NORTH FALLS

Offshore Wind Farm

PRELIMINARY ENVIRONMENTAL INFORMATION REPORT

Chapter 27 Traffic and Transport

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Glossary of Acronyms

AIL	Abnormal Indivisible Load
BEIS	Department for Business, Energy & Industrial Strategy
BESS	Battery Energy Storage Scheme
CEA	Cumulative Effect Assessment
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
ES	Environmental Statement
ESDAL	Electronic Service Delivery for Abnormal Loads
ETG	Expert Topic Group
GEART	Guidelines for the Environmental Assessment of Road Traffic
GHG	Greenhouse Gas
HDD	Horizontal Directional Drill
HGV	Heavy Goods Vehicle
LCV	Light Commercial Vehicle
LV	Light Vehicle
NPS	National Policy Statement
NRSWA	New Roads and Street Works Act
NSIP	Nationally Significant Infrastructure Project
OCTMP	Outline Construction Traffic Management Plan
PEIR	Preliminary Environmental Information Report
PPG	Planning Practice Guidance
PRoW	Public Rights of Way
PR1	Priority 1
PR2	Priority 2
RTRA	Road Traffic Regulation Act
TA	Transport Assessment
TMA	Traffic Management Act
TS	Transport Statement
TTSA	Traffic and Transport Study Area

Glossary of Terminology

Cable construction compound	Area set aside to facilitate construction of the onshore cable route. Will be located adjacent to the onshore cable route, with access to the highway.
Haul road	The track along the onshore cable route used by construction traffic to access different sections of the onshore cable route.
Heavy Goods Vehicle (HGV)	HGV is the term for any vehicle with a Gross Weight over 3.5 tonnes. This is also used as a proxy for HGVs and buses / coaches recognising the similar size and environmental characteristics of the respective vehicle types.
Horizontal directional drill (HDD)	Trenchless technique to bring the offshore cables ashore at the landfall. The technique will also be used for installation of the onshore export cables at sensitive areas of the onshore cable route.
Jointing bay	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The location where the offshore cables come ashore.
Landfall compound	Compound at landfall within which HDD or other trenchless technique would take place
Light Vehicle (LV)	The term 'light vehicle' is used to describe the range of vehicles that would be used by construction employees, i.e. cars, vans, pick-ups, minibuses, etc.
Movement	A two-way trip (i.e. the arrival and departure from site) for the transfer of employees or goods.
National Grid substation connection works	Infrastructure required to connect the Project to National Grid's connection point.
Onshore cable corridor(s)	Onshore corridor(s) within which the onshore export cables and associated infrastructure will be located. A final onshore cable route for which consent will be sought will be selected from within these corridor(s).
Onshore substation	A compound containing electrical equipment required to transform and stabilise electricity generated by the Project so that it can be connected to the National Grid.
Onshore substation zone	Area within which the onshore substation will be located.
Requirement	Requirements are similar to planning conditions in Town and Country Planning Act decisions, specifying conditions and restrictions on the development and matters for which detailed approval needs to be obtained before the development can be lawfully begun.
Serious Collision	A collision resulting in serious injury for which a person is detained in hospital as an "in-patient", or any of the following injuries whether or not they are detained in hospital: fractures, concussion, internal injuries, crushing, burns (excluding friction burns), severe cuts, severe general shock requiring medical treatment and injuries causing death 30 or more days after the accident.
Slight Collision	A collision resulting in a slight injury of a minor character such as a sprain (including neck whiplash injury), bruise or cut which are not judged to be severe, or slight shock requiring roadside attention. This definition includes injuries not requiring medical treatment.
The Applicant	North Falls Offshore Wind Farm Limited (NFOW).
The Project Or 'North Falls'	North Falls Offshore Wind Farm, including all onshore and offshore infrastructure.
Traffic and Transport Study Area (TTSA)	Area where potential impacts from the Project could occur, as defined for each individual EIA topic.
Transition joint bay	Underground structures that house the joints between the offshore export cables and the onshore export cables

Trenchless crossing compound	Areas within the cable corridor which will house trenchless crossing (e.g. HDD) entry or exit points.
Vehicle (HGV, Traffic) trips	A two-way trip (i.e. the arrival and departure from site) for the transfer of employees or goods.

27 Traffic and Transport

27.1 Introduction

1. This chapter of the Preliminary Environmental Information Report (PEIR) considers the likely significant effects of the North Falls offshore wind farm (hereafter 'North Falls' or 'the Project') on traffic and transport. The chapter provides an overview of the existing environment for the proposed onshore project area, followed by an assessment of likely significant effects for the construction, operation, and decommissioning phases of the Project.
2. This chapter has been written by Royal HaskoningDHV, with the assessment undertaken with specific reference to the relevant legislation and guidance, of which the primary sources are the National Policy Statements (NPS). Details of these and the methodology used for the Environmental Impact Assessment (EIA) and Cumulative Effects Assessment (CEA) are presented in Section 27.4.
3. The assessment should be read in conjunction with the following linked chapters (Volume I):
    - Chapter 20 Onshore Air Quality;
    - Chapter 26 Noise and Vibration;
    - Chapter 28 Human Health;
    - Chapter 31 Socio Economics; and
    - Chapter 32 Tourism and Recreation.
4. Additional information to support the traffic and transport assessment includes:
    - Appendix 27.1 Transport Assessment (TA) (Volume III); and
    - Appendix 27.2 Inter-relationships between impacts (Volume III).

27.2 Consultation

5. Consultation with regard to traffic and transport has been undertaken in line with the general process described in Chapter 6 EIA Methodology (Volume I). The key elements to date have included scoping and the ongoing technical consultation via the traffic and transport Expert Topic Group (ETG) meetings. The feedback received has been considered in preparing the PEIR. Table 27.1 provides a summary of how the consultation responses received to date have influenced the approach that has been taken.
6. This chapter will be updated following the consultation on the PEIR in order to produce the final assessment, which will be presented in an Environmental Statement (ES) that will be submitted with the Development Consent Order (DCO) application. Full details of the consultation process will also be presented in the Consultation Report as part of the DCO application.

Table 27.1 Consultation responses

Consultee	Date / Document	Summary of Comment	Response / where addressed in the PEIR
Essex County Council	19/08/2021 Scoping Opinion	… It is noted however that a number of key topics, not least as they relate to the statutory function of [Essex County Council] ECC including Highways and Transportation, and Economy and Skills have not been the subject of prior engagement. For example ECC does not know how many vehicles will be needed to implement the proposal, what routes will be taken across what is essentially a restricted rural highway network to the coast. Hence it has meant it is difficult to consider the true impacts of the scheme across the board and to consider matters which have to be implemented to ensure the scheme can be delivered affectively, and any adverse impact can be mitigated.	Following the submission of the Scoping Report, the Applicant has undertaken further consultation with Essex County Council and provided clarification on transport matters. This has included the submission of a Traffic and Transport Method Statement, Access Strategy Note and two ETG meetings. Details of forecast traffic flows and routes are provided within Table 27.17.
		… there is scant detail on the highways implications of this development both on its own and in combination with other proposals which will be taking place at the same time. ECC look forward to engaging with other Authority partners and the applicants on this.	Section 27.8 of this PEIR includes details of the cumulative effects with other developments.
	20/08/2021 Scoping Opinion	Essex County Council requested that the assessment of highway safety effects should include an assessment of construction traffic using narrow rural roads and the impact upon users of [Public Rights of Way] PRoW.	Section 27.6.1.7 includes an assessment of the effects of construction traffic using narrow rural roads, referred to as driver delay (highway geometry). Section 27.6.1.4 includes an assessment of the effects of North Falls construction traffic upon Highway Safety of all road users (including those of PRoW).
		Essex County Council requested that the assessment of Severance and Amenity effects should also consider the impact upon non-motorised users of the public highway including PRoW.	Section 27.6.1.2 and 27.6.1.3 includes an assessment of the effects of North Falls construction traffic upon severance and amenity of all road users (including those of PRoW, as identified in Table 27.14).
		Essex County Council advised of sections of the Design Manual for Roads Bridges (DMRB) that may be relevant to the assessment.	Section 27.4.1 outlines the salient legislation, policy and guidance that have been utilised within this PEIR.
		Essex County Council provided details of data sources which show Public Rights of Way and National Cycle Routes.	Table 27.7 outlines the available sources of data that have been used to categorise the sensitive receptors within the Traffic and Transport Study Area (TTSA).

Consultee	Date / Document	Summary of Comment	Response / where addressed in the PEIR
		Essex County Council provided detailed comments in in relation to PRoW.	Potential effects upon PRoW are assessed within Chapter 32 Tourism Recreation (Volume I).
		Essex County Council advised that further discussion will need to take place to agree the scope and content of the Transport Assessment to accompany the EIA.	Following the submission of the Scoping Report, the Applicant has undertaken further consultation with Essex County Council. This has included the submission of a Traffic and Transport Method Statement, Access Strategy Note and two ETG meetings. A Transport Assessment (TA) is provided as Appendix 27.1 (Volume III) of this PEIR.
Suffolk County Council	17/09/2021 Scoping Opinion	**5.9.7 Table 3.30 Abnormal indivisible loads (AIL).** The DfT HR82 preferred heavy load route runs from the M25/A12 junction via the A12 to Bramford substation in Suffolk. While SCC agrees that transport of AILs by marine or rail is preferable to road and compliant with national policy any improvements to HR82 would be welcomed. The authority notes that the width of AILs has been a matter of detail discussion in the SZC examination due to the routing of these on narrow local roads. https://www.gov.uk/government/publications/preferred-routes-for-high-and-heavy-abnormal-loadmovements	Section 27.4.3.1.1 contains details of the approach to the assessment of abnormal loads.
		5.9.9 Mitigation. SCC would consider that a Construction Traffic Management Plan is likely to be required this project and this would be consistent with other offshore windfarm applications (EA1, EA1(N), EA2, EA3). Most of these projects also prepared a Construction Workers Travel Plan. https://infrastructure.planninginspectorate.gov.uk/wpcontent/ipc/uploads/projects/EN010077/EN010077-005234-8.9%20EA1N%20Outline%20Construction%20Traffic%20Management%20Plan.pdf https://infrastructure.planninginspectorate.gov.uk/wpcontent/ipc/uploads/projects/EN010077/EN010077-005238-8.11%20EA1N%20Outline%20Travel%20Plan.pdf	An outline Construction Traffic Management Plan (OCTMP) will be submitted with the DCO application. The OCTMP will include outline travel plan measures, which would be developed further in consultation with Essex County Council and National Highways prior to the commencement of the authorised project.

Consultee	Date / Document	Summary of Comment	Response / where addressed in the PEIR
Public Health England	13/08/2021 Scoping Opinion	Public Health England's response identifies the wider determinants of health and wellbeing that they expect the ES to address, to demonstrate whether they are likely to give rise to significant effects. Public Health England has provided extensive background under the headings of: • 2a. Accessibility • 2b. Access to / by public transport • 2c. Opportunities for / access by cycling and walking • 2d. Links between communities • 2e. Community severance • 2f. Connections to jobs • 2g. Connections to services, facilities and leisure opportunities	Section 27.5 provides a detailed review of the sensitivity of each of the highway links within the TTSA in the context of all user groups and modes of travel. Section 27.6 provides a detailed assessment of North Falls construction traffic upon all user groups and modes of travel. The effects of North Falls construction traffic upon air quality and human health are also assessed separately within Chapter 20 Onshore Air Quality (Volume I) and Chapter 28 Human Health (Volume I).
Planning Inspectorate	26/08/2021 Scoping Opinion	The ES should provide a robust justification as to how study areas have been defined and why the defined study areas are appropriate for assessing potential impacts.	Section 27.3.1 provides details of how the TTSA has been derived.
		The Inspectorate notes specific receptors should be identified within the ES, alongside categorisation of their sensitivity and value.	Section 27.4.3.1.1 provides details of how traffic and transport receptors have been identified and their sensitivity and value categorised.
		The ES should include details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Section 27.4.5 outlines the salient assumptions and limitations that underpin this PEIR.
		The ES should include reference specific planning policy and legislation, where this has been used to inform the methodology used for assessment.	Section 27.4.1 outlines the salient legislation, policy and guidance that have been utilised within this PEIR.
		Any mitigation relied upon for the purposes of the assessment should be explained in detail within the ES. The likely efficacy of the mitigation proposed should be explained with reference to residual effects. The ES should also address how any mitigation proposed is secured, with reference to specific DCO requirements or other legally binding agreements.	Section 27.3.3 describes the mitigation measures that have been embedded into the design of the Project. Section 27.6.1 outlines the additional mitigation measures to be applied to manage the potential for significant effects during the construction of the Project.

