primary School);
- Link 22 – A1046, Clarence Street (East of A1046, Haverton Hill Road/B1275, Hope Street Signal Controlled Junction);
- Link 23 – B1275, Hope Street (Between A1046, Haverton Hill Road/A1046, Clarence Street Junction and B1275, Robson Street (Belasis Avenue));
- Link 24 – Hope Street (North of B1275, Robson Street (Belasis Avenue));
- Link 25 – B1275, Belasis Avenue;
- Link 26 – Greenwood Road (North of B1275, Belasis Avenue/Greenwood Road/Coxwold Way Roundabout);
- Link 27 – B1275, Belasis Avenue (Between Greenwood Road and Cowpen Lane);
- Link 28 – Central Avenue (Between Cowpen Lane and A1027/Wolviston Road/Central Avenue Double Roundabout);
- Link 29 – A1027 (Between A1027/Wolviston Road/Central Avenue Double Roundabout and A19 Norton Interchange);
- Link 30 – A1027 (West of A19 Norton Interchange);
- Link 31 – Cowpen Lane;
- Link 32 – B1275 (Between Cowpen Lane and A139/A19 Southbound On-slip);
- Link 33 – A139;

- Link 34 – A19 Mainline (Between A19 Wolviston Interchange and A19 Norton Interchange);
- Link 35 – A1046, Haverton Hill Road (Between A1046, Haverton Hill Road/Hope Street Junction and A1046/SUEZ EfW Roundabout);
- Link 36 – A1046, Haverton Hill Road (Between A1046, Haverton Hill Road/SUEZ EfW Roundabout and New Road);
- Link 37 – New Road;
- Link 38 – A1046, Haverton Hill Road (Between New Road and Able UK Head Office Access);
- Link 39 – A1046, Haverton Hill Road (East of A19 Portrack Interchange);
- Link 40 – A1032, Newport Bridge Approach Road;
- Link 41 – A19 Mainline (South of A19 Portrack Interchange);
- Link 42 – A1046, Haverton Hill Road (West of A19 Portrack Interchange); and
- Link 43 – A19 Mainline (North of A19 Portrack Interchange).

- 16.5.8. The Study Area falls wholly within the STBC Boundary and includes access routes to National Highways Strategic Road Network (SRN).
- 16.5.9. **Figure 16-2 (Volume 2)** also shows the anticipated fixed routes for HGV movements during the Construction Phase.

16.6. BASELINE CONDITIONS AND FUTURE BASELINE

BASELINE CONDITIONS

Site Location and Local Highway Network

- 16.6.1. The Site is located in an area that is dominated by industrial uses. The north bank of the Tees is occupied by a variety of operations including petro-chemical facilities, storage and heavy engineering. Within or adjacent to the Proposed DCO Application Boundary, this includes:
- Majority of The North Tees Works Oil Refinery (and associated infrastructure including pipelines and storage tanks);
 - Material Resource Facility (operated by N+P Group);
 - Navigator North Tees Rail Terminal;
 - Navigator Terminals Seal Sands;
 - Augean;
 - ICL (including Clarence Wharf);
 - Sabic;
 - BOC Hydrogen Production Plant; and
 - Wilton Engineering Wharf.
- 16.6.2. Further details are provided in Section 2.1 Site Description of **Chapter 2: Site and Proposed Scheme Description (Volume 1)**.

- 16.6.3. In addition, the DCO Application Boundary extend to the east side of the Tees to the Bran Sands Waste Water Treatment Plant (WWTP). This is also located in an area dominated by industrial uses, which includes Teesworks to the north, British Steel Lackenby to the south, and Tees Port to the west.
- 16.6.4. The primary vehicular access to the Site is from Huntsman Drive. Huntsman Drive forms a priority junction with ghost island right turn with the A178, Seaton Carew Road.
- 16.6.5. Huntsman Drive connects the Site to the A178, Seaton Carew Road, which provides onward connections to the A1185 to the north west and the A1046, Port Clarence Road to the south west. There are two main routes towards the SRN, the first is via the A1185 and A689, which links to the A19 Wolviston Interchange and the second is via the A1046, Haverton Hill Road, which connects to the A19 Portrack Interchange.
- 16.6.6. Internally, the Site is serviced by road via several points of vehicular access as follows:
- **Site Access** - the Site Access comprises a priority junction arrangement with Huntsman Drive. The access comprises two entry and two exit lanes. The associated barriers/security booth are set back 50m from Huntsman Drive;
 - **Staff/Visitor Car Park Access** - the car park access comprises one entry and one exit lane which serve the access and egress points of the existing staff/visitor car park;
 - **MRF** – the MRF site access comprises a priority junction formed with Huntsman Drive;
 - **Maintenance/Emergency Access** - there is an emergency/maintenance access point located to the eastern part of the Site, which comprises a simple priority junction with Huntsman Drive. The access point is secured with a palisade gate that separates the Site from Huntsman Drive. There are crash barriers located on both sides of the bell-mouth along with pipelines that run on the eastern side of the access beneath Huntsman Drive; and
 - **Redundant Access** - a further access point is located to the western part of the Site, which comprises a simple priority junction with Huntsman Drive. It is understood that the access has been redundant for an extended period of time.
- 16.6.7. In addition to the primary access from the public highway to the Site, there is a further existing access to the Wilton Engineering Wharf. The Wilton Engineering Wharf is one of the Marine Transport Infrastructure options being considered as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**.
- 16.6.8. Vehicular access to the Bran Sands WWTP works area during the Construction Phase will be from Tees Dock Road and the A1085/Teesworks/Wilton roundabout. This sits outside the Study Area due to the limited number of vehicle movements forecast.
- 16.6.9. Beyond the Site, other land uses include Port Clarence landfill site, Teesside Gas Processing Plant and chemical works. Further details of the surrounding land uses are provided in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**.
- 16.6.10. In relation to emergency services there are no police stations, ambulance stations, or hospitals within the Study Area. However, there is a Community Fire Station located to

the west of the Site on the A178, Seaton Carew Road. The impact to emergency services within the Study Area, namely Billingham Community Fire Station will be fully assessed as part of the ES.