Consultee	Date / Document	Summary of Comment	Response / where addressed in the PEIR
		The Inspectorate considers that there is potential for likely significant traffic and transport effects to occur during operation, maintenance, construction and decommissioning of the project. The Inspectorate does not agree to scope these matters out of the ES. The Inspectorate advises that where the final selection of port(s) has not been determined at the time of any DCO submission, an assessment should be presented in the ES on the basis of parameters that establish the maximum significant adverse effects.	The preferred base port (or ports) for the offshore construction, operation and decommissioning of the Project is not known and any decision would not be expected until post-consent. Such facilities would be existing or would be provided or brought into operation by means of one or more planning applications or as port operations with permitted development rights. It has therefore been agreed with National Highways (at a meeting on the 7 June 2022) and Essex County Council (at a meeting on the 9 July 2021) to scope out of the assessment the onshore impacts of traffic and transport associated with offshore construction, operation and decommissioning activities. This approach has also been accepted by the Planning Inspectorate for other recently consented offshore wind farm projects, e.g. Norfolk Vanguard and Boreas, East Anglia Two, East Anglia One North and Hornsea Three.
		The Inspectorate agrees that significant effects are unlikely to occur during the operational phase of the onshore infrastructure and assessment of these matters can be scoped out of the ES. The Inspectorate however notes that the ES should clarify the anticipated number and routeing of road vehicle movements during the operational phase.	Section 27.6.2 includes details of the likely levels of operational traffic. The accompanying TA (Appendix 27.1, Volume III) includes details of the proposed access strategy for the operational phase.
		Paras 662 and 663 **Rail network.** The Scoping Report states that there is a branch of the East Coast Main Line (ECML) railway within the onshore scoping area, as well as a number of rail stations. No information is presented as to whether the Proposed Development may result in impacts to the operation of the rail network. The ES should include an assessment of the potential impact on the rail network, including the potential impacts of any construction or diversion activities on public transport, where significant effects are likely to occur.	Section 27.6 contains an assessment of the potential effects on the transport network associated with North Falls. No effects upon other transport services or infrastructure are anticipated.

Consultee	Date / Document	Summary of Comment	Response / where addressed in the PEIR
		Table 3.30 **Abnormal indivisible loads (AIL).** The Inspectorate notes from information in Table 3.30 that an assessment of the suitability of access routes to accommodate abnormal loads will be undertaken. This assessment should consider the worst case number of abnormal loads and types of vehicles required. The outcome of this assessment should be reported in the ES, together with confirmation of any measures required to mitigate significant adverse effects arising from this matter, including consideration of delays to emergency services. If mitigation is required, it should be clear how this will be secured in the DCO. The Applicant should also consider whether use of existing river and rail connections for the transport of abnormal loads could represent an environmentally better outcome than road transport.	Section 27.4.3.1.1 contains details of the approach to the assessment of abnormal loads.
		Hazardous loads. The Scoping Report does not present any information about hazardous loads and whether there is potential for these to be required as part of the construction, operation or decommissioning of the Proposed Development. This should be clarified within the ES, and where there is potential for hazardous loads that could give rise to significant effects, an assessment should be undertaken and presented in the ES accordingly.	With the exception of potential fuel deliveries (for temporary generators) no hazardous loads are anticipated for the North Falls. Section 27.6.1.4 provides a detailed assessment of the highway safety baseline and identifies no significant issues in relation to the movement of HGVs. Noting this and that the transportation of fuel is strictly controlled by existing legislation (Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (Department for Transport, 2009)) no further assessment of hazardous loads is presented.
		Mitigation. The Scoping Report does not reference any potential mitigation that might be required to manage traffic and transport impacts during construction, eg a construction traffic management plan (CTMP) or PRoW management plan. The Inspectorate would expect drafts of these documents to be provided within any DCO submission, together with confirmation of how they would be secured through the DCO.	An OCTMP will be submitted with the DCO application. The OCTMP will include outline travel plan measures, which would be developed further in consultation with Essex County Council and National Highways prior to the commencement of the authorised Project.
Essex County Council	9 July 2021	An initial meeting held with Essex County Council to discuss: • The extents of the TTSA;	The approach to data gathering is outlined within Section 27.4.2 and the accompanying TA (Appendix 27.1, Volume III).

Consultee	Date / Document	Summary of Comment	Response / where addressed in the PEIR
	ETG Meeting 1	• Data collection; • Impacts to be assessed and the assessment methodology; and • Proposed DCO documents. Agreements were reached with regard to: • Approach to capturing baseline traffic flows; • The approach to scoping out the assessment of operational traffic and transport impacts; • The approach to scoping out the assessment of onshore traffic movements associated with the offshore construction and operational phases; • The impacts to be assessed within the EIA; • The approach to the assessment of highway safety; • The proposed DCO documents; • The Traffic and Transport EIA Chapter should be supported by a separate Transport Assessment; and • The design of new accesses and crossings.	The assessment methodology and agreed impacts to be assessed are outlined within Section 27.4. A TA (Appendix 27.1, Volume III) is provided in support of this PEIR Chapter. The TA includes details of the proposed access strategy and approach to the design of new accesses and crossings.
Essex County Council	5 May 2022 ETG Meeting 2	A second ETG meeting was held with Essex County Council to discuss the proposed strategy to access the project during the construction phase. Agreements were reached with regards to the routeing of HGVs to some accesses. To date no comments have been received from Essex County Council in relation to the proposed access strategy.	A TA is provided in Appendix 27.1 (Volume III). The TA includes details of the proposed access strategy and approach to the design of new accesses and crossings.
National Highways	7 June 2022 Traffic and Transport Meeting	A meeting was held with National Highways to discuss: • The potential to access from the A120; • The extent of the TTSA; • Approach to data collection; • Impacts to be assessed; • Proposed DCO documents. Agreements were reached with regard to: • The approach to capturing baseline traffic flows; • The approach to considering seasonality of baseline traffic;	The approach to data gathering is outlined within Section 27.4.2 and the accompanying TA (Appendix 27.1, Volume III). The assessment methodology and agreed impacts to be assessed are outlined within Section 27.4. A TA is provided in Appendix 27.1 (Volume III). The TA includes details of the proposed access strategy and approach to the design of new accesses and crossings.

Consultee	Date / Document	Summary of Comment	Response / where addressed in the PEIR
		• The approach to scoping out the assessment of operational traffic and transport impacts; • The approach to scoping out the assessment of onshore traffic movements associated with the offshore construction and operational phases; • The impacts to be assessed within the EIA; • The approach to the assessment of highway safety; • The proposed DCO documents; • The Traffic and Transport EIA Chapter should be supported by a separate Transport Assessment; and • The design of new accesses and crossings.	
National Highways	8 November 2022. Email	In response to consultation with National Highways upon a range of access options in the vicinity of the A120. National Highways advised that they wish to avoid any new access to the A120 and would prefer access to the project to be taken from the local highway network. National Highways also advised that where the projects cables cross the A120, they would prefer that the project uses 'thrust bore' to install the cables under the carriageway, or to cross over at a suitable hight.	A TA is provided in Appendix 27.1 (Volume III). The TA includes details of the proposed access strategy and approach to the design of new accesses and crossings. No access is proposed from the A120. Section 27.3.3 describes the mitigation measures that have been embedded into the design of the Project. These measures include a commitment to install the Project's cables under the A120 using trenchless techniques.

27.3 Scope

27.3.1 Study area

7. The Traffic and Transport Study Area (TTSA) has been established through determining the most probable routes for traffic, for both the transportation of materials and employees and subsequent stakeholder engagement.

8. The extent of the TTSA is shown in Figure 27.1 (Volume II). The TTSA is divided into 42 separate highway sections known as links, which are sections of road with similar characteristics and traffic flows. In total, the TTSA comprises of approximately 90km of highway network.

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

27.3.2 Realistic worst case scenario

10. The final design of the Project will be confirmed through detailed engineering design studies that will be undertaken post-consent. In order to provide a precautionary but robust impact assessment at this stage of the development process, realistic worst case scenarios have been defined in terms of the potential effects that may arise. This approach to EIA, referred to as the Rochdale Envelope, is common practice for developments of this nature, as set out in Planning Inspectorate Advice Note Nine (2018). The Rochdale Envelope for a project outlines the realistic worst case scenario for each individual impact, so that it can be safely assumed that all other scenarios within the design envelope will have less impact. Further details are provided in Chapter 6 EIA Methodology (Volume I).

11. The realistic worst case scenarios for the likely significant effects scoped into the EIA for the traffic and transport assessment are summarised in Table 27.2. These are based on project parameters described in Chapter 5 Project Description (Volume I), which provides further details regarding specific activities and their durations.

12. The onshore parameters for the Project described in Chapter 5 Project Description (Volume I) have been reviewed by construction consultants (Wardell Armstrong) and the Applicant's engineering team. Wardell Armstrong and the Applicant's engineering team have applied their experience gained through the construction of previous wind farm projects in the UK to determine the worst-case scenario for traffic and transport.

13. Traffic demand has been forecast by applying a 'first principles' approach. The first principles approach generates traffic volumes from an understanding of material quantities and employee numbers required for the construction of the Project and converts these metrics into vehicle trips.

14. Detailed derivation and distribution of the traffic numbers and worst case parameters are provided within the TA (Appendix 27.1, Volume III). Table 27.2 provides a brief summary of the realistic worst case parameters of the onshore infrastructure that are relevant to potential effects on traffic and transport during the construction of the Project.

Table 27.2 Realistic worst case scenarios

Potential impact	Parameter	Notes
Construction		
Impact 1: Severance Impact 2: Amenity Impact 3: Highway Safety Impact 4: Driver Delay (Capacity) Impact 5: Driver Delay (Highway Geometry) Impact 6: Driver Delay (Road Closures)	The Project: • Earliest construction commencement year = 2026 Landfall: • Construction duration = 13 months • Landfall compound area = 100 x 200m • No. of HDD = 5 • Diameter of HDD (diameter of duct) 0.3m • No. of transition joint bays = 4 • Size of transition joint bays = 4 x 15m (each) Onshore cable corridor(s): • Construction duration = 18 – 24 months • No. of temporary construction compounds = 7 • Size of temporary construction compounds = 150 x 150m (general cable construction compounds) to 100 x 100m (small cable construction compounds) • Length of onshore cable corridor = 24km • Width of open cut trenching working width = 60m • No. of circuits = 4, comprising 3 power cables, 3 telecommunications cables and 1 earth cable in each circuit • No. of cable trenches = 4 • Cable trench dimensions = 3.75m x 2m (width x depth) • Volume of cement bound sand (CBS) per m of trench = 0.62m^3 • Haul road = 6m x 24km x 0.35m (width x length x depth) • Length of temporary access roads = 2.3km • No. of joint bays = 80 - 192 (approximately every 500m) • Dimensions of joint bays = 13 x 5m (length x width) • Trenchless crossing compound dimensions = 80 x 120m (major crossings) 40 x 120m (minor crossings)	A first principles approach has been used to derive traffic flows (see paragraph 13). The approach is influenced by the quantum of material and personnel and the time period by which the associated movements would occur. These metrics combined form the basis for hourly and daily project traffic demand. It should be noted that for the assessment presented in the PEIR, the material quantities and employee numbers used to derive traffic flows are indicative while the onshore project design continues to be revised, and will be revised and updated based on the output of ongoing design review work prior to presentation with the ES. The assessment of severance, amenity and highway safety is informed through a consideration of the magnitude of change in daily traffic flows. In order to consider a worst case scenario, the assessment utilises the peak daily traffic flows that could occur during the construction phase. The assessment of driver delay is informed through a consideration of changes in hourly traffic flows. In order to consider a worst case scenario, the assessment utilises the peak daily traffic flows that could occur during the construction phase. Hourly flows are then calculated from peak daily traffic flows.

Potential impact	Parameter	Notes
	Onshore substation: The design of the onshore substation has not been finalised at this stage. Therefore in order to inform the realistic worst case parameters for PEIR assessment reference has been made to the traffic movements derived for the Awel y Mor Offshore Wind Farm (RWE, April 2022). Awel y Mor Offshore Wind Farm is considered to be a representative development of similar character and scale. • Onshore substation = peak daily Heavy Goods Vehicle (HGV) trips: 200, peak daily employee trips: 252 • Construction duration = 27 months Associated peak movements and routeing (for landfall, onshore cable corridor(s) and onshore substation): • Peak HGV movements = 565 HGV trips per day (inclusive of contingencies for incidental deliveries) • Peak LV movements = 960 Light Vehicle (LV) trips per day (inclusive of contingencies for movements between work areas and incidental deliveries throughout the day) • Construction routing = All HGV traffic is assumed to have an origin on either the A120, either east towards the port of Harwich or west towards Colchester and the A12 • Rail or water transport = HGV numbers are based on all materials are delivered direct to the work area by road, i.e. no use of rail or water transport • Backhauling = HGV numbers are based on no back-hauling, i.e. no reduction has been applied to take account of the potential that vehicles making deliveries could be used to export materials • Contingencies = A contingency (reflecting the uncertainties in the design) has been applied to all material quantities and associated HGV movements • Travel planning = LV movements have been based upon one employee to one vehicle, i.e. no reduction has been applied to account for the potential that construction employees may car-share, or travel in contractor provided minibuses • Traffic reassignment = No reduction in traffic movements has been applied to account for the reassignment of traffic. For example, many HGVs would already be on the local network serving existing supply chains and would potentially reassign to serve North Falls without creating additional demand within the TTSA. However, within the assessment all HGV movements are assessed as 'new' trips.	
Operation		
No significant traffic and transport effects are anticipated during the operational phase and as agreed with stakeholders and as set out in the scoping opinion (detailed in Table 27.1), no operational scenarios will be assessed within this traffic and transport impact assessment.		
Decommissioning		

Potential impact	Parameter	Notes
No final decision has yet been made regarding the final decommissioning policy for the onshore Project infrastructure including landfall, onshore cable corridor and onshore substation. It is also recognised that legislation and industry best practice change over time. However, it is likely that the onshore Project equipment, including the cable, will be removed, reused or recycled where possible and the transition bays and cable ducts being left in place. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and will be agreed with the regulator. It is anticipated that for the purposes of a worst case scenario, the effects will be no greater than those identified for the construction phase.		

27.3.3 Summary of mitigation embedded in the design

15. This section outlines the embedded mitigation relevant to the traffic and transport assessment, which has been incorporated into the design of North Falls (Table 27.3). Where other mitigation measures are proposed, these are detailed in the impact assessment (Section 27.6), where applicable.

Table 27.3 Embedded mitigation measures

Parameter	Mitigation measures embedded into North Falls design
Construction phase	
Construction Traffic Management Plan	An OCTMP will be submitted with the DCO application. The OCTMP would contain details of measures to control, monitor and enforce HGV movements and would provide details of the mechanisms for managing design of accesses and offsite highway works. The OCTMP would also include 'Travel Plan' measures to manage the number of single occupancy car trips.
Delivery time restrictions	As requested by Essex County Council, HGV movements through Thorpe-le-Soken will be scheduled to occur outside of school start and finish times. These restrictions would be managed through the CTMP.
Strategy for access	An access strategy has been developed that seeks to reduce the impact of HGV traffic upon the most sensitive communities and to avoid travelling via narrow roads. The access strategy would be facilitated by: • The construction of a temporary haul road along the onshore cable route; • The creation of vehicle crossovers; and • Controls on vehicle routing. These embedded mitigation parameters are outlined further below, with the proposed location of accesses and vehicle crossovers shown in Figure 27.2 (Volume II).
	Haul Road A temporary haul road would be provided to provide safe access for construction vehicles along the onshore cable route, thus reducing the requirement for vehicles to travel via the public highway.
	Vehicle Crossovers To avoid vehicle access via unsuitable locations, where the onshore cable corridor and haul road cross certain sensitive roads, no direct access would be provided and vehicles would only be permitted to cross the highway. The proposed access strategy is described in detail within the TA (Appendix 27.1, Volume III) and shown in Figure 27.2 (Volume II). In summary, it includes: • Little Clacton Road. To avoid construction traffic access via Little Clacton Road and Great Holland, vehicles would access from access 2a or 2b and travel north on the temporary haul road crossing over at Little Clacton Road (crossing point 1 and 2) before travelling north towards the existing railway line. • B1034, Damant's Farm Lane, B1414 and Golden Lane. To reduce the volume of construction traffic routed via Thorpe-le-Soken, access would be taken from the B1035 to the north of the village and all construction traffic would travel south on the temporary haul road from access 4, crossing over either at crossing points 12a, 11a, 10a, 9a, 6, 5, 4 and 3, or 12b, 11b, 10b, 9b, 8, 7, 6, 5, 4 and 3. • Lodge Lane, Wolves Hall Lane, and Stones Green Road. To avoid HGV access via Tendring Green along the B1035, all HGV traffic would access from the north via access 12a or b and travel south on the temporary haul road, crossing over at access point 11, 10, 8 and 9 and crossing point 13 and 14. • Payne's Lane, Spratts Lane, Barlon Road. To avoid HGV access via these narrow roads, all HGV traffic would access from the east via access 16 and travel west on the temporary haul road, crossing over at crossing points 15, 16, 17, 18, 19, 20, 21 and 22. These measures would be captured in the OCTMP.
	Landfall access 1a or 1b, vehicle routeing strategy

Parameter	Mitigation measures embedded into North Falls design
	To avoid the necessity for HGVs to travel via the B1033 and Thorpe-le-Soken towards the landfall access (access 1a or 1b) it was agreed with Essex County Council (at a meeting on the 5 May 2022, detailed in Table 27.1) that all HGVs would be routed towards the A133.
	Onshore cable route, access 4, 5, 6 and 7, vehicle routing strategy To avoid the necessity for HGVs to travel via the B1035 and Tendring Green and Tendring towards access 4, 5, 6 and 7, it was agreed with Essex County Council (at a meeting on the 5 May 2022) that all HGVs would be routed south on the B1035 and then west on the B1033 towards the A133.
	Onshore substation access 16, vehicle routeing strategy To avoid the necessity for HGVs to travel via Little Bromley towards the onshore substation access (access 16), all HGVs would be routed south on Bentley Road, towards the A120.

Trenchless Crossings	To avoid disruption to transport users whilst the Project's cables are installed under road and rail infrastructure, trenchless crossing techniques will be used at the following locations and shown in Figure 27.4 (Volume II):
	• The railway line towards Walton-on-the-Naze and Frinton-on-Sea.
	• All A and B roads and the following local roads:
	  ○ Walton Road;
	  ○ Stones Green Road; and
	  ○ Bentley Road.

Crossing private access tracks	To avoid disruption to transport users whilst the Project's cables are installed under Lodge Lane and Spratts Lane, temporary road diversions would be established. This would be via agreed diversion routes, via existing private tracks or a temporary access track within the DCO order limits.
Operational phase	
Onshore substation access 17, vehicle routeing strategy	To provide for operational staff and maintenance vehicles to periodically visit the onshore substation to carry out routine checks and maintenance, it will be necessary to implement 'access management measures', such as passing places, to allow traffic to the onshore substation to pass oncoming traffic, reducing the potential for delays. Details of any such measures will be discussed and agreed with Essex County Council post PEIR. Further details of the proposed operational access strategy are provided within the TA (Appendix 27.1, Volume III).

27.4 Assessment methodology

27.4.1 Legislation, guidance and policy

27.4.1.1 National Policy Statements

16. The assessment of likely significant effects upon traffic and transport has been made with specific reference to the relevant National Policy Statements (NPS). These are the principal decision making documents for Nationally Significant Infrastructure Projects (NSIPs). Those relevant to the Project are:

- Overarching NPS for Energy (EN-1) (Department of Energy and Climate Change (DECC) 2011a);
- NPS for Renewable Energy Infrastructure (EN-3) (DECC 2011b);
- NPS for Electricity Networks Infrastructure (EN-5) (DECC 2011c);
- Draft Overarching NPS for Energy (EN-1) (Department for Business, Energy & Industrial Strategy (BEIS) 2021a);
- Draft NPS for Renewable Energy Infrastructure (EN-3) (BEIS 2021b); and

- Draft NPS for Electricity Networks Infrastructure (EN-5) (BEIS 2021c).

17. The UK Government announced a review of the existing NPSs within its December 2020 Energy White Paper (HM Government, 2020) and issued a draft version of Overarching NPS for Energy EN-1, NPS for Renewable Energy Infrastructure EN-3 and NPS for Electricity Networks Infrastructure EN-5 for consultation on 6th September 2021 (BEIS 2021a; BEIS 2021b; BEIS 2021c). At the time of writing this PEIR chapter, final versions of the revised NPSs are not available.

18. The specific assessment requirements for traffic and transport, as detailed in the NPS, are summarised in Table 27.4 together with an indication of the section of the PEIR chapter where each is addressed.

Table 27.4 NPS assessment requirements

NPS Requirement	NPS Reference	PEIR Reference
Overarching NPS for Energy (EN-1)		
If a project is likely to have significant transport implications, the applicant's ES should include a Transport Assessment, using the New Approach To Appraisal / Transport Analysis Guidance methodology stipulated in Department for Transport guidance, or any successor to such methodology.	Section 5.13.3	This chapter and the accompanying TA (Appendix 27.1) have been produced in accordance with current transport guidance (referenced later within Section 27.4.1).
Where appropriate, the applicant should prepare a Travel Plan including demand management measures to mitigate transport impacts. The applicant should also provide details of proposed measures to improve access by public transport, walking and cycling, to reduce the need for car parking associated with the proposal and to mitigate transport impacts.	Section 5.13.4	Section 27.6 contains an assessment of the potential effects on the transport network associated with North Falls and further outlines the mitigation measures for construction. An OCTMP will be submitted with the DCO application. The OCTMP will include outline travel plan measures, which would be developed further in consultation with Essex County Council and National Highways prior to the commencement of the authorised Project.
NPS for Renewable Energy Infrastructure (EN-3)		
EN-3 contains relevant policy in relation to the assessment of transmission infrastructure for renewable energy installations, however there is no information specific to this traffic and transport chapter.		
NPS for Electricity Networks Infrastructure (EN-5)		
A review of NPS EN-5 did not identify requirements relating to traffic and transport and are therefore not considered relevant to this chapter.		
Draft Overarching NPS for Energy (EN-1)		
The draft NPS, includes for an additional sentence at the end of section 5.13.4 of the NPS. This states that: *The assessment should also consider any possible disruption to services and infrastructure (such as road, rail and airports).*	Section 5.14.4	Section 27.6 contains an assessment of the potential effects on the transport network associated with North Falls. No effects upon other transport services or infrastructure are anticipated.
Draft NPS for Renewable Energy Infrastructure (EN-3)		
There are no material changes as with the existing NPS EN-3 and therefore there are no new relevant paragraphs in relation to this chapter.		

NPS Requirement	NPS Reference	PEIR Reference
Draft NPS for Electricity Networks Infrastructure (EN-5)		
There are no material changes as with the existing NPS EN-5 and therefore there are no new relevant paragraphs in relation to this chapter.		

27.4.1.2 Other legislation, policy and guidance

19. In addition to the NPS, there are a number of pieces of legislation, policy and guidance applicable to the assessment of traffic and transport. Further detail is provided in Chapter 3 Policy and Legislative Context (Volume I).

27.4.1.2.1 Local Planning Policy

20. EN-1 states that the Planning Inspectorate will also consider Development Plan Documents or other documents in the Local Development Framework to be relevant to its decision making.

21. The TTSA falls under the jurisdiction of Essex County Council as the local highway authority and Tendring District as the local planning authority.

22. Table 27.5 provides details of the local planning policy documents and the policies contained within these which are relevant to traffic and transport. These policies have been considered within the development of this PEIR.

Table 27.5 Relevant local planning policies

Document	Policy	Policy / Guidance purpose	PEIR Consideration
Tendring District Local Plan 2013 – 2033 and Beyond (Tendring District Council, January 2022)	Policy CP 1: Sustainable Transport and Accessibility	*"Proposals for new development must be sustainable in terms of transport and accessibility and therefore should include and encourage opportunities for access to sustainable modes of transport, including walking, cycling and public transport…"* *"Planning applications for new major development likely to have significant transport implications will normally require a Transport Statement. If the proposal is likely to have significant transport implications or a Transport Assessment the scope of which should be agreed in advance between the District Council and the applicant, in consultation with Essex County Council as the Highway Authority"* *"… all such applications should include proposals for walking and cycling routes and new or improved bus-stops/services. Where relevant, improvements to railway station passenger facilities should be included and greater connectivity between places and modes of transport demonstrated"* *"Travel Plans and Residential Travel Information Packs should be provided as appropriate"*	An OCTMP will be submitted with the DCO application. The OCTMP will include travel plan measures, which will be developed further in consultation with Essex County Council and National Highways (to be approved by Tendring District Council) prior to the commencement of the Project. Section 27.6 and the accompanying TA (Appendix 27.1, Volume III) detail an assessment of the Project's traffic and transport effects.

Document	Policy	Policy / Guidance purpose	PEIR Consideration
	Policy CP 2: Improving the Transport Network	*"Proposals for new development which contribute to the provision of a safe and efficient transport network that offers a range of sustainable transport choices will be supported. Major development proposals should include measures to prioritise cycle and pedestrian movements, including access to public transport"* *"Proposals will not be granted planning permission if there would be an unacceptable impact on highway safety, or the residual cumulative impact on the road network would be severe"*	
Essex Transport Strategy: the Local Transport Plan for Essex (Essex County Council, June 2011)	Policy 2 – Integrated Planning	*"Transport and land-use planning will be used together to secure new development at the most appropriate and sustainable locations by:* • … ensuring new developments provide for sustainable transport and effective travel planning; • requiring new developments to provide appropriate transport infrastructure…"	
	Policy 8 – Promoting Sustainable Travel Choices	*"The County Council will encourage the use of more sustainable forms of travel by:* • … requiring effective travel planning for proposed developments…"	
	Policy 10 – Road Safety	*"The County Council will work to reduce the incidence and severity of road traffic collisions on roads in Essex by:* • … ensuring Safety Audits are undertaken of all proposed designs of new highway schemes or proposals to materially alter the existing public highway"	The accompanying TA (Appendix 27.1, Volume III) outlines the proposed access strategy for the Project, including the approach to ensuring safety audits are undertaken.

27.4.1.2.2 Further Policy and Guidance

The Strategic Road Network and the Delivery of Sustainable Development

23. The Department for Transport Circular 02/2013 entitled 'The Strategic Road Network and the Delivery of Sustainable Development' (Department for Transport, 2013) sets out the ways in which the Highways Agency (now National Highways) will engage with communities and developers to deliver sustainable development and, thus economic growth, whilst safeguarding the primary function and purpose of the Strategic Road Network.

24. Under the heading of Environmental Impact 02/2013 paragraph 47 notes that:

"… developers must ensure all environmental implications associated with their proposals, are adequately assessed and reported so as to ensure that the mitigation of any impact is compliant with prevailing policies and standards. This requirement applies in respect of the environmental impacts arising from the

temporary construction works and the permanent transport solution associated with the development, as well as the environmental impact of the existing trunk road upon the development itself".

25. The Circular 02/2013 details access requirements specifically for wind turbines and paragraph A15 states that:

"The promoter of a wind farm should prepare a report covering the construction, operation and de-commissioning stages of the development. From this, the acceptability of the proposal should be determined, and any mitigating measures should be identified"

Access to the site for construction, maintenance and de-commissioning should be obtained via the local road network and, normally, there should be no direct connection to the strategic road network"

Swept path analyses should be provided by the developer for the abnormal load deliveries to the site."