Walking and Cycling Connections

- 16.6.11. Access to the Site is from Huntsman Drive which does not have footways. There is streetlighting present on Huntsman Drive between the A178, Seaton Carew Road and a disused rail line which crosses Huntsman Drive to the east of the Navigator Terminal North Tees.
- 16.6.12. To the north of the A178, Seaton Carew Road/Huntsman Drive junction, there are footways in the immediate vicinity of the closest bus stops to the Site. The footway on the western side of the A178, Seaton Carew Road is only present within the proximity of the bus layby. A desk study indicates that this footway is overgrown with vegetation.
- 16.6.13. The footway on the eastern side of the A178, Seaton Carew Road is part of the England Coast Path (ECP). Locally, the ECP comprises a mixture of sealed surfaced path, unsealed and loose material surfacing. The route of the ECP in the local area is shown on **Figure 16-3 (Volume 2)** and locally, runs between Hartlepool and Seaton Carew in the north and to Port Clarence and Middlesbrough to the south (via Haverton Hill Road and the A1032, Newport Bridge Approach Road).
- 16.6.14. In the wider Study Area there are footways and streetlighting on all main routes that link the surrounding areas.
- 16.6.15. There is no cycling infrastructure in place along Huntsman Drive, however, the A178, Seaton Carew Road in the vicinity of Huntsman Drive is designated as an advisory cycle route. To the north, the advisory route links to a traffic-free route that runs through Saltholme nature reserve and links to Port Clarence.
- 16.6.16. To the south, the advisory route continues on the A1046, Port Clarence Road through Port Clarence and to Billingham (via the B1275, Belasis Avenue and Greenwood Road) and Cowpen Bewley (via Cowpen Bewley Road).
- 16.6.17. There is also a shared footway/cycleway along the A1046, Port Clarence Road through Port Clarence which continues on both sides of the carriageway along the majority of the A1046, Haverton Hill Road. The shared footway/cycleway links to a wider network of routes at the A19 Portrack Interchange, including National Cycle Network (NCN) 14 to the north that links to Billingham in the north and Stockton-on-Tees to the west and to NCN 1 within Middlesbrough to the south, via the A1032, Newport Bridge Approach Road. Locally, NCN 14 runs between Hartlepool and Seaton Carew in the north, through Stockton-on-Tees to Darlington and NCN 1 runs between Redcar, Middlesbrough and Stockton-on-Tees.
- 16.6.18. NCN 65 connects to the NCN 1 within Middlesbrough and locally, provides connections to residential areas to the south of Middlesbrough, including Linthorpe, Acklam and Hemlington.
- 16.6.19. The Teesdale Way can be accessed from the A1032, Newport Bridge Approach Road. To the east of the A1032, Newport Bridge Approach Road, the route mostly runs along

the south bank of the River Tees through Middlesbrough and South Bank to Coatham Sands. To the west of the A1032, Newport Bridge Approach Road, the route mostly runs along the north bank of the River Tees through Stockton-on-Tees, Eaglescliffe and Yarm.

- 16.6.20. The Transporter Bridge is designated as an advisory route that provides direct connections to NCN 1, 65 and The Teesdale Way. However, at the time of preparing this PEIR, the Transporter Bridge is not operational.
- 16.6.21. The Tees Valley Cycle Map is included in **Appendix 16A: Local Cycle Routes (Volume 3)**.

PRoW Network

- 16.6.22. A desk-study has been undertaken to identify PRoW within the Study Area which may need to be closed or diverted (temporarily or permanently) to manage any potential conflict between NMUs and development generated traffic.
- 16.6.23. There are four PRoW within 500m of the Site, in the vicinity of the Bran Sands WWTP including:
- Footpath 116/31 (116/31/1 - 116/31/3) which runs along the route of the pipeline before heading south west towards Tees Dock Road and footpath 102/2A;
 - Footpath 102/2A (102/2A/1 – 102/2A/2) runs approximately south west to north east in parallel to the internal Teesport private access road before connecting to footpath 102/2 (102/2/1 - 102/2/3);
 - Footpath 102/2 (102/2/1 - 102/2/3) follows the alignment of a rail line in parallel to footpath 102/2 (102/2/1 - 102/2/3); and
 - Bridleway 116/9 (116/9/1 - 116/9/2) follows the alignment of a rail line in parallel to footpath 102/02 (102/2/1 - 102/2/3).
- 16.6.24. The identified PRoW sit outside the Traffic and Transport Study Area. This area has been omitted from the Study Area due to the limited number of vehicle movements forecast during the wastewater pipeline connection works.
- 16.6.25. In addition, in the wider Study Area, there are PRoW that intersect road links, this includes:
- Public Byway Ref. BY 30 which crosses the A1185 (Link 9), running between Billingham Cemetery in the south to Cowpen Bewley Woodland Park in the north;
 - Footpath Ref. FP 8D which runs from Newton Bewley (within the Hartlepool local authority area), crosses the A1185 (Link 10) and runs south into residential estates to the north of Billingham;
 - Public Footpath Ref. FP 1 which runs north from the A689 (Link 16) and connects to Public Footpath FP 15;
 - Public Footpath Ref. FP 15 runs east/west crossing the A19 mainline (Link 18) at-grade in the west and the A19 mainline Off-Slip (Link 15A) in the east;

- A PRoW which runs from the A19 mainline Off-Slip (Link 15A) east to Newton Bewley (within the Hartlepool local authority area). It is not known if this PRoW connects directly to Public Footpath Ref. FP 15; and
- Public Footpath Ref. FP 27 runs to the east of Junction 9 and crosses the A1027 (Link 29), where it becomes FP 29. Public Footpath Ref. FP 29 wraps around the southern section of Junction 9, crossing the A19 mainline via a footbridge and links to a residential estate within Stockton on-Tees.

16.6.26. **Figure 16-3 (Volume 2)** includes an overview of the PRoW network.

Public Transport (Bus)

16.6.27. The closest bus stops to the Site are situated on the A178, Seaton Carew Road, to the north of the A178, Seaton Carew Road/Huntsman Drive junction. Both bus stops are located within lay-bys and served by Stagecoach Service 1.

16.6.28. Stagecoach Service 1 operates between Hartlepool and Middlesbrough, via Seaton Carew, Port Clarence and Haverton Hill. During weekdays, there are up to two services per hour in either direction from between approximately 7am – 7pm. There is a similar level of service on Saturdays and an hourly service on Sundays.

Public Transport (Rail)

16.6.29. The closest train stations to the Site are Middlesbrough Train Station and Billingham Train Station. Middlesbrough Train Station is over 3km from the Site. Access to the station would be via the Tees Transport Bridge but this is not currently operational. Billingham Train Station is over 5km from the Site.

Road Safety

16.6.30. PIC data has been obtained from the Traffic Accident Data Unit (TADU) for the five-year period 01/01/2015 – 31/12/2019 and for the period 01/03/2021 - 31/07/2023, the latest period that data was available at the time of the request to TADU. Data has also been obtained for 2020 but omitted due to the effects of Covid.

16.6.31. The extent of the Study Area is shown on **Figure 16-1 (Volume 2)** and comprises 34km on road on the local highway network and the SRN.

16.6.32. The PIC data is included in **Appendix 16B: Personal Injury Collision Data (Volume 3)**. A summary of the PIC data classified by severity and year is presented in **Table 16-13**.