26. Under the heading of 'Access, To The Strategic Road Network' paragraph 37 states that:

"The creation of new accesses to the strategic road network can impact on its ability to fulfil the function of facilitating the safe and effective movements of goods and people in support of economic growth by compromising traffic movement and flow"

27. Whilst there is a presumption against new or intensification of access on the motorway network, paragraph 43 notes that:

"The Highways Agency [now National Highways] will adopt a graduated and less restrictive approach to the formation or intensification of use of access to the remainder of the strategic road network, However, the preference will always be that new development should make use of existing junctions. Where a new junction or direct means of access is agreed, the promotor will be expected to secure all necessary consents, and to fund all related design and construction works"

28. Circular 02/2013 requirements have been discussed with National Highways and are addressed within this PEIR and accompanying TA (Appendix 27.1, Volume III).

Traffic Management Act 2004

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

30. The TMA directs effective communication between Local Highway Authorities and parties interested in carrying out street works. The TMA encourages a disciplined approach and advance communication to plan the street works.

31. The TMA also contains extra powers for Local Traffic Authorities to manage and direct street works beyond those contained in the New Roads and Street Works Act 1991.

New Roads and Street Works Act 1991

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

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

Road Traffic Regulation Act 1984

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

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

Highways Act 1980

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

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

The Guidelines for the Environmental Assessment of Road Traffic

38. The Guidelines for the Environmental Assessment of Road Traffic (GEART) (Institute of Environmental Assessment, 1993) are guidelines for the assessment of the environmental impacts of road traffic associated with new developments, irrespective of whether the developments are subject to formal EIAs.

39. The purpose of the guidelines is to provide the basis for systematic, consistent and comprehensive coverage for the appraisal of traffic impacts arising from development projects. Impacts that may arise include pedestrian severance and amenity, driver delay, accidents and safety and noise, vibration and air quality.

40. GEART is the principal guidance that informs this assessment and Section 27.4.3 of this chapter contains full details of how the guidance has been applied.

Planning Practice Guidance - Travel Plans, Transport Assessment and Statements

41. Department for Transport, Transport Assessment guidance referred to in NPS EN-1, was withdrawn in October 2014 and was replaced with Planning Practice Guidance (PPG). For the purpose of assessing the effect of North Falls, the relevant PPG is ‘Travel Plans, Transport Assessment and Statements’ (henceforth referred to as the Transport PPG).

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

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

43. The Transport PPG key principles have shaped the development of this PEIR and accompanying TA (Appendix 27.1, Volume III) and can be seen throughout this chapter.

Further Policy and Guidance Technical Transport Guidance

44. Data was acquired within the TTSA through a detailed desktop review of existing datasets, as listed in Table 27.6.

Table 27.6 Supplementary technical transport guidance

Document	Purpose/Application
Design Manual for Roads and Bridges (DMRB) CD 123 – Geometric design of at-grade priority and signal-controlled junctions (National Highways, November 2021)	The DMRB has been prepared for trunk roads and motorways and has been adopted as best practice within this assessment for the design of all accesses.
DMRB CD 109 – Highway link design (National Highways, March 2020)	
DMRB GG 104 – Requirements for Safety Risk Assessments (Highways England, June 2018)	Sets out the approach for safety risk assessments to be applied when undertaking activity that can have an impact on safety on the Strategic Road Network. Provides a framework for identifying hazards, assessing, evaluating and managing safety risks.
DMRB GG 119 - Road Safety Audit (Highways England, January 2020a)	Provides the requirements for road safety audit for highway schemes.
DMRB LA 112 – Population and Human Health (Highways England, January 2020b)	Sets out rights of way sensitivity thresholds for walkers, cyclist and horse-riders when crossing roads.
Manual for Streets (Chartered Institute of Highways and Transportation, 2007)	Guidance to inform the visibility requirements for junctions where measured speeds are below 40mph.
Manual for Streets 2 (Chartered Institute of Highways and Transportation, 2010)	
Traffic Signs Manual Chapter 8 Traffic Safety Measures and Signs for Road Works and Temporary Situations Part 1: Design (Department for Transport, 2009)	Provides guidance upon temporary traffic management that will be used to inform the assessment of driver delay impacts related to temporary road closures.

27.4.2 Data sources

27.4.2.1 Available sources

45. Data was acquired within the TTSA through a detailed desktop review of existing datasets, as listed in Table 27.7.

Table 27.7 Available sources of TTSA data

Data Set	Source	Spatial Coverage	Year	Notes
Traffic flows	Road Traffic Statistics (Department for Transport, 2019)	15 locations within the TTSA	Annual average daily traffic flows were obtained for 2019. Whilst more recent 2020 data is provided, these data include periods where traffic flows were impacted due to the Covid-19 pandemic and have therefore been discounted.	National road traffic statistics provides a summary of traffic flows and vehicle composition (e.g. HGV, car, motorcycle) for a range of motorways, 'A' road and minor roads across the UK. Data was acquired for 15 of the 42 links within the TTSA. Full details of the data and application in the TTSA is presented in the TA (Appendix 27.1, Volume III).
Traffic flows	Essex County Council, permanent traffic counters	Two links within the TTSA	Traffic flow data showing seasonal changes in traffic were obtained for the period of 2018. Whilst more recent data is available, these data include periods where traffic flows were impacted due to the Covid-19 pandemic and have therefore been discounted.	Permanent traffic counters provide details of how traffic flows vary throughout the year. Data was acquired for two of the 42 links within the TTSA. These two links (the A133 and B1033) have been selected as they provide the main routes towards the coast for tourists within the TTSA. Full details of these data and application in the TTSA is presented in the TA (Appendix 27.1, Volume III) and Section 27.5.2.
Collision data	Essex County Council	All links within the TTSA.	Data was acquired from Essex County Council for the latest five year period 01 March 2017 to 28 February 2022 (at the time of drafting).	Collisions on the public highway that are reported to the police, and which involve injury or death are recorded by the police on a STATS19 form and collated by the local highway authority (Essex County Council). The personal injury collision data includes a wide variety of information about the collision (such as time, date, location, road conditions). Full details of the data and application in the TTSA is presented in the TA (Appendix 27.1, Volume III).
Public Rights of Way	Essex County Council	The extent of the TTSA.	n/a	Geographic Information System layer from Essex County Council.
National Cycle Routes	Sustrans (Sustrans, 2022)	The extent of the TTSA.	n/a	Map of the national cycle networks from Sustrans.

27.4.2.2 Site specific

46. To provide site specific and up to date information on which to base the impact assessment, traffic surveys were undertaken to inform data gaps identified in the TTSA. A summary of the surveys is outlined in Table 27.8, full details are presented within the TA (Appendix 27.1, Volume III).

Table 27.8 Site specific survey data

Data Set	Spatial Coverage	Year	Notes
Automatic Traffic Counts	30 locations within the TTSA	Traffic flows were obtained for a period of seven days (09/06/2022 to 15/06/2022).	Traffic counts commissioned by the Applicant which provide classified hourly and daily count and speed data. Full details are provided within the TA (Appendix 27.1, Volume III).

47. A desk-based assessment supported by site visits was undertaken to provide information with regard to the existing baseline highway environment, clarifying characteristics and sensitive receptors. Further details are provided in Section 27.5.

27.4.3 Impact assessment methodology

48. Chapter 6 EIA Methodology (Volume I) explains the general impact assessment methodology applied to North Falls. The following sections describe the methods used to assess the likely significant effects on traffic and transport. These principles have been augmented by traffic and transport specific methodologies (as prescribed in GEART) to inform a significance evaluation.

49. The methodology was presented within the Scoping Report and a Traffic and Transport 'Method Statement' presented to the traffic and transport ETG as part of the Evidence Plan Process (detailed in Table 27.1).

50. It was agreed during traffic and transport ETG meetings with Essex County Council (on the 9 July 2021) and National Highways (on the 7 June 2022), that the potential traffic and transport impacts to be assessed are:

- Severance;
- Pedestrian and Cyclist Amenity (Amenity);
- Highway Safety;
- Driver Delay (relating to highway capacity, highway geometry and road closures); and
- Abnormal Loads.

51. Traffic borne air quality effects, noise and vibration and health effects have been informed by the traffic data outlined in this chapter. These effects are assessed in Chapter 20 Onshore Air Quality, Chapter 26 Noise and Vibration, and Chapter 28 Human Health (Volume I) respectively.

27.4.3.1 Definitions

52. For each potential impact, the assessment identifies receptors within the TTSA which are sensitive to that impact and implements a systematic approach to understanding the impact pathways and the degree of impact (i.e. magnitude)

on given receptors. The definitions of sensitivity and magnitude for the purpose of the traffic and transport assessment are provided in Section 27.4.3.1.1 (sensitivity) and Section 27.4.3.1.2 (magnitude).Magnitude

27.4.3.1.1 Sensitivity

53. It is necessary to identify particular user groups ('receptors') and associated locations, which may be sensitive to changes in the traffic and transport network conditions.

54. Table 27.9 provides a summary of the potential impacts and an indication of the receptors affected and potential locations that will be considered within the assessment.

Table 27.9 Potential impacts and receptors

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

Severance and amenity

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

56. Definitions of the different sensitivity levels for highway traffic receptors are given in Table 27.10.

Table 27.10 Definitions of sensitivity levels for severance and amenity

Sensitivity	Definition
High	Concentrations of sensitive receptors (e.g. hospitals, schools, residential dwellings, areas with high footfall) and limited separation from traffic provided by the highway environment; or a low concentration of sensitive receptors and no separation from traffic provided by the highway environment.
Medium	A low concentration of sensitive receptors (e.g. residential dwellings, pedestrian desire lines) and some separation from traffic provided by the highway environment.
Low	Few sensitive receptors.
Negligible	Links that fall below GEART Rule 1 and 2 screening thresholds (see below) and major 'A' roads with no pedestrian, cycle or equestrian environment; or highway environment that can accommodate changes in volumes of traffic.

57. The definitions of the sensitivity levels based on the highway traffic receptors defined in Table 27.10 have been applied to all links in the TTSA and are detailed in Paragraph 131.

Highway Safety

58. To assess the effects on highway safety, the TA (Appendix 27.1, Volume III) includes an examination of the existing collisions occurring within the TTSA to identify any areas of the highway with concentrations of collisions with similar patterns (termed collision clusters), or roads with collision rates that are higher than national averages.

59. These sites (shown in Figure 27.3, Volume II) are considered to be sensitive to changes in traffic flows (sensitive receptors) and therefore a more detailed analysis of significance has been undertaken in the context of the proposals.

Driver Delay (Capacity)

60. Junctions and links that are operating at or above their theoretical capacity could be considered to be of high sensitivity, whilst junctions operating with spare capacity would be of negligible to medium sensitivity.

61. Figure 3.5 of the Essex County Council Local Transport Plan (Essex County Council, 2011) provides a graphical depiction of sections of the road network that are likely to suffer from 'journey unreliability'.

62. It can be observed from the Essex County Council Local Transport Plan that the A120 (links 1, 2, 3, 15, 19 and 19) and A133 (links 20, 21, 22 and 23) suffer from journey unreliability. These roads are therefore assessed to be of high sensitivity to changes in traffic and will be assessed further for driver delay. The remaining roads within the TTSA are therefore not assessed further.

Driver Delay (Highway Geometry)

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

64. Within the TTSA there are two links (out of a total of 42 links) that are of constrained width, these are:

- Link 11: Stones Green Road which would serve accesses 10 and 11 (as shown on Figure 27.2, Volume II); and
- Link 12: Parsonage Lane and Wolves Hall Lane which would serve accesses 8 and 9 (as shown on Figure 27.2, Volume II).

65. These two links are considered to be sensitive to increases in traffic and will be assessed further for driver delay. The remaining 40 links are not considered further.

Driver Delay (Road Closures)

66. A review of all the links within the TTSA has been undertaken to identify links where open cut trenching may be used to install North Falls cables under the public highway.

67. The onshore cable corridor would cross approximately 19 public roads; of these, it is proposed that cables for North Falls would be installed under 12 roads using trenchless technologies (allowing the roads to remain open at all times).

68. Figure 27.4 (Volume II) highlights those roads where trenchless technologies would be used and those where it is proposed that the cables may be installed using open cut techniques.

69. The seven roads proposed to be crossed by open cut techniques are considered to be potentially sensitive to driver delay impacts and are assessed further within this chapter. It is proposed that access for pedestrians and cyclists at these locations would be maintained at all times. Hence, only drivers may be subject to effects.

Abnormal Loads

70. Abnormal load is a generic term applied when a vehicle or load exceeds the maximum standard parameters set out in The Road Vehicles (Construction and Use) Regulations (1986) (Department for Transport, 1986) for height, width and weight. This term covers a broad range of vehicles, ranging from limited load projections permitted for standard vehicles to Special Order Vehicles designed specifically for the purpose of moving loads well in excess of standard vehicle parameters.

71. Legislation requires hauliers to notify the movement of most abnormal loads and abnormal vehicles to the police before moving them by road.

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

73. The transformers for North Falls onshore substation will require Special Order AILs. In addition, there may also be a requirement for non-Special Order AILs associated with large items of plant, cable drums, etc.