Table 16-13: PIC Summary (Severity and Year)

	5 Year Period Pre-Covid 19							2021 - 2023		
Severity	2015	2016	2017	2018	2019	5 Year Period	12 Month Average	2021	2022	2023
Slight	41	22	26	27	26	132	28.4	28	21	14
Serious	11	10	7	4	6	38	7.6	3	7	3
Fatal	0	1	0	1	1	3	0.6	0	1	1
Total	52	33	33	32	33	183	36.6	31	29	18

16.6.33. The PIC records show that during the analysed period 01/01/2015 -31/07/2023, there was a total of 261 recorded collisions within the Study Area (excluding 2020), of which, 205 were categorised as slight, 51 as serious and five as fatal.

Existing Traffic Flows

16.6.34. The baseline traffic flows have been derived from existing traffic counts available from an online database maintained by DfT. The location of these traffic counts is shown on **Figure 16-4 (Volume 2)**. For most locations this has resulted in the use of data from 2019 and 2022. For Links 24, 31, 32 and 37, only DfT traffic counts from 2009 were available.

16.6.35. **Appendix 16C: Traffic Flow Data (Volume 3)** contains the DfT data and baseline traffic flows.

16.6.36. At this stage the available traffic data does not cover all of the roads identified in the Study Area. As part of the ES, it is anticipated that new traffic counts will be undertaken at locations where there are gaps in the baseline data and assessment is required. The traffic counts will be used to update the baseline for the ES including updating the DfT data utilised for this PEIR.

FUTURE BASELINE

16.6.37. A future baseline will be established as part of the ES for the 2026 and 2028 assessment years associated with the Construction Phase and Operational Phase. The future baseline takes into consideration traffic growth on the highway network and committed development.

Background Traffic Growth

16.6.38. As the available traffic data is historic, growth rates have been applied. The growth rates for total vehicles have been derived from the DfT's TEMPro 8.0 software. The current year of 2024 has been adopted as the baseline year.

16.6.39. Growth rates from TEMPro have been based on the planning authority the Study Area is located within, namely Stockton-on-Tees. The growth rates applied to the existing traffic flows are contained in **Table 16-14**.

16.6.40. TEMPro traffic growth factors have also been applied to obtain future year figures for 2026 and 2028. Average growth factors have been compiled using TEMPro 8.0 for Stockton-on-Tees, as summarised in **Table 16-14**. These growth factors were determined using the following criteria in TEMPro:

- Years: Base year of 2011 and 2019 and future years of 2026 and 2028.
- Area: Stockton-on-Tees.
- Scenario: 'Core'.
- Trip End: Origin/Destination.
- Time Period: Average Day/Average Weekday.

Table 16-14: TEMPro Growth Factors (Daily)

Years	Stockton-on-Tees	
	Average Weekday	Average Day
2011 – 2024	0.9744	0.9976
2019 - 2024	1.0397	1.0397
2024 – 2026	1.0176	1.0179
2024 - 2028	1.0281	1.0281

Committed Development

- 16.6.41. There may be the potential for cumulative impacts associated with the Proposed Scheme and committed developments during the Construction Phase and Operation Phase. Therefore, an assessment of the significance of the Cumulative Effects will be undertaken in the context of the potential interactions associated with the Proposed Scheme.
- 16.6.42. To ensure all committed developments are accounted for, it is requested that STBC and National Highways provide a list of committed developments for further review as part of the cumulative impacts of the Proposed Scheme. The addition of TEMPro and committed development can result in double counting therefore this will be discussed and agreed with STBC and National Highways through subsequent consultation.
- 16.6.43. The methodology for establishing a Long List and Short List is set out in **Chapter 19: Cumulative Effects (Volume 1)** and both lists will be developed for the ES. For this PEIR, no committed developments have been included.
- 16.6.44. The future baseline traffic flows are contained at **Appendix 16C: Traffic Flow Data (Volume 3)**.

16.7. EMBEDDED DESIGN, MITIGATION AND ENHANCEMENT MEASURES

CONSTRUCTION PHASE

- 16.7.1. Relevant design, mitigation and enhancement measures will be identified in the ES, and these will include:

- The Applicant will work with the designers of the Proposed Scheme to embed measures to promote sustainable modes of transport into the design of the Proposed Scheme. This is with a focus to mitigate against any likely significant environmental Traffic and Transport effects arising during the Construction Phase and Operation Phase of the Proposed Scheme.
- **Construction Traffic Management Plan (CTMP)** which will provide details of procedures for construction related traffic, including: number of vehicles; routes; frequency and timing of movements; worker hours and shift patterns; Construction Laydown Area(s) and parking; and AILs; and
- **Construction Worker Travel Plan (CWTP)** which focuses on minimising the traffic impacts associated with construction workers travelling to and from Site.

16.7.2. These would sit either as an appendix to, or alongside the Outline Code of Construction Practice (OCoCP).

OPERATION PHASE

16.7.3. Relevant design, mitigation and enhancement measures will be identified in the ES, and these may include:

- **Workplace Travel Plan (WTP)** – the Proposed Scheme is not anticipated to attract a significant number of movements (by all modes) in the Operation Phase. If required, a WTP will be produced which will represent a long-term travel management strategy, detailing specific measures, designed to encourage staff and visitors to travel by more sustainable and active transport options.

16.8. SENSITIVE RECEPTORS

16.8.1. A desktop exercise has been undertaken (supplemented by a site visit) to classify the sensitivity of the highway links within the Study Area. The classification of the link sensitivity is based on guidance contained in DMRB LA104 and EATM taking into consideration sensitive receptors assigned to the link and the receptor environment. For example, if the route passes a school, care home or similar it would likely have a higher sensitivity to change in traffic flows due to the presence of vulnerable users. **Table 16-15** identifies the highway links within the Study Area, the assigned sensitivity rating, and the rationale.

Table 16-15: Sensitivity of Receptors (NMUs)

Link	Description	Link Sensitivity	Rationale
1	Huntsman Drive (East of Main Site Access)	Negligible	Huntsman Drive is a single carriageway road and is subject to a 30mph speed limit. There are no footways along the entirety of the route. There are a number of industrial uses served off Huntsman Drive, including Navigator Terminal North Tees, Port Clarence Landfill Site, N+P Subcoal Production Teesside and Navigator North Tees Marine Terminal.
2	Huntsman Drive (Between Main Site Access and N+P Subcoal Production Teesside)	Negligible	
3	Huntsman Drive (Between N+P Subcoal Production Teesside and Koppers Road)	Negligible	
4	Huntsman Drive (Between Koppers Road and Navigator Terminal Access)	Negligible	
5	Huntsman Drive (Between and Navigator Terminal Access and A178, Seaton Carew Road)	Negligible	
6	A178, Seaton Carew Road (Between Huntsman Drive and A1185/A178, Seaton Carew Road (Seal Sands Roundabout))	Low	This section of the A178, Seaton Carew Road is a single carriageway road, subject to the national speed limit. There are no footways along the route, however, ECP runs along the eastern side of the A178, Seaton Carew Road. The local bus stops are located on the A178, situated within laybys. The section of the A178, Seaton Carew Road in the vicinity of the A178, Seaton Carew Road/Huntsman Drive junction is lit.
7	A178, Seaton Carew Road (north of Seal Sands Roundabout)	Low	This section of the A178, Seaton Carew Road is a single carriageway road, subject to the national speed limit. The ECP runs along the eastern side of the A178, Seaton Carew Road and crosses the road prior to the road crossing Greatham Creek. There is no streetlighting along this route, except within the vicinity of the Seal Sands Roundabout. There is no direct frontage onto this section of the A178, Seaton Carew Road, with a limited number of accesses that serve small industrial activities.