74. The Applicant has commissioned Collett and Sons Ltd to undertake an AIL study assessing the effects of transporting the transformers to inform the management measures required for the transportation of AILs for the Project. The AIL study will be submitted in support of the DCO application. The findings of this study are important in underpinning the basis for the construction access strategy, although give the small number of vehicle movements involved are unlikely to materially affect the conclusions of the assessment presented in Section 27.6.

75. To ensure that delays are managed and minimised, prior to the movement of any AIL the contractor would be required to submit notifications to the relevant authorities (police, highway authorities and bridge / structure owners) through ESDAL (Electronic Service Delivery for Abnormal Loads). The ESDAL process would detail which of the proposed routes would be used and ensure the timing of AIL movements would be co-ordinated and potential effects would not be significant.

76. The total forecast HGV movements (assessed within this chapter) include for the transportation of cable drums and plant. Further details regarding the derivation of traffic movements are contained within the TA (Appendix 27.1,

Volume III). These numbers of non-Special Order AILs are therefore included within the assessment of all impacts presented in Section 27.6.

77. To ensure that potential impacts associated with the transportation of all AILs are managed and coordinated, a OCTMP will be submitted with the DCO application that would include a commitment that, prior to the movement of any AILs, the contractor would be required to submit notifications to the relevant authorities (police, highway authorities and bridge/ structure owners) through EDSAL. The EDSAL process would detail which proposed routes would be used and ensure the timing would be co-ordinated and potential effects would not be significant.

27.4.3.1.2 Magnitude

78. Having identified the TTSA, GEART suggests application of the following rules to define the extent and scale of the assessment required:

- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%); and
- Rule 2: Include any specifically sensitive areas where traffic flows are predicted to increase by 10% or more (or where the number of HGVs is predicted to increase by 10% or more).

79. In justifying these rules GEART examines the science of traffic forecasting and paragraphs 3.16 and 3.19 state:

"It is generally accepted that accuracies greater than 10% are not achievable. It should also be noted that the day to day variation of traffic on a road is frequently at least some + or -10%. At a basic level, it should therefore be assumed that projected changes in traffic of less than 10% create no discernible environmental impact.

…a 30% change in traffic flow represents a reasonable threshold for including a highway link within the assessment."

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

81. The exception to the GEART Rule 1 and 2 is the consideration of the impacts of highway safety and driver delay. These impacts can be potentially significant for lower changes in traffic flow when high baseline traffic flows are evident. Full details of the methodology adopted for these effects are set out later in this section.

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

83. It was agreed during the traffic and transport ETG with Essex County Council (on the 9 July 2021) and National Highways (on the 7 June 2022) the potential traffic and transport impacts to be assessed. The following sub-sections provide detail of the adopted methodology for assessing each of these impacts.

Severance

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

85. GEART suggests that changes in total traffic flow of 30%, 60% and 90% are considered to be slight, moderate, and substantial respectively. These are transposed in to the EIA magnitude of impact matrix (Table 27.11) as low, medium and high respectively. However, GEART notes that these figures should be used cautiously, and the assessment should pay full regard to specific local conditions.

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

Amenity

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

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

89. GEART suggests that a tentative threshold of a doubling of total traffic flow or the HGV component may lead to a negative effect upon amenity.

90. GEART recognises there will be a need for judgement to be exercised (especially in determining the degree of fear and intimidation) and special consideration should be given to areas where there are likely to be particular areas with higher than average levels of vulnerable groups.

Highway Safety

91. The salient GEART guidance on highway safety (GEART, paragraph 4.42) is as follows:

"Where a development is expected to produce a change in the character of traffic (e.g. HGV movements on rural roads), then data on existing accidents levels may not be sufficient. Professional judgement will be needed to assess the implications of local circumstances, or factors which may elevate or lessen the risk of accidents, e.g. junction conflicts."

92. In this context, a review of the existing collisions occurring within the TTSA was undertaken to identify any areas of the highway with concentrations of collisions (clusters) with similar patterns and links with collision rates higher than the national average (for comparable roads). These sites are considered to be sensitive to changes in traffic flows (sensitive receptors) and therefore a more

detailed analysis of significance has been undertaken in the context of the proposals.

93. In addition to considering existing patterns of collisions, the TA (Appendix 27.1, Volume III) outlines how any new risks associated with the formation of new points of access to North Falls would be managed and mitigated.

Driver Delay

94. GEART recommends the use of proprietary software packages to model vehicle delays. However, it is noted that vehicle delays are only likely to be significant when the surrounding highway network is at, or close to capacity.

95. During consultation with Essex County Council (at a meeting on the 9 July 2021) and National Highways (at a meeting on the 7 June 2022) it was agreed that the assessment of driver delay should consider not only the impact of increases in traffic upon junction capacity but also delays related to highway geometry (e.g. routes where highway width is constrained) and roadworks.

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

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

Driver Delay (Capacity)

97. A review of the TTSA has been undertaken to identify sections of the road network that are identified to suffer from journey unreliability (Section 27.4.3.1.1) and could therefore be sensitive to increases in North Falls traffic.

98. A review of increases in traffic via these links has therefore been undertaken to understand the potential impacts of North Falls construction traffic upon driver delay.

Driver Delay (Highway Geometry)

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

100. A review of the TTSA has been undertaken to identify all links where two vehicles would not be able to pass each other (Section 27.4.3.1.1). An assessment of the potential changes in traffic flows and opportunities for vehicles to pass along these links (e.g. frequency of passing places) has been undertaken to inform a judgement regarding magnitude of impact.

Driver Delay (Road Closures)

101. Road users are likely to experience delays where road or lane closures may be required. It is anticipated that temporary road or lane closures may be required during construction where open cut techniques are used to install North Falls

cables across the public highway. These locations are identified in Section 27.6.1.8 and shown in Figure 27.4 (Volume II).

102. To assess the potential effects of temporary road closures, the assessment considers an initial worst case where a full road closure is required (i.e. access is not maintained via a single lane closure). To inform a judgement regarding the magnitude of impact, the assessment considers the required the length and duration of the detour that may be required to close the road.

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

104. The assessment framework derived from Chapter 8 that identifies a duty to inform of possible future delays where works will take longer than a week and introduce delays of over two minutes, or where moderate to severe delays of over 10 minutes are forecast (regardless of duration). On this basis delays of less than two minutes are considered to result in impacts of negligible magnitude.

Magnitude of impact (summary)

105. Table 27.11 details the assessment framework for magnitude thresholds adapted from GEART. These thresholds are guidance only and provide a starting point by which transport data will inform a local analysis augmented by professional judgement of the magnitude of impact.

Table 27.11 Definition of magnitude of impact for all impacts

Impacts	Magnitude of Impact			
	Negligible	Low	Medium	High
Severance	Change in total traffic flow of less than 30%	Change in total traffic flows of 30 to 60%	Change in total traffic flows of 60 to 90%	Change in total traffic flows of over 90%
Amenity	Change in traffic flow (or HGV composition) of less than 100%		Greater than 100% increase in traffic (or HGV composition) and a review based upon the quantum of vehicles, vehicle speed and pedestrian footfall.	
Highway Safety	Informed by a review of existing collision records from within the TTSA and the forecast increase in traffic.			
Driver Delay (Capacity)	Informed by a review of the potential increase in peak hour traffic through sensitive junctions and links.			
Driver Delay (Highway Geometry)	Informed by a review of the potential increase in peak hour traffic through sensitive junctions and links.			
Driver Delay (Road Closures)	No or single lane road closure required, or delays of less than two minutes.	Delays of more two to 10 minutes.	Delays over 10 minutes and a review based upon the quantum of vehicles, scheduled buses and pedestrian and cycle traffic.	

27.4.3.2 Significance of effect

106. The assessment of significance of an effect is a function of the sensitivity of the receptor and the magnitude of the impact (see Chapter 6 EIA Methodology (Volume I) for further details). The determination of significance is guided by the

use of a significance of effect matrix, as shown in Table 27.12. Definitions of each level of significance are provided in Table 27.13.

107. A further consideration in determining significance is the duration over which the effect is going to occur. Discrete impacts have differing levels of sensitivity to temporal dimensions e.g. amenity impacts for a very short period are likely to be less significant than highway safety impacts for the same period.

108. Likely significant effects identified within the assessment as major or moderate are regarded within this chapter as significant. Appropriate mitigation has been identified, where possible, in consultation with the regulatory authorities and relevant stakeholders. The aim of mitigation measures is to avoid or reduce the overall significance of effect to determine a residual effect upon a given receptor.

Table 27.12 Significance of effect matrix

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

Table 27.13 Definition of effect significance

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

27.4.4 Cumulative effects assessment methodology

109. The cumulative effects assessment (CEA) considers other plans, projects and activities that may result in cumulation with North Falls. Chapter 6 EIA Methodology (Volume I) provides further details of the general framework and approach to the CEA.

110. For traffic and transport, these activities include other projects where their TTSA (or project study area) has the potential for a temporal and geographical overlap with similar effects arising from:

- Recent development, either built or under construction (which is not constructed as part of the baseline);
- Approved development, awaiting implementation; and

- Proposals awaiting determination within the planning process with design information in the public domain.

27.4.5 Assumptions and limitations

111. No overarching assumptions or limitations have been identified that apply to the assessment for traffic and transport. Where routine assumptions have been made in the course of undertaking the assessment, these are noted in Sections 27.5 to 27.9 and the accompanying TA (Appendix 27.1, Volume III).

27.5 Existing environment

112. As set out in Section 27.4.2, characterisation of the existing environment in relation to traffic and transport has been informed through a number of sources, including:

- Desktop studies and site visits;
- Personal injury collision data sourced from Essex County Council;
- Traffic count information sourced from the Department for Transport;
- Traffic surveys commissioned for North Falls.

113. Details of link characteristics for all 42 links within the TTSA are detailed in the following sections:

- The existing background traffic flows and estimated future traffic flows (Section 27.5.2 and Section 27.5.5.1 respectively);
- An audit of the sensitive receptors in the TTSA (Section 131);
- A detailed review of the baseline highway safety conditions (Section 27.5.4);
- An audit of the TTSA based on links which experience journey unreliability (Section 27.4.3.1.1); and
- An audit of the TTSA based on the highway geometry (Section 27.4.3.1.1).

27.5.1 Existing highway network

114. This section provides a broad overview of the baseline characteristics of the 42 links forming the TTSA. These links are illustrated in Figure 27.1 (Volume II).

115. The Principal (A) road network in the TTSA includes the A133 and A137 managed by Essex County Council. The A120 (within the TTSA) forms part of the Strategic Road (Trunk Road) Network managed by National Highways.

116. The A120 provides the main link between Colchester and the A12 to the north west and the port of Harwich to the east.

117. Within the TTSA, the A120 comprises of a dual carriageway until the junction with the A133. To the east of the junction with the A133, the A120 continues towards Harwich as a single carriageway, albeit with short sections of dual carriageway on the approach to and exit from some junctions.

118. All other roads within the TTSA fall under the administration of Essex County Council as the local highway authority.

119. The Essex County Council Local Transport Plan (Essex County Council, 2011) (LTP) identifies the Haven Gateway (the sub-region covering north-east Essex and south-east Suffolk) as one of the key international gateways to the UK, containing the internationally significant Haven Ports of Harwich and Felixstowe.

120. The Essex County Council LTP identifies that the key interurban highway routes serving the Haven Gateway are the A12, A120 and the A133.

121. Essex County Council have established a strategic County Routes network comprising Priority 1 (PR1) and Priority 2 (PR2) roads, with the remaining network categorised as 'Local Roads'.

122. Essex County Council identify that it is the County Routes network which provides the main arteries for the flow of commerce, goods and people, and therefore carries high volumes of traffic through and around the county.

27.5.1.1 Priority 1 (PR1) Roads

123. A133 provides the main link to the wider Strategic Road Network (via the A120 and A12) and heads south from the A120 towards Clacton-on-Sea.

124. A137 is a single carriageway 'A' road that links from the town of Colchester in the south to Manningtree and onwards towards Ipswich in the north.

125. The B1033 is a single carriageway road that provides the main link from the A133 to the towns of Walton-on-the-Naze and Frinton-on-Sea.

27.5.1.2 Priority 2 (PR2) Roads

126. From the main PR1 Roads, in order to access the majority of the proposed construction access points for North Falls, construction vehicles would need to utilise the local road network. Figure 27.2 (Volume II) depicts the proposed access locations.

127. A number of strategically important PR2 roads are located within the TTSA and offer access to the PR1 Principal and Strategic Road Network. These routes are described below.

- The B1032 is a single carriageway 'B' road that links the towns of Walton-on-the-Naze and Frinton-on-Sea to the nearby town of Clacton-on-Sea.
- The B1414 is a single carriageway 'B' road that provides a link to the B1033 (PR1 Road) at Thorpe-le-Soken in a north easterly direction towards Harwich.
- Bentley Road is a single carriageway road that provides a link from the A137 and Lawford/Manningtree in the north and the A120 to the south.

128. These PR2 roads offer connectivity to minor roads along the onshore cable corridor.

27.5.1.3 Local Roads

129. There are a number of other unclassified links within the TTSA which typically serve the final part of the journey to the onshore cable corridor(s). These links typically have narrow carriageways and are subject to lower baseline traffic flows.

27.5.2 Traffic flow data

130. Traffic flow data for all links within the TTSA have been informed by traffic counts. The TA (Appendix 27.1, Volume III) contains full details of these counts and a summary of the baseline traffic flows for all links within the TTSA.