Link	Description	Link Sensitivity	Rationale
8	A1185 (Between A1185/A178, Seaton Carew Road (Seal Sands Roundabout) and Saltholme North Power Station)	Low	This section of the A1185 is a single carriageway road, subject to the national speed limit. There are no footways or streetlighting along this route or direct frontage. There are a number of maintenance access which serve reservoirs and adjacent agricultural fields.
9	A1185 (Between Saltholme North Power Station and Cowpen Woodland)	Medium	This section of the A1185 is a single carriageway road, subject to the national speed limit. There are no footways or streetlighting along this route or direct frontage. PRow BY 30 crosses the A1185 which runs between Billingham Cemetery in Cowpen Bewley to the south to Cowpen Bewley Woodland Park in the north.
10	A1185 (Between Cowpen Woodland and Marsh House Avenue)	Medium	This section of the A1185 is a single carriageway road, subject to the national speed limit. There are no footways or streetlighting along this route or direct frontage. There are a number of field gate accesses serving adjacent agricultural routes along this link. PRow FP 8D runs from Newton Bewley (within the Hartlepool local authority area), crosses the A1185 and runs south into residential estates to the north of Billingham.
11	Marsh House Avenue	Medium	This link is a dual carriageway route, subject to a 40mph speed limit, has streetlighting and no direct frontage. There are residential estates on both sides of this link and there is an uncontrolled pedestrian crossing point linking both estates.
12	A1185 (Between Marsh House Avenue and A689, Stockton Road/A1185 Roundabout)	Low	This link is a dual carriageway route, subject to a 50mph speed limit, has streetlighting and no direct frontage.
13	Wolviston Road	Low	This link is a dual carriageway route, subject to a 50mph speed limit and forms a set of slip roads that link to the A689/A1185 roundabout. Both carriageways have no footways and are lined with dense vegetation/trees on both sides. There is streetlighting on the northbound carriageway on the approach to the roundabout.

Link	Description	Link Sensitivity	Rationale
14	A689, Stockton Road	Low	This link is a dual carriageway route, subject to the national speed limit and has streetlighting on the approach to the A689/A1185 roundabout. There is no streetlighting and no direct frontage on to the A689.
15A	A19/Wynyard Park Southbound Off-Slip	Medium	This link is a southbound Off-Slip from the A19 and connects to the A689/A1185 roundabout. The route is subject to national speed limit, there is no direct frontage and there are a number of field gate access to adjacent agricultural fields. To the west of the link, PRoW FP 15 runs west from this link, crossing the A19 mainline (Link 18). There is a separate PRoW which runs from this link east to Newton Bewley (within the Hartlepool local authority area). It is not known if this PRoW connects directly to FP 15.
15B	A19 Wolviston Interchange Northbound On-Slip	Medium	This link in the northbound on-slip from the A19 Wolviston Interchange to the A19 northbound carriageway. There is a single controlled pedestrian crossing at the beginning of the link. There is no direct frontage or accesses located on this link and this link is subject to the national speed limit.
16	A689 (Between A689, Stockton Road/A1185 Roundabout and A689/Wolviston Services Roundabout)	Low	This link is a dual carriageway route, subject to a 40mph speed limit and has streetlighting throughout. There are no footways or direct frontage on to the A689. There are signal controlled pedestrian crossings located on both carriageways at the junction with Coal Lane.
17	A689 (West of A689/Wolviston Services Roundabout)	Low	This link is a dual carriageway route, subject to a 40mph speed limit and has streetlighting throughout. There are no footways or direct frontage on this link.
18	A19 Mainline (North of A19/A689 Roundabout)	Medium	This is a dual-carriageway route subject to a 70mph speed limit and part of the SRN. PRoW FP 15 runs east/west and crosses the A19 mainline at-grade.
19	A689, Coal House (West of A19/A689 Roundabout)	Medium	This link is a dual carriageway route, subject to a 50mph speed limit and has streetlighting throughout. There are no footways or direct frontage on

Link	Description	Link Sensitivity	Rationale
			this link. There is a bus stop located within a layby on the eastern link with a footway connecting to Wynyard Park. There is also a field gate access located on both sides of the carriageway serving agricultural fields.
20	A178, Seaton Carew Road (Between A178 Seaton Carew Road/Huntsman Drive and A1046, Port Clarence Road/A178, Seaton Carew Road Junction)	Low	This section of the A178, Seaton Carew Road is a single carriageway road, subject to the national speed limit. There are no footways along the route, however, ECP runs along the eastern side of the A178, Seaton Carew Road. The section of the A178, Seaton Carew Road in the vicinity of the A178, Seaton Carew Road/Huntsman Drive junction is lit.
21	A1046, Port Clarence Road (Adjacent to High Clarence Primary School)	High	This link forms the main route through the settlement of Port Clarence and is subject to a 30mph speed limit. There is a footway running along the north side of the carriageway for the entirety of the link and a shared-footway cycle on the south. There are a number of residential streets that connect to this link and there are various uses that directly front this link, including residential dwellings, local amenities and a primary school. Local bus stops are also present on this route.
22	A1046, Clarence Street (East of A1046, Haverton Hill Road/B1275, Hope Street Signal Controlled Junction)	Medium	This link is subject to a 40mph speed limit, has streetlighting on both sides of the carriageway and forms the eastern arm of the A1046, Clarence Road/B1275 Hope Street signal controlled junction. There is a footway on the north side of the link and a shared/footway cycleway on the south. There are various direct accesses to light industrial units on this link.
23	B1275, Hope Street (Between A1046, Haverton Hill Road/A1046, Clarence Street Junction and B1275, Robson Street (Belasis Avenue))	Medium	This link is subject to a 40mph speed limit, has streetlighting and footways on both sides of the carriageway and forms the northern arm of the A1046, Haverton Hill Road/A1046, Clarence Street signal controlled junction. There are various direct accesses to light industrial units on this link.
24	Hope Street (North of B1275, Robson Street (Belasis Avenue))	Low	The majority of this link is subject to a 40mph speed limit, with streetlighting and footways on both sides of the carriageway. There are various direct accesses to light industrial units on this link along with