131. Essex County Council has identified that traffic flows within the TTSA are subject to seasonal fluctuations and that the assessment should give consideration to this. In this regard, permanent traffic count data for the TTSA has been obtained from Essex County Council.

132. These data (presented within the TA, Appendix 27.1, Volume III) highlight that for the A133 and B1033, traffic flows fluctuate throughout the year with the highest flows occurring during July and August and the lowest during January and December. Traffic flows on the A133 and B1033 are typically 7% to 18% higher in July/August than average, respectively.

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

134. In accordance with current guidance, background traffic flows (contained in Section 27.6) are therefore representative of neutral traffic conditions. The adoption of neutral conditions represent a robust baseline as it provides a better indicator of the magnitude of impact of the Project's traffic, whereas an elevated baseline, would inadvertently reduce the magnitude of impact based on the percentage increase in traffic.

27.5.3 Link based sensitive receptors

135. The sensitivity of a road (link) can be defined by the type of user groups who may use it. A sensitive area may for example be a village environment or where pedestrian or cyclist activity may be high, for example near a school. Table 27.10 provides broad definitions of the different sensitivity levels (derived from GEART) which have been applied to the assessment.

136. A desktop exercise augmented by site visits has been undertaken to identify the sensitive receptors in the TTSA. Table 27.14 provides broad definitions of the different sensitivity levels (derived from GEART) which have been applied to the assessment. All 42 links within the TTSA have been assessed and assigned a sensitivity. Figure 27.5 (Volume II) illustrates these routes graphically.

Table 27.14 Link based sensitive receptors

Link ID.	Link sensitivity	Rationale for applied link sensitivity
1	Negligible	A main A road whose primary function is to provide a bypass of Colchester for vehicular traffic.
2	Negligible	A main A road whose primary function is to provide route for vehicular traffic between Harwich and Colchester

Link ID.	Link sensitivity	Rationale for applied link sensitivity
3	Negligible	A main A road whose primary function is to provide route for vehicular traffic between Harwich and Colchester
4	Low	The link is a PR2 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential developments.
5	High	The link is a PR2 Road. There is a concentration of sensitive receptors along the link including residential properties a public house and a shop. The link is also crossed by PRoW. Limited separation from traffic is provided with a narrow footway only along some of the link.
6	Low	The link is a PR2 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential developments.
7	Low	The link is a PR2 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential developments.
8	High	The link is a PR2 Road. There is a concentration of sensitive receptors located along or in close proximity to the link including residential properties, a primary school and community centre. Footways are provided on both sides of the road in the vicinity of the sensitive receptors.
9	Medium	The link is a PR1 main A road. There is a low concentration of sensitive receptors along the link including residential properties and community centre. Limited separation from traffic is provided along the link.
10	Low	The link is a PR1 main A road. There are few sensitive receptors along the link.
11	Medium	There is a low concentration of sensitive receptors along the link, primarily comprising of residential properties, the link is also crossed by PRoW. A narrow footway is only provided along some of the link providing limited separation from traffic.
12	High	There is a low concentration of sensitive receptors along the link primarily comprising of residential properties, the link is also designated as an on-road cycle route and crossed by PRoW. No separation from traffic is provided along the link for pedestrians or cyclists.
13	Medium	The link is a PR2 Road. There is a low concentration of sensitive receptors along the link primarily comprising of residential properties, the link is also crossed by PRoW. A narrow footway is only provided along some of the link providing limited separation from traffic.
14	Low	The link is a PR2 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential developments and a public house.
15	Negligible	A main A road whose primary function is to provide route for vehicular traffic between Harwich and Colchester.
16	Negligible	A main A road whose primary function is to provide route for vehicular traffic between Harwich and Colchester.
17	Low	The link is a PR2 Road. No sensitive receptors are noted along the link.
18	Negligible	A main A road whose primary function is to provide route for vehicular traffic between Harwich and Colchester.
19	Negligible	A main A road whose primary function is to provide route for vehicular traffic between Harwich and Colchester.
20	Negligible	A main A road whose primary function is to provide route for vehicular traffic from the main A120 to Clacton-on-Sea.
21	Low	The link is a PR1 main A road whose primary function is to provide a route for vehicular traffic from the main A120 to Clacton-on-Sea. There are few sensitive receptors along the link.
22	Negligible	The link is a PR1 main A road whose primary function is to provide a route for vehicular traffic from the main A120 to Clacton-on-Sea. No sensitive receptors are noted along the link.

Link ID.	Link sensitivity	Rationale for applied link sensitivity
23	Negligible	The link is a PR1 main A road whose primary function is to provide a route for vehicular traffic from the main A120 to Clacton-on-Sea. No sensitive receptors are noted along the link.
24	High	The links are PR2 Roads. There is a concentration of sensitive receptors along the links, including shops, take-aways, residential properties, places of worship etc. Separation for pedestrians from traffic is provided by footways along the links, and formal and informal crossings are also provided.
25	High	
26	Low	The link is a PR2 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential developments.
27	High	The link is a PR2 Road. There is a concentration of sensitive receptors along the link, including, residential properties, places of worship, a play area, etc. Some separation for pedestrians from traffic is provided by a narrow footway along the link.
28	High	The link is a PR1 Road. There is a concentration of sensitive receptors along the link, including, residential properties, a public house, and take-aways, etc. Some separation for pedestrians from traffic is provided by a narrow footway along the link.
29	Low	The link is a PR1 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential developments.
30	High	The link is a PR1 Road. There is a concentration of sensitive receptors along the link, including residential properties a playing field and nursery. Some separation for pedestrians from traffic is provided by a narrow footway along the link.
31	High	The link is a PR2 Road. There is a concentration of sensitive receptors along the link, including residential properties and a college. Some separation for pedestrians from traffic is provided by a narrow footway along the link.
32	High	The link is a PR1 Road. There is a concentration of sensitive receptors along the link, including a primary school, nursery, shops, public houses, restaurants, take-aways, and residential properties, etc. The link is also crossed by PRoW. Separation for pedestrians from traffic is provided by footways along the links, and formal and informal crossings are also provided.
33	Medium	The link is a PR1 Road. There is a low concentration of sensitive receptors along the link primarily comprising of residential properties and a public house. The link is also crossed by PRoW. Separation from traffic for pedestrians in the vicinity of the residential properties and public house is provided by footways on both sides of the road.
34	Low	The link is a PR1 Road. There are few sensitive receptors along the link.
35	Low	The link is a PR2 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential developments. The link is also crossed by PRoW. Some separation from traffic for pedestrians in the vicinity of the residential properties is provided by a narrow footway.
36	Low	The link is a PR2 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential development.
37	Low	The link is a PR2 Road. No sensitive receptors are noted along the link.
38	High	The link is a PR2 Road. There is a concentration of sensitive receptors along the link primarily comprising of a play area, residential properties and a shop/post office. Two PRoW are intersected by the link. Some separation from traffic for pedestrians is provided by a narrow footway.
39	Low	The link is a PR2 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential development.
40	High	The link is a PR2 Road. There is a concentration of sensitive receptors along the link primarily comprising of residential properties, a restaurant/bar, village hall and place of worship. The link is also crossed by a PRoW. Some separation from traffic for pedestrians is provided by a narrow footway.

Link ID.	Link sensitivity	Rationale for applied link sensitivity
41	Low	There are few sensitive receptors along the link, predominantly comprising of sporadic residential developments. Two PRoW are intersected by the link.
42	High	The link is a PR2 Road. A primary school is located along the link. Some separation from traffic for pedestrians is provided by a narrow footway.

27.5.4 Highway safety

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

138. In consultation with Essex County Council and National Highways it has been agreed that the highway safety review should examine the baseline collision data to identify those areas that are potentially sensitive to changes in traffic. This review includes:

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

139. The TA (Appendix 27.1, Volume III) details an audit of the TTSA and provides a highway safety baseline including collision rates and cluster locations.

140. A summary of the identified collision clusters and links with a collision rate higher than the national average within the TTSA are provided in Table 27.15 and Table 27.16 respectively. The location of the clusters is also shown graphically in Figure 27.3 (Volume II).

Table 27.15 Collision clusters

Cluster Reference	Location	Number and type of collisions
Cluster Site 1	A133/B1027 St John's Roundabout	During the five-year study period (2017-2022), there have been a total of 16 collisions at the roundabout, these comprise of 12 slight and four serious collisions, no fatalities were recorded.
Cluster Site 2	B1027/Holland Road, Mini Roundabout	During the five-year study period (2017-2022), there have been a total five collisions at cluster site 2, these comprised of three slight and two serious collisions. No fatal collisions were recorded.
Cluster Site 3	Bovill's Roundabout, A133/Progress Way/St Osyth Road	During the five-year study period (2017-2022), there has been a total of 12 recorded collisions, these comprised eight slight and four serious collisions. No fatal collisions were recorded.
Cluster Site 4	Thorpe-le-Soken High Street	During the five year study period (2017-2022), a total of nine collisions were recorded at cluster site 4, of these, seven were classified as slight collisions and two as serious. No fatal collisions were recorded.
Cluster Site 5	A133/Colchester Road Roundabout	Within the five-year study period (2017 – 2022), a total of ten collisions were recorded at the roundabout, of these, nine were classified as slight and one was serious. No fatal collisions were recorded.

Cluster Reference	Location	Number and type of collisions
Cluster Site 6	A120/A133 grade separated junction	During the five-year study period (2017-2022), a total of 13 collisions were recorded, of which eight were classified as slight and four as serious. One fatal collision was recorded.

Table 27.16 Links with collision rates higher than the national average

Links	Description	Calculated collision rate (collisions per billion vehicle miles)	National average collision rate (collisions per billion vehicle miles)
28, 29, 30 and 32	B1033 (Thorpe Road) from the B1032 to B1035	384	336
35, 37, 38 40 and 42	B1035 from Lodge Lane to the B1033	515	336

27.5.5 Future trends in baseline conditions

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

27.5.5.1 Future year traffic flows

142. The earliest date that the main construction works could start would be 2026.

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

144. To take account of changes in travel patterns and sub-regional growth in housing and employment, a proportionate approach to forecasting future traffic growth for the 2026 reference year has been agreed during the traffic and transport ETG with Essex County Council (on the 9 July 2021) and National Highways (on the 7 June 2022).

145. Forecast 2026 future year baseline traffic flows are presented in Table 27.17, whilst the TA (Appendix 27.1, Volume III) includes details of the approach to forecasting these flows using growth factors from the Department for Transport Trip End Model Presentation Programme software.

27.5.5.2 Climate Change and Natural Trends

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

147. The UK Government has enshrined in law the commitment to 'net zero' by 2050, and notably, has banned the sale of new petrol and diesel cars and vans from 2030.

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

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

149. Given the rate of technological advancement in the decarbonisation of transport, and legal commitments to net-zero, it is anticipated that emissions will be reduced from current baseline levels. These predictions for forecast changes in vehicle emissions are reflected in the assessment of air quality (Chapter 20 Onshore Air Quality, Volume I).

150. The contribution of decarbonisation from modal shift is harder to forecast, especially given the significant ongoing travel choice changes related to the Covid-19 pandemic. Page 21 of *Decarbonising Transport* notes:

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

151. The forecast for future traffic growth within the TTSA (outlined in section 27.5.5.1) has a basis in pre-COVID-19 travel patterns and is considered to be an upper bound for total traffic flows and a cautious application of modal shift. The forecast for future traffic growth presented in this chapter are therefore considered to be representative of a worst-case scenario in terms of total traffic on the highway network.

27.6 Assessment of significance

152. This section assesses the potential effects of the Project on sensitive receptors within the TTSA.

153. The identification of the traffic and transport environmental effects is based on an assessment of the volume of traffic demand associated with North Falls. The TA (Appendix 27.1, Volume III) contains the derivation of the Project's construction traffic flows and background (baseline) traffic flows that have informed this assessment.

154. Unless otherwise specified, the Project's vehicle trips quoted herein are representative of two-way movements, i.e. quoted HGV trips represent the laden trip from source and the unladen trip back to source; and employee vehicle trips represent the inbound and outbound journeys. For example, 20 HGV trips comprise 10 laden trips from source and 10 outbound unladen trips back to source.

27.6.1 Potential effects during construction

27.6.1.1 Construction traffic impact screening

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

156. Table 27.17 summarises the assigned daily peak and average vehicle trips generated by all materials, personnel and plant associated with the construction of North Falls.

157. Table 27.17 also provides a comparison of the peak daily construction flows with the forecast background daily traffic flows in 2026 and identifies the links exceeding the GEART screening thresholds.