Link	Description	Link Sensitivity	Rationale
			junctions serving other industrial units. Continuing north, this link becomes subject to the national speed limit, with no footways or streetlighting.
25	B1275, Belasis Avenue	Low	This link is subject to a 40mph speed limit, has streetlighting and footways on the south side of the carriageway. The link follows a relatively straight alignment with no direct frontage and there is one main T-junction on the link with Nelson Avenue, which serves a food manufacturing facility.
26	Greenwood Road (North of B1275, Belasis Avenue/Greenwood Road/Coxwold Way Roundabout)	High	The majority of this link is subject to a 40mph speed limit, becoming 30mph on the approach to Billingham where residential dwellings take direct access from the link. There are on-carriageway cycle lanes, footways and streetlighting located on both sides of the carriageway.
27	B1275, Belasis Avenue (Between Greenwood Road and Central Avenue)	Low	This link is subject to a 40mph speed limit, has streetlighting and footways on both sides of the carriageway. There is no direct frontage on this link and two T-junctions, one to the north and south which serve industrial/manufacturing facilities.
28	Central Avenue (Between Cowpen Lane and A1027/Wolviston Road/Central Avenue Double Roundabout)	High	This link is a dual carriageway route subject to a 30mph speed limit. There are footways and streetlighting on both sides of the carriageway and both sides of the carriageway are fronted by terraced and semi-detached residential properties.
29	A1027 (Between A1027/Wolviston Road/Central Avenue Double Roundabout and A19 Norton Interchange)	Medium	This link is a dual carriageway route subject to a 40mph speed limit. There is a shared footway cycleway on the north side of the carriageway and a separate footway and cycleway on the south. Both are separated from the running lanes by crash barriers. Streetlighting is present throughout this link. There is an access from the eastbound carriageway which serves Billingham Beck Valley Country Park and PRoW cross the link to the east of Junction 9. To the north of the link, the PRoW is called FP 27 and becomes FP 29 to the south of the link.

Link	Description	Link Sensitivity	Rationale
30	A1027 (West of A19 Norton Interchange)	Low	This link is a dual carriageway route subject to a 40mph speed limit. There are footways and streetlighting on both sides of the carriageway. There is no direct frontage access or junctions that connect to this link.
31	Cowpen Lane	High	The initial section of this link is dual carriageway, subject to a 30mph speed limit with footways and streetlighting situated on both sides of the carriageway. Travelling south, the link becomes single carriageway and is known as the B1275 Belasis Avenue. There are two pedestrian access points access to Billingham South Community Primary School located on this link, along with access to light industrial units and residential dwellings located adjacent to the link.
32	B1275 (Between Cowpen Lane and A139/A19 Southbound On-slip)	High	This link forms the main route through the south of Billingham and is subject to a 30mph speed limit. There are footways and streetlighting along the entirety of this link. There are on-carriageway cycle routes on both sides of the carriageway for the majority of the link. There are a number of junctions that connect to residential dwellings, along with residential dwellings and local amenities directly front this link. Local bus stops are also present on this route.
33	A139	Low	This link connects two roundabouts that form Junction 10 within the Study Area. This link is subject to a 40mph speed limit, is a single carriageway route with streetlighting and shared footway cycleways on both sides of the carriageway. There is no direct frontage on this link but there is a junction on the northern side which links to a network of footpaths.
34	A19 Mainline (Between A19 Wolviston Interchange and A19 Norton Interchange)	Medium	This link is a dual carriageway route with three lanes in each direction, subject to the national speed limit and is part of the SRN.
35	A1046, Haverton Hill Road (Between A1046, Haverton Hill Road/Hope Street Junction and A1046/SUEZ EfW Roundabout)	Medium	These links are single carriageway route with a 40mph limit. The A1046 is a main distributor route linking the A19 to a number of industrial and commercial premises. There are shared footway cycleways on both sides

Link	Description	Link Sensitivity	Rationale
36	A1046, Haverton Hill Road (Between A1046, Haverton Hill Road/SUEZ EfW Roundabout and New Road)	Medium	of the carriageway for the majority of the A1046, Haverton Hill Road. Local bus stops are also present on this route.
37	New Road	Medium	New Road is a single carriageway route subject to a 40mph speed limit. The route is lit and there is a footway on the northern side of the carriageway. There is no direct frontage on New Road, but there are a number of junctions which serve industrial/manufacturing premises. Local bus stops are also present on this route.
38	A1046, Haverton Hill Road (Between New Road and Able UK Head Office) Access	Medium	These links are single carriageway route with a 40mph speed limit. The A1046, Haverton Hill Road is a main distributor route linking the A19 to a number of industrial and commercial premises. There are shared footway cycleways on both sides of the carriageway for the majority of the A1046, Haverton Hill Road. Local bus stops are also present on this route.
39	A1046, Haverton Hill Road (East of A19 Portrack Interchange)	Medium	
40	A1032, Newport Bridge Approach Road	Medium	The initial section of this link is dual carriageway and subject to a 40mph speed limit. Streetlighting is provided throughout the link and there is a shared footway/cycleway on the eastern side of the link. Travelling south, the link is a single carriageway with a 30 mph speed limit travelling over the Newport Bridge.
41	A19 Mainline (South of A19 Portrack Interchange)	Medium	This link is a dual carriageway route with three lanes in each direction, subject to the national speed limit and is part of the SRN.
42	A1046, Haverton Hill Road (West of A19 Portrack Interchange)	Medium	This link is a dual carriageway route, subject to a 40mph speed limit and is the main route through North Tees Industrial Estate. There is a shared footway/cycleway on both sides of the carriageway and streetlighting is present throughout. Local bus stops are also present on this route.
43	A19 Mainline (North of A19 Portrack Interchange)	Medium	This link is a dual carriageway route with three lanes in each direction, subject to the national speed limit and is part of the SRN.

16.9. PRELIMINARY ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

- 16.9.1. This section details the preliminary assessment of significant effects of the Proposed Scheme during both the Construction Phase and Operational Phase, considering the embedded design, mitigation and enhancement measures detailed in **Section 16.7**.
- 16.9.2. To assess the potential likely significant effects on receptors, the current estimated construction and operation related traffic has been assigned to the network in accordance with the methodology previously outlined in **Section 16.4** of this technical Chapter, with the full details and analysis underpinning the trip generation, distribution and assignment during the Construction Phase and Operation Phase is included in **Appendix 16D: Traffic Assumptions (Volume 3)**.
- 16.9.3. In summary, **Appendix 16D: Traffic Assumptions (Volume 3)** indicates that at the peak of construction the Site could attract up to 1,114 LDV per day and 60 HGVs per day. Once operational the site could attract up to 48 LDVs per day and 113 HGVs per day.
- 16.9.4. The construction traffic has been added to the 2026 peak construction year baseline and the operational traffic has been added to the 2028 operation year baseline. The percentage increase has then been calculated, as shown in **Appendix 16E: Construction Phase Traffic Flows (Volume 3)** and **Appendix 16F: Operation Phase Traffic Flows (Volume 3)**.
- 16.9.5. It is considered that the Decommissioning Phase impacts are anticipated to be no worse than those during the Construction Phase following the implementation of a DTMP for the works. The Construction and Decommissioning Phases have therefore been assessed together.