Table 27.17 Link screening

Link ID	Link Description	Link Sensitivity	Background 2026 annual average daily traffic flows		Forecast construction vehicle trips				Percentage increase (based on peak trips)	
					Peak		Average			
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
1	A120 from the A12 to the A133	Negligible	49,188	3,047	1,117	565	788	432	2%	19%
2	A120 from the A133 to Harwich Road	Negligible	49,188	3,047	873	565	625	432	2%	19%
3	A120 from Harwich Road to Bentley Road	Negligible	13,954	1,819	918	565	652	432	7%	31%
4	Bentley Road from the A120 to Little Bromley	Low	1,048	17	583	251	377	184	56%	1,457%
5	Bentley Road through Little Bromley	High	1,048	17	124	0	72	0	12%	0%
6	B1035 south of the A120 to Tendring Green	Low	5,867	93	479	79	329	62	8%	85%
7	Bromley Road north of Little Bromley	Low	1,711	31	124	0	72	0	7%	0%
8	Bromley Road south of the A137	High	1,711	31	124	0	72	0	7%	0%
9	A137 east-west through Lawford	Medium	13,426	341	0	0	0	0	0%	0%
10	A137 north-south through Lawford	Low	13,426	341	376	0	242	0	3%	0%
11	Parsonage Lane and Wolves Hall Lane east of the B1035	Medium	94	2	53	0	35	0	56%	0%

Link ID	Link Description	Link Sensitivity	Background 2026 annual average daily traffic flows		Forecast construction vehicle trips				Percentage increase (based on peak trips)	
					Peak		Average			
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
12	Stones Green Road	High	286	7	53	0	35	0	19%	0%
13	B1035 south of the B1352	Medium	8,606	167	261	0	176	0	3%	0%
14	B1035 north of the A120	Low	8,606	167	360	52	246	37	4%	31%
15	A120 from Bentley Road to the B1035	Negligible	13,954	1,819	723	565	539	432	5%	31%
16	A120 from the B1035 to Colchester Road	Negligible	13,954	1,819	785	565	579	432	6%	31%
17	Colchester Road south of the A120	Low	1,274	27	295	79	206	62	23%	293%
18	A120 from Colchester Road to the B1352	Negligible	11,564	1,622	574	565	438	432	5%	35%
19	A120 from the B1352 to Parkeston Road	Negligible	11,564	1,622	565	565	432	432	5%	35%
20	A133 south of the A120	Negligible	35,582	1,501	489	245	313	150	1%	16%
21	A133 to the B1033	Low	34,140	1,444	506	245	323	150	1%	17%
22	A133 south of the B1033 to Progress Way	Negligible	24,213	847	209	98	144	68	1%	12%
23	A133 south of Progress Way to the B1032	Negligible	24,213	847	213	98	147	68	1%	12%

Link ID	Link Description	Link Sensitivity	Background 2026 annual average daily traffic flows		Forecast construction vehicle trips				Percentage increase (based on peak trips)	
					Peak		Average			
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
24	B1032 east of the A133 to Holland Road	High	13,421	284	221	98	153	68	2%	34%
25	B1032 from Holland Road to Kings Parade	High	14,337	323	200	98	139	68	1%	30%
26	B1032 from Kings Parade to the south of Great Holland	Low	7,557	98	275	98	192	68	4%	100%
27	B1032 through Great Holland	High	7,557	98	80	0	56	0	1%	0%
28	B1033 north of the B1032 through Kirby Cross to Pork Lane	High	10,078	154	80	0	56	0	1%	0%
29	B1033 from Pork Lane to the south of Thorpe-le-Soken	Low	10,078	154	226	52	140	21	2%	34%
30	B1033 south of the B1414 through Thorpe-le-Soken	High	10,078	154	223	52	138	21	2%	34%
31	B1414 east of the B1033	High	1,559	68	1	0	1	0	0%	0%
32	B1033 north of the B1414 through Thorpe-le-Soken	High	10,078	154	222	52	137	21	2%	34%
33	B1033 from the B1441 to the B1035 through Weeley	Medium	11,202	215	303	147	183	83	3%	68%

Link ID	Link Description	Link Sensitivity	Background 2026 annual average daily traffic flows		Forecast construction vehicle trips				Percentage increase (based on peak trips)	
					Peak		Average			
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
34	B1033 from the A133 to the B1441	Low	11,202	215	315	147	190	83	3%	68%
35	B1035 north of B1033 to Whitehall Lane	Low	1,714	33	389	95	254	62	23%	284%
36	B1035 through Tendring Green from Parsonage Lane to Stones Green Road	Low	5,867	93	248	0	166	0	4%	0%
37	B1035 north of Whitehall Lane to Swan Road	Low	1,714	33	389	95	254	62	23%	284%
38	B1035 through Goose Green	High	5,867	93	195	0	130	0	3%	0%
39	B1035 north of Swan Road to the south of Tendring	Low	2,470	46	389	95	254	62	16%	209%
40	B1035 through Tendring to Crown Lane	High	2,470	46	189	0	126	0	8%	0%
41	Crown Lane	Low	3,383	48	6	0	4	0	0%	0%
42	B1035 from Crown Lane to Lodge Lane	High	2,470	46	195	0	130	0	8%	0%
%	Exceeds GEART screening thresholds									

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

159. Disaggregating from Table 27.17, 17 of the 42 links are above the GEART screening thresholds. Table 27.18 provides a summary of those links that will be taken forward for further assessment (for the impacts of severance and amenity) and those that are screened out.

Table 27.18 Link screening summary

Links requiring further assessment	Links requiring no further assessment
4, 6, 11, 12, 14, 17, 24 – 26, 29, 30, 32 – 35, 37, and 39	1 – 3, 5, 7 – 10, 13, 15, 16, 18 – 23, 27, 28, 31, 36, 38, 40 - 42

27.6.1.2 Impact 1: Severance

160. Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. Section 27.4.3 provides details of the adopted impact assessment methodology.

27.6.1.2.1 Magnitude of impact

Table 27.19 provides a summary of the severance magnitude of impact for each of the screened links detailed in Table 27.17.

Table 27.19 Magnitude of severance impact

Links	Magnitude of impact	Rationale for magnitude
6, 12, 14, 17, 24 – 26, 29, 30, 32 – 35, 37, and 39	Negligible	The peak daily change in total traffic flow is less than 30%
4 and 11	Low	The peak daily change in total traffic flow is between 30% and 60%.

27.6.1.2.2 Sensitivity of receptors

161. The sensitivity of each highway link is detailed in Table 27.14 and Figure 27.5 (Volume II).

27.6.1.2.3 Significance of effect

162. Table 27.20 provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of the severance effect.

Table 27.20 Significance of severance effect

Links	Magnitude of impact	Sensitivity	Significance of effect
6, 14, 17, 26, 29, 34, 35, 37, 39	Negligible	Low	Negligible
33		Medium	Minor adverse
12, 24, 25, 30, 32		High	Minor adverse
11	Low	Medium	Minor adverse
4		Low	Negligible

27.6.1.3 Impact 2: Amenity

163. Amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width and separation from traffic. It can affect a range of non-motorised users such as pedestrians, cyclists and equestrians. Section 27.4.3 provides details on the adopted impact assessment methodology for amenity

27.6.1.3.1 Magnitude of impact

164. This section presents an assessment of the magnitude of amenity impact for each of the previously screened links (Table 27.17).

165. The magnitude of amenity impact assessment is informed by the function of the highway link under consideration. Essex County Council identify that it is the 'County Routes Network' which provides the main arteries for the flow of commerce, goods and people, and therefore carries high volumes of traffic through and around the county. By definition, the Essex County Council County Routes Network would be less sensitive to the Project's traffic.

166. The Essex County Council County Routes Network therefore sets the context for the magnitude of impact assessment. Essex County Council established a strategic County Routes Network comprising Priority 1 (PR1) and Priority 2 (PR2) roads, with the remaining network categorised as 'Local Roads'.

167. The amenity magnitude of impact assessment has therefore been informed by the scale of forecast traffic increase in context with the function of the discreet highway link under consideration (as defined by the Essex County Council County Routes Network).

168. Peak hour vehicle trips have been calculated to assess amenity to aid a more detailed assessment of construction traffic characteristics within the daily demand. To develop a worst-case scenario, the peak demand hour flows include the assumption that employees (LVs) will arrive and depart within a single hour and that HGV movements would be one-tenth of the daily demand.

169. Table 27.21 presents the resultant amenity magnitude of impact assessment for North Falls.

Table 27.21 Magnitude of amenity impact

Link	Link Description	Essex County Council County Routes Network Priority	Magnitude of impact assessment	Magnitude of impact
4	Bentley Road from the A120 to Little Bromley	PR2	The link has a baseflow of 1,048 vehicle trips (including 17 HGV trips) per day and would be subject to construction traffic of up to 251 HGV trips per day at its peak. Peak construction traffic would result in an increase in traffic of 56% for all vehicles and 1,457% for HGVs. As the change in HGV component is greater than 100%, the HGV traffic along the link is considered in detail. Receptors would experience a peak increase in flow of approximately 25 (an average of 18) HGV trips per hour during the defined hours of construction.	High
6	B1035 south of the A120 to Tendring Green	PR2	The link has a baseflow of 5,867 vehicle trips (including 93 HGV trips) per day and would be subject to construction traffic of up to 79 HGV trips per day at its peak. Peak construction traffic would result in an increase in traffic of 8% for all vehicles and 85% for HGVs.	Low
11	Parsonage Lane and Wolves Hall Lane east of the B1035	Local Road	The link has a baseflow of 94 vehicle trips (including 2 HGV trips) per day and would be subject to construction traffic of up to 53 LV trips per day at its peak. No HGV traffic would be routed via link 11. Peak construction traffic would result in an increase in traffic of 56% for all vehicles.	Low
12	Stones Green Road	Local Road	The link has a baseflow of 286 vehicle trips (including 7 HGV trips) per day and would be subject to construction traffic of up to 53 LV trips per day at its peak. No HGV traffic would be routed via link 12. Peak construction traffic would result in an increase in traffic of 19% for all vehicles.	Negligible
14	B1035 north of the A120	PR2	The link has a baseflow of 8,606 vehicle trips (including 167 HGV trips) per day and would be subject to construction traffic of up to 52 HGV trips per day at its peak. Peak construction traffic would result in an increase in traffic of 4% for all vehicles and 31% for HGVs.	Negligible
17	Colchester Road south of the A120	Local Road	The link has a baseflow of 1,274 vehicle trips (including 27 HGV trips) per day and would be subject to construction traffic of up to 79 HGV trips per day at its peak. Peak construction traffic would result in an increase in traffic of 23% for all vehicles and 293% for HGVs. As the change in HGV component is greater than 100%, the HGV traffic along the link is considered in detail. Receptors would experience a peak increase in flow of approximately eight (an average of six) HGV trips per hour during the defined hours of construction.	Medium
24	B1032 east of the A133 to Holland Road	PR2	The link has a baseflow of 13,421 vehicle trips (including 284 HGV trips) per day and would be subject to construction traffic of up to 98 HGV trips per day at its peak. Peak construction traffic would result in an increase in traffic of 2% for all vehicles and 34% for HGVs.	Negligible
25	B1032 from Holland Road to Kings Parade	PR2	The link has a baseflow of 14,337 vehicle trips (including 323 HGV trips) per day and would be subject to construction traffic of up to 98 HGV trips per day at its peak. Peak construction traffic would result in an increase in traffic of 1% for all vehicles and 30% for HGVs.	Negligible

Link	Link Description	Essex County Council County Routes Network Priority	Magnitude of impact assessment	Magnitude of impact
26	B1032 from Kings Parade to the south of Great Holland	PR2	The link has a baseflow of 7,557 vehicle trips (including 98 HGV trips) per day and would be subject to construction traffic of up to 98 HGV trips per day at its peak. Peak construction traffic would result in an increase in traffic of 4% for all vehicles and 100% for HGVs. As the change in HGV component is greater than 100%, the HGV traffic along the link is considered in detail. Receptors would experience a peak increase in flow of approximately 10 (an average of seven) HGV trips per hour during the defined hours of construction.	Medium
29	B1033 from Pork Lane to the south of Thorpe-le-Soken	PR1	The link has a baseflow of 10,078 vehicle trips (including 154 HGV trips) per day and would be subject to construction traffic of up to 52 HGV trips per day at its peak. Peak construction traffic would result in an increase in traffic of 2% for all vehicles and 34% for HGVs.	Negligible
30	B1033 south of the B1414 through Thorpe-le-Soken	PR1	The links have a baseflow of 10,078 vehicle trips (including 154 HGV trips) per day and would be subject to construction traffic of up to 52 HGV trips per day at its peak. Peak construction traffic would result in an increase in traffic of 2% for all vehicles and 34% for HGVs.	Negligible
32	B1033 north of the B1414 through Thorpe-le-Soken	PR1		Negligible
33	B1033 from the B1441 to the B1035 through Weeley	PR1	The link has a baseflow of 11,202 vehicle trips (including 215 HGV trips) per day and would be subject to construction traffic of up to 147 HGV trips per day at its peak. Peak construction traffic would result in an increase in traffic of 3% for all vehicles and 68% for HGVs.	Low
34	B1033 from the A133 to the B1441	PR1	The link has a baseflow of 11,202 vehicle trips (including 215 HGV trips) per day and would be subject to construction traffic of up to 147 HGV trips per day at its peak. Peak construction traffic would result in an increase in traffic of 3% for all vehicles and 68% for HGVs.	Low
35	B1035 north of B1033 to Whitehall Lane	PR2	The links have a baseflow of 1,714 vehicle trips (including 33 HGV trips) per day and would be subject to construction traffic of up to 95 HGV trips per day at its peak. Peak construction traffic would result in an increase in traffic of 23% for all vehicles and 284% for HGVs. As the change in HGV component is greater than 100%, the HGV traffic along the link is considered in detail. Receptors would experience a peak increase in flow of approximately ten (an average of six) HGV trips per hour during the defined hours of construction.	Medium
37	B1035 north of Whitehall Lane to Swan Road			Medium
39	B1035 north of Swan Road to the south of Tendring	PR2	The link has a baseflow of 2,470 vehicle trips (including 46 HGV trips) per day and would be subject to construction traffic of up to 95 HGV trips per day at its peak. Peak construction traffic would result in an increase in traffic of 16% for all vehicles and 209% for HGVs.	Medium

Link	Link Description	Essex County Council County Routes Network Priority	Magnitude of impact assessment	Magnitude of impact
			As the change in HGV component is greater than 100%, the HGV traffic along the link is considered in detail. Receptors would experience a peak increase in flow of approximately ten (an average of six) HGV trips per hour during the defined hours of construction.	