Assessment of Construction/Decommissioning Phase Effects

- 16.9.6. The following sections provide a preliminary assessment of the effects in relation to severance, NMU amenity, and fear and intimidation with reference to the change in traffic flows, driver delay, road safety, and AIL.

Severance and Pedestrian Delay (incorporating delay to all non-motorised users)

- 16.9.7. Severance is the perceived division that can occur within a community when it becomes separated from places and other people. The severance may be caused by a physical barrier created by a development or by the difficulty of crossing roads due to an increase in traffic flow.
- 16.9.8. The results in **Appendix 16G: Preliminary Assessment of Construction Phase Effects (Volume 3)** show that the predicted magnitude of change in total traffic flows associated with the Construction Phase of the Proposed Scheme results in less than 30% (negligible) change in total traffic flows on all links.
- 16.9.9. The significance of effect of severance is classified as Neutral or Slight Adverse (Not Significant) on all links.

Non-motorised User Amenity

- 16.9.10. NMU amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition, pavement width and separation between vehicles and NMUs. The IEMA EATM guidelines suggest that a doubling or halving of total traffic flow or the HGV composition could lead to perceptible change upon NMU amenity.
- 16.9.11. The results in **Appendix 16G: Preliminary Assessment of Construction Phase Effects (Volume 3)** show that the predicted change in total traffic flows associated with the Construction Phase of the Proposed Scheme results in less than 30% (negligible) change in total traffic flows on all links. **Appendix 16G: Preliminary Assessment of Construction Phase Effects (Volume 3)** also shows that the predicted change in HGV traffic flows associated with the Construction Phase of the Proposed Scheme results in no change, or less than 30% (negligible) on all links.
- 16.9.12. The significance of effect of NMU amenity is classified as Neutral or Slight Adverse (Not Significant) on all links.

Fear and Intimidation

- 16.9.13. A further effect that traffic may have on pedestrians is fear and intimidation, which is dependent on the following factors: the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by factors such as narrow pavement widths.
- 16.9.14. The results in **Appendix 16-G: Preliminary Assessment of Construction Phase Effects (Volume 3)** show that the predicted change in total traffic flows associated with the Construction Phase of the Proposed Scheme results in no step change (negligible) on all links. **Appendix 16-G: Preliminary Assessment of Construction Phase Effects (Volume 3)** also shows that the predicted change in HGV traffic flows associated with the Construction Phase of the Proposed Scheme results in no step change (negligible) on all links.
- 16.9.15. The significance of effect of fear and intimidation is classified as Neutral or Slight Adverse (Not Significant) on all links.

Public Transport

- 16.9.16. The impact of the Proposed Scheme on the public transport network and effect to public transport users will be grouped with driver delay and considered together.

Driver Delay

- 16.9.17. Traffic delay will be assessed as part of the ES following operational assessments of the junctions within the Study Area during the AM and PM peak hours.

Road Safety

- 16.9.18. Following a preliminary assessment of PIC within the Study Area, it is considered that the frequency, severity, and spatial distribution of collision does not represent a pattern that indicates there are inherent road safety issues within the Study Area.

- 16.9.19. Notwithstanding this, a full review, including an analysis of clusters, HGV movements and Killed or Seriously Injured (KSIs) will be undertaken in the ES for all links and junctions within the Study Area. This will ensure a comprehensive road safety analysis is undertaken which is informed by the peak number of vehicle movements in the peak hour periods and daily movements for the Construction Phase and Operation Phase.
- 16.9.20. It is considered that the traffic impacts and subsequent effects during the Construction Phase would be managed through the preparation of a CWTP and CTMP.
- 16.9.21. If there are any areas within the Study Area where there are underlying road safety issues that could be exasperated by traffic movements associated with the Proposed Scheme, then appropriate mitigation measures will be proposed.

Abnormal Indivisible Loads

- 16.9.22. At this stage, the size and number of AIL movements are not known, nor is the type of vehicle required to be used. There are currently two options proposed for the movement of AILs:
- Option 1 of the marine infrastructure options would require access initially onto a short section of public highway (Port Clarence Road north of the Middlesbrough Transporter Bridge) before transitioning onto the Heavy Haul Road (see **Figure 1-2 (Volume 2)**); and
 - Option 2 would only require the abnormal loads to be driven to the SAF Plant Site utilising the Heavy Haul Road.
- 16.9.23. Further details on the movements of the AILs are outlined in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**.
- 16.9.24. The ES will confirm the worst-case number of abnormal loads required, the route, and the types of vehicles required. Any mitigation measures required to facilitate the delivery of abnormal loads will be detailed in the ES and any resultant likely significant effects assessed. Any assessment will be proportionate.

Operation Phase

- 16.9.25. **Appendix 16H: Preliminary Assessment of Operation Phase Effects (Volume 3)** contains a preliminary assessment of effects of the change of traffic flows on links within the Study Area for severance and pedestrian delay (incorporating delay to all NMUs), NMU amenity and fear and intimidation.

Severance and Pedestrian Delay (incorporating delay to all non-motorised users)

- 16.9.26. Severance is the perceived division that can occur within a community when it becomes separated from places and other people. The severance may be caused by a physical barrier created by a development or by the difficulty of crossing roads due to an increase in traffic flow.
- 16.9.27. The results in **Appendix 16H: Preliminary Assessment of Operation Phase Effects (Volume 3)** show that the predicted change in total traffic flows associated with the Operation Phase of the Proposed Scheme results in less than 30% (negligible) change in total traffic flows on all links.

- 16.9.28. The significance of effect of severance is classified as Neutral or Slight Adverse (Not Significant) on all links.

Non-motorised User Amenity

- 16.9.29. NMU amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition, pavement width and separation between vehicles and pedestrians. The IEMA EATM guidelines suggest that a doubling or halving of total traffic flow or the HGV composition could lead to perceptible change upon NMU amenity.
- 16.9.30. The results in **Appendix 16H: Preliminary Assessment of Operation Phase Effects (Volume 3)** show that the predicted change in total traffic flows associated with the Operation Phase of the Proposed Scheme results in less than 30% (negligible) change in total traffic flows on all links. **Appendix 16H: Preliminary Assessment of Operation Phase Effects (Volume 3)** also shows that the predicted change in HGV traffic flows associated with the Operation Phase of the Proposed Scheme results in no change, or less than 30% (negligible) on all links with the exception of 15A.
- 16.9.31. The significance of effect on NMU amenity is classified as Neutral or Slight Adverse (Not Significant) on all links.

Fear and Intimidation

- 16.9.32. A further effect that traffic may have on pedestrians is fear and intimidation, which is dependent on the following factors: the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths.
- 16.9.33. The results in **Appendix 16H: Preliminary Assessment of Operation Phase Effects (Volume 3)** show that the predicted change in total traffic flows associated with the operation phase of the Proposed Scheme results in no step change (negligible) on all links. **Appendix 16H: Preliminary Assessment of Operation Phase Effects (Volume 3)** also shows that the predicted change in HGV traffic flows associated with the Operation Phase of the Proposed Scheme results in no step change (negligible) on all links.
- 16.9.34. The significance of effect of fear and intimidation is classified as Neutral or Slight Adverse (Not Significant) on all links.

Public Transport

- 16.9.35. The impact of the Proposed Scheme on the public transport network and effect to public transport users will be grouped with driver delay and considered together.

Driver Delay

- 16.9.36. In addition to the preliminary quantified assessment of effects set in **Appendix 16H: Preliminary Assessment of Operation Phase Effects (Volume 3)**, traffic delay will be fully assessed as part of the ES following operation assessments of the junctions within the Study Area during the AM and PM peak hours. Impact to emergency services within the Study Area, namely Billingham Community Fire Station will also be fully assessed as part of the ES.

Road Safety

16.9.37. Following a review of PIC within the Study Area, it is considered that the frequency, severity, and spatial distribution of collision does not indicate a pattern that indicates there are inherent road safety issues within the Study Area. Notwithstanding this, a full review, including an analysis of clusters, HGV movements and KSIs will be undertaken in the ES for all links and junctions within the Study Area. This will ensure a comprehensive road safety analysis is undertaken which is informed by the peak number of vehicle movements in the peak hour periods and daily movements for the Construction and Operation Phase.

16.10. ADDITIONAL DESIGN, MITIGATION AND ENHANCEMENT MEASURES

CONSTRUCTION PHASE

16.10.1. At this stage it is not anticipated that there will be a requirement for additional design, mitigation, or enhancement measures.

OPERATION PHASE

16.10.2. Relevant design, mitigation and enhancement measures will be identified in the ES, following an assessment of any likely significant environmental Traffic and Transport effects.

16.10.3. At this stage it is not anticipated that there will be a requirement for additional design, mitigation, or enhancement measures.

16.11. MONITORING

16.11.1. Further details in relation to potential monitoring requirements will be provided in the ES.

16.12. RESIDUAL EFFECTS

16.12.1. **Table 16-16** summarises the residual effects associated with the Proposed Scheme.

Table 16-16: Summary of Residual Effects for Traffic and Transport

Description of the Effect	Sensitive Receptor	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation, Enhancement Measure	Residual Effect
Construction/Decommissioning Phase				
Severance and Pedestrian Delay (incorporating delay to all NMUs)	Highway Links/PRoW (NMU)	Neutral or Slight Adverse (Not Significant)	N/A	Neutral or Slight Adverse (Not Significant)
Pedestrian Amenity	Highway Links/PRoW (NMU)	Neutral or Slight Adverse (Not Significant)	N/A	Neutral or Slight Adverse (Not Significant)
Fear and Intimidation	Highway Links/PRoW (NMU)	Neutral or Slight Adverse (Not Significant)	N/A	Neutral or Slight Adverse (Not Significant)
Public Transport Network	Public Transport Users	The assessment will be identified and presented as part of the ES and TA		
Driver Delay	Highway Links/Junctions (motorised users)	The assessment will be identified and presented as part of the ES and TA.		
Road Safety	Highway Links/Junctions (motorised users)	The assessment will be identified and presented as part of the ES and TA.		
Road Safety Audit	Highway Links/Junctions (motorised users)	The assessment will be identified and presented as part of the ES and TA.		
Hazardous Loads	Highway Links/Junctions (motorised users)	The assessment will be identified and presented as part of the ES and TA.		

Description of the Effect	Sensitive Receptor	Significance of Effect with Embedded Mitigation	Additional Design, Mitigation, Enhancement Measure	Residual Effect
Operation Phase				
Severance and Pedestrian Delay (incorporating delay to all NMU)	Highway Links/PRoW (NMU)	Neutral or Slight Adverse (Not Significant)	N/A	Neutral or Slight Adverse (Not Significant)
NMU Amenity	Highway Links/PRoW (NMU)	Neutral or Slight Adverse (Not Significant)	N/A	Neutral or Slight Adverse (Not Significant)
Fear and Intimidation	Highway Links/PRoW (NMU)	Neutral or Slight Adverse (Not Significant)	N/A	Neutral or Slight Adverse (Not Significant)
Public Transport Network	Public Transport Users	The assessment will be identified and presented as part of the ES and TA.		
Driver Delay	Highway Links/Junctions (motorised users)	The assessment will be identified and presented as part of the ES and TA.		
Road Safety	Highway Links/Junctions (motorised users)	The assessment will be identified and presented as part of the ES and TA.		
Road Safety Audit	Highway Links/Junctions (motorised users)	The assessment will be identified and presented as part of the ES and TA.		
Hazardous Loads	Highway Links/Junctions (motorised users)	The assessment will be identified and presented as part of the ES and TA.		

16.12.2. It is anticipated that there will be neutral or slight residual Traffic and Transport effects associated with the Proposed Scheme during construction, operation, or decommissioning. This would be subject to further analysis in the ES.

16.13. NEXT STEPS

- 16.13.1. The Traffic and Transport effects will be detailed and scoped with STBC, RCBC, and National Highways to agree the transport parameters to be fully assessed in the Traffic and Transport Chapter in the ES. Further assessment work will be undertaken to address the uncertainties contained in this PEIR.
- 16.13.2. The final calculation of vehicle trips generated by construction vehicles and construction workers (including profiling) will be carried out.
- 16.13.3. JTCs and ATCs will be undertaken on the surrounding highway network.
- 16.13.4. The theoretical capacity of existing junctions within a Study Area agreed by STBC and National Highways will be undertaken.
- 16.13.5. A full review of committed development and cumulative impacts will be carried out and reported in the ES.
- 16.13.6. It is proposed that the following documents will be produced as part of the DCO application:
- ES – Traffic and Transport Chapter;
 - Transport Assessment (TA);
 - Outline Construction Traffic Management Plan (CTMP); and
 - Construction Worker Travel Plan (CWTP).
- 16.13.7. A Statement of Common Ground (SoCG) will be prepared in relation to the Traffic and Transport impacts with the relevant highway authorities.

16.14. LIMITATIONS AND ASSUMPTIONS

- 16.14.1. The following limitations and assumptions have been identified:
- The information provided in this PEIR is preliminary; the final assessment of likely significant effects will be reported in the ES. This PEIR has been produced to fulfil the Applicant's consultation duties and enable consultees to develop an informed view of the likely significant effects of the Proposed Scheme, and comment on this during statutory consultation, before the design of the Proposed Scheme is finalised and taken forward to submission of the application for development consent.
 - The Proposed Scheme design is still evolving and this PEIR is based on the best available information at the time of writing. Traffic generation assumptions presented within this Chapter provide a high level, robust assessment of the likely worst-case. Further refinement of the traffic generation estimation will be undertaken as the design details are progressed.

- The 'Construction Phasing' and associated construction worker profile will be developed with the Applicant and the relevant contractors. This will feed into discussions regarding assessment scenarios and will be shared with the highway authorities.
- The detailed scope of the Traffic and Transport assessment has not yet been discussed with STBC, RCBC, MBC or National Highways. This will be undertaken prior to the preparation of the ES.
- Rail Movements – The Proposed Scheme may result in an increase in rail movements associated with transferring Biocarbon Feedstock from other sources across the UK and transferred by rail to the Navigator North Tees Rail Terminal. The feedstock would then be transferred from the intermediate buffer storage at the Rail Terminal to the Feedstock Storage & Pre-Processing Area via conveying equipment to be installed between the rail terminal and the SAF Plant. This will be considered further as part of the ES.

16.15. REFERENCES

- ¹ Department for Energy Security and Net Zero. (2023). Overarching National Policy Statement for Energy (EN-1). Available at: <https://assets.publishing.service.gov.uk/media/655dc190d03a8d001207fe33/overarching-nps-for-energy-en1.pdf>
- ² Department for Levelling Up, Housing & Communities. (2023). National Planning Policy Framework. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf
- ³ Department for Transport and National Highways. (2022). Strategic road network and the delivery of sustainable development. Available at: <https://www.gov.uk/government/publications/strategic-road-network-and-the-delivery-of-sustainable-development/strategic-road-network-and-the-delivery-of-sustainable-development>
- ⁴ National Highways. (2023). Planning for the future. A guide to working with National Highways on planning matters. Available at: https://nationalhighways.co.uk/media/2depj2hh/final-cre23_0370-nh-planning-guide-2023.pdf
- ⁵ Highways England. (2019). Water preferred policy - Guidelines for the movement of abnormal indivisible loads. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/799833/WPP_guidelines_2019_DfT_consultation_revision.pdf
- ⁶ Tees Valley Local Authorities. (2011). Tees Valley Joint Minerals and Waste Development Plan Documents. Available at: [Tees Valley joint minerals and waste DPDs | Middlesbrough Council](#)
- ⁷ Tees Valley Combined Authority. (2020). Strategic Transport Plan 2020 – 2023. Available at: [sd42-tees-valley-strategic-transport-plan-2020-2030.pdf \(darlington.gov.uk\)](#)
- ⁸ Stockton-on-Tees Borough Council. (2019). Local Plan. Available at: [Local Plan - Stockton-on-Tees Borough Council](#)
- ⁹ Redcar and Cleveland Borough Council. (2018). Local Plan. Available at: <https://www.redcar-cleveland.gov.uk/planning/local-plan/redcar-and-cleveland-local-plan>
- ¹⁰ Parliament of the United Kingdom. (1980). Highways Act. Available at: [Highways Act 1980 \(legislation.gov.uk\)](#)
- ¹¹ Parliament of the United Kingdom. (1990). Town and Country Planning Act. Available at: [Town and Country Planning Act 1990 \(legislation.gov.uk\)](#)
- ¹² Parliament of the United Kingdom. (1991). New Roads and Street Works Act. Available at: <https://www.legislation.gov.uk/ukpga/1991/22/contents>
- ¹³ Parliament of the United Kingdom. (2004). Traffic Management Act. Available at: <https://www.legislation.gov.uk/ukpga/2004/18/contents>
- ¹⁴ Parliament of the United Kingdom. (2008). Planning Act 2008. Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents>
- ¹⁵ Parliament of the United Kingdom. (2008). Local Transport Act. Available at: [Local Transport Act 2008 \(legislation.gov.uk\)](#)
- ¹⁶ Guidelines for the Environmental Assessment of Road Traffic (1993). Available at: https://gat04-live-1517c8a4486c41609369c68f30c8-aa81074.divio-media.org/filer_public/dc/df/dcdfa287-b475-4fbb-bd4e-a1e96b06be5d/cd71-guideline-for-the-environmental-assessment-of-road-traffic-institute-of-environmental.pdf
- ¹⁷ David, S, Hoare. D, Howard. R, Ross. A. (2023). Institute of Environmental Management and Assessment (IEMA) Guidelines: Environmental Assessment of Traffic and Movement Road Traffic and Movement

- ¹⁸ Ministry of Housing, Communities & Local Government. (2014). Planning Practice Guidance. Travel Plans, Transport Assessments and Statements. Available at: <https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements>
- ¹⁹ Highways England. (2019). LA 101 - Introduction to environmental assessment. Available at: <https://www.standardsforhighways.co.uk/tses/attachments/54b0eb69-fd65-4fa5-a86b-7313f70b3649?inline=true>
- ²⁰ Highways England. (2020). LA 103 - Scoping projects for environmental assessment. Available at: <https://www.standardsforhighways.co.uk/tses/attachments/fb43a062-65ad-48d3-8c06-374cfd3b8c23?inline=true>
- ²¹ Highways England. (2020). LA 104 - Environmental assessment and monitoring. Available at: <https://www.standardsforhighways.co.uk/tses/attachments/0f6e0b6a-d08e-4673-8691-cab564d4a60a?inline=true>
- ²² Highways England. (2020). LA 112 - Population and human health. Available at: <https://www.standardsforhighways.co.uk/tses/attachments/1e13d6ac-755e-4d60-9735-f976bf64580a?inline=true>
- ²³ The Planning Inspectorate. (2023). Scoping Opinion: Proposed Lighthouse Green Fuels Project. <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010150/EN010150-000012-EN010150%20-%20Lighthouse%20Green%20Fuels%20-%20Scoping%20Opinion.pdf>
- ²⁴ David, S, Hoare. D, Howard. R, Ross. A. (2023). Institute of Environmental Management and Assessment of Road Traffic and Movement
- ²⁵ Lighthouse Green Fuels DCO. (2023). 'Environment Impact Assessment Scoping Report: Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010150/EN010150-000006-LGF%20EIA%20Scoping%20Volume%20I%20-%20Main%20Text%20and%20Figures.pdf>
- ²⁶ TD16/93 – Geometric design of roundabouts. (1993). Available at: <https://www.thenbs.com/support>