27.6.1.3.2 Sensitivity of receptors

170. The sensitivity of each highway link is detailed in Table 27.14 and Figure 27.5 (Volume II).

27.6.1.3.3 Significance of effect

171. Table 27.22 provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of the amenity effect.

Table 27.22 Significance of amenity effect

Links	Magnitude of impact	Sensitivity	Significance of effect
4	High	Low	Moderate adverse
17, 26, 35, 37, 39	Medium	Low	Minor adverse
6, 34	Low	Low	Negligible
11, 33		Medium	Minor adverse
12, 24, 25, 30, 32	Negligible	High	Minor adverse
14, 29		Low	Negligible

172. Table 27.22 identifies that the change in traffic flows via link 4 could result in a moderate adverse effect, which is a potentially significant effect upon amenity in EIA terms. North Falls traffic flows via link 4 would comprise of vehicle movements to the proposed onshore substation and the section of onshore cable corridor(s) west of Bentley Road.

173. GEART outlines amenity can be affected by traffic flow, traffic composition and pavement width/separation from traffic. In this context, a review of the highway baseline via link 4 (outlined in Table 27.14) has established few sensitive receptors and onsite observations have noted no pedestrian activity along the road.

174. GEART also identifies that the definition of amenity can also include pedestrian fear and intimidation and can be considered to be a broader category, including consideration of the exposure to noise and air pollution, and the overall relationship between pedestrians and traffic.

175. No significant air quality effects are identified along link 4 (Chapter 20 Onshore Air Quality, Volume I), however, the assessment of traffic borne noise (Chapter 26 Noise and Vibration, Volume I) outlines potentially significant noise effects and outlines that additional mitigation measures would be required.

176. A range of mitigation measures are therefore outlined (within Chapter 26 Noise and Vibration, Volume I). It is proposed that these measures would be reviewed further once the design of the onshore substation has been progressed further (post PEIR) and final traffic numbers are known.

177. Proposed measures to mitigate potentially significant noise effects via link 4 could therefore include:

- Temporary screening between the road and the noise and vibration sensitive receptors (where space permits);
- A reduction in peak LV trips through the promotion of car-sharing or contractor provided minibuses, etc;

- A reduction in peak daily HGV trips through measures such as:
  - Stockpiling of materials to reduce peak daily HGV demand;
  - Backhauling, i.e. using laden vehicles to import stone and export excavated material;
  - Optimising the size of HGVs to reduce the total number;
  - Incentivising the appointed construction Contractor to seek engineering refinements to reduce material quantities and therefore HGV numbers; and
  - The reuse of materials onsite to reduce offsite HGV trips, e.g. using excavated materials to form bunds, etc.
- A temporary reduction in the speed limit along Bentley Road.

178. The additional measures to reduce the significance of noise effects would be equally applicable to reducing the magnitude of impact upon amenity. It is therefore assessed that a reduction in magnitude of impact (related to additional noise mitigation) and a refined level of sensitivity (noting no pedestrian activity via the link) would reduce the overall significance of the effect to not significant (i.e. no greater than minor adverse).

179. Any identified mitigation measures would be outlined in a future OCTMP (as part of the DCO application) and secured via a DCO Requirement.

27.6.1.4 Impact 3: Highway Safety

180. In order to understand the potential effect of changes in traffic (associated with North Falls) on the existing highway safety baseline, an examination of the recorded collisions occurring within the TTSA has been undertaken in context of the development proposals.

27.6.1.4.1 Magnitude of impact and sensitivity of receptors

181. The initial review of the existing road safety baseline has selected areas where there are concentrations of collisions (known as collision clusters) and links with collision rates higher than the national average which may be sensitive to changes in traffic flows. (Section 27.4.3 provides full details on the methodology for identifying these eight collision clusters and two locations where collision rates are higher than the national average.)

182. Table 27.23 outlines a review of the sensitivity of the selected collision clusters (depicted in Figure 27.3, Volume II) and the magnitude of impact of North Falls traffic in the context of the changes in forecast daily traffic flows in 2026. Details of the percentage changes in daily traffic flows have been summarised from Table 27.17.

Table 27.23 Magnitude of highway safety impact and sensitivity of receptors

Receptors	Location	Summary of collisions and sensitivity	Links	Percentage change		Magnitude of impact
				All vehicles	HGVs	
Cluster Site 1	A133/B1027 St John's Roundabout	During the five-year study period (2017-2022), there have been a total of 16 collisions at the roundabout, these comprise of 12 slight and four serious collisions, no fatalities were recorded. None of the 16 collisions involved HGVs. Of the 16 collisions occurring at this roundabout, seven comprise of collisions involving pedestrians and cyclists, six comprise of rear end shunts and three failures to give way. An emerging pattern of collisions involving pedestrians and cyclists and rear end shunts is identified at this roundabout. Cluster Site 1 is therefore assessed to be of high sensitivity.	23/24	1 - 2%	12% - 34%	Cluster site 1 is located at the intersection of links 23 and 24 that are projected to experience an increase in total traffic of up to 1% and HGV traffic of up to 34%. It is assessed that a change in HGV traffic of up to 34% represents a low magnitude of impact.
Cluster Site 2	B1027/Holland Road, mini roundabout	During the five-year study period (2017-2022), there have been a total of five collisions at cluster site 2, these comprised of three slight and two serious collisions. No fatal collisions or collisions involving HGVs were recorded. There have been five collisions within the proximity of the mini-roundabout, however no clear emerging trend or pattern in collision types is noted. Cluster Site 2 is therefore assessed to be of low sensitivity.	24/25	1 - 2%	30% - 34%	Cluster site 2 is located at the intersection of links 24 and 25 that are projected to experience an increase in total traffic of up to 1% and HGV traffic of up to 34%. No emerging pattern of collisions is identified at cluster site 2 and the types of existing collisions would not be disproportionately impacted by vehicle composition, therefore it is more appropriate to focus upon the total change in traffic rather than changes in HGVs. It is therefore assessed that a change in total traffic of up to 2% represents a negligible magnitude of impact.
Cluster Site 3	Bovill's Roundabout, A133/Progress Way/St Osyth Road	During the five-year study period (2017-2022), there has been a total of 12 collisions, these comprised eight slight and four serious collisions. No fatal collisions or collisions involving HGVs were recorded. Of the 12 collisions occurring at this roundabout five comprise of rear end shunts, two involve collisions	22/23	1%	12%	Cluster site 3 is located at the intersection of links 22 and 23 that are projected to experience an increase in total traffic of up to 1% and HGV traffic of up to 12%. It is assessed that a change in HGV traffic of up to

Receptors	Location	Summary of collisions and sensitivity	Links	Percentage change		Magnitude of impact
				All vehicles	HGVs	
		between cars and cycles, two involve collisions between circulating traffic and three involve single vehicles losing control. It is concluded that there is an emerging pattern of rear end shunt type collisions and collisions with cycles occurring at the roundabout. Cluster Site 3 is therefore assessed to be of high sensitivity.				12% represents a negligible magnitude of impact.
Cluster Site 4	Thorpe-le-Soken High Street	During the five year study period (2017-2022), a total of nine collisions were recorded at cluster site 4, of these, seven were classified as slight collisions and two as serious. No fatal collisions or collisions involving HGVs were recorded. Of the nine collisions occurring at cluster site 4, five involved cars colliding with pedestrians or cyclists, two involved the drivers of cars turning into the path of other cars, one involved a car colliding with a right turning car, and one involved a rear-end shunt. It can be concluded that there is an emerging pattern of collisions involving pedestrians and cyclists and motor vehicles at this location. Cluster site 4 is therefore assessed to be of high sensitivity.	30/32	2%	34%	Cluster site 4 is located along links 30 and 32 that are projected to experience an increase in total traffic of up to 2% and HGV traffic of up to 34%. Section 27.3.3 outlines that North Falls have made a commitment to ensuring that no HGV movements occur during the sensitive school start and finish times (noting the pattern of collisions involving vulnerable road users). It is therefore assessed that a change in HGV traffic outside of these hours of up to 34% represents a negligible magnitude of impact.
Cluster Site 5	A133/Colchester Road Roundabout	Within the five year study period (2017-2022) the roundabout was amended (circa 2020) to incorporate a segregated straight-on lane from the A120 to the A133 (S). Within the five-year study period, a total of ten collisions were recorded at the roundabout, with four happening before the amendments and six afterwards. Of the ten collisions, nine were classified as slight and one as serious. No fatal collisions or collisions involving HGVs were recorded. Of the 10 collisions occurring at cluster site 5, four collisions involved vehicles losing control on approach to the roundabout, five were rear end shunts and one involved a collision between vehicles circulating on the	20/21	1%	16 - 17%	Cluster site 5 is located at the intersection of links 20 and 21 that are projected to experience an increase in total traffic of up to 1% and HGV traffic of up to 17%. Whilst a cluster of collisions with an emerging pattern of rear end shunt and loss of control is identified, these types of collisions would not be disproportionately impacted by vehicle composition and therefore it is more appropriate to focus upon the total change in traffic rather than changes in HGVs. It is therefore assessed that a change in total traffic of up to 1% represents a negligible magnitude of impact.

Receptors	Location	Summary of collisions and sensitivity	Links	Percentage change		Magnitude of impact
				All vehicles	HGVs	
		roundabout. It can be concluded that there is an emerging pattern of collisions involving rear end shunts and loss of control type collisions. Cluster site 5 is therefore assessed to be of high sensitivity.				
Cluster Site 6	A120/A133 grade separated junction	During the five-year study period (2017-2022), a total of 13 collisions were recorded, of which eight were classified as slight and four as serious. One fatal collision was recorded where a pedestrian crossed the live lanes and was struck by a car. Of the 13 collisions at cluster site 6, eight were loss of control, four were rear-end shunts and one was a car colliding with a pedestrian. It can be concluded that there is an emerging pattern of collisions involving drivers losing control whilst negotiating the junction. Cluster site 6 is therefore assessed to be of high sensitivity.	2/20	1 - 2%	16 – 19%	Cluster site 6 is located at the intersection of links 2 and 20 that are projected to experience an increase in total traffic of up to 2% and HGV traffic of up to 19%. Whilst a cluster of collisions with an emerging pattern of loss of control is identified, the existing cause of collisions would not be disproportionately impacted by vehicle composition and therefore it is more appropriate to focus upon the total change in traffic rather than changes in HGVs. It is therefore assessed that a change in total traffic of up to 2% represents a negligible magnitude of impact.
Links 28, 29, 30 and 32	B1033 (Thorpe Road) from the B1032 to B1035	During the five year study period (2017-2022), there has been a total of 21 collisions along these links, of which, three were classified as serious and 18 were slight. No fatal collisions, or collisions involving HGVs were recorded. Table 27.16 identifies that the collision rate (per billion vehicle miles) along these links is 366 and just above the national average for comparable roads of 336. The 21 collisions, occurring along these links can be summarised as follows: • seven involved cars colliding with pedestrians or cyclists; • six involved collisions between turning vehicles; • three involved a rear-end shunt; • three involved losses of control; and	28, 29, 30 and 32	1 - 2%	34%	Links 28, 29, 30 and 32 are projected to experience an increase in total traffic of up to 2% and HGV traffic of up to 34%. Section 27.3.3 outlines that North Falls have made a commitment to ensuring that no HGV movements occur during the sensitive school start and finish times (noting the pattern of collisions involving vulnerable road users). It is therefore assessed that a change in HGV traffic outside of these hours of up to 34% represents a negligible magnitude of impact.

Receptors	Location	Summary of collisions and sensitivity	Links	Percentage change		Magnitude of impact
				All vehicles	HGVs	
		• two involved cars driving on the wrong side of the road, one of which collided with another car and one caused a second car to collide with street furniture. It can be concluded that there is an emerging pattern of collisions involving pedestrians and cyclists and collisions between turning vehicles at this location. Links 28, 29, 30 and 32 are therefore assessed to be of high sensitivity.				
Links 35, 37, 39, 40 and 42	B1035 from Lodge Lane to the B1033	During the five year study period (2017-2022), there has been a total of five collisions along these links, of which, two were classified as serious and three were slight. No fatal collisions, or collisions involving HGVs were recorded. Table 27.16 identifies that the collision rate (per billion vehicle miles) along these links is 515 and above the national average for comparable roads of 336. The five collisions, occurring along these links can be summarised as follows: • a serious four car collision initially resulting from a car driver attempting to overtake another car; • a car colliding with street furniture after taking avoiding action to avoid a deer in the road; • a car colliding with street furniture after taking avoiding action to avoid an oncoming car on the wrong side of the road; • a car driver failing to give way at a priority junction and colliding with another car; and • a serious collision which involved a motorcycle driving on the wrong side of the road and colliding with a van. Noting the low number of total collisions (five in five years) and that there is no identifiable pattern in collision types, the links are assessed to be of low sensitivity.	35, 37, 39, 40 and 42	8 – 23%	0 – 284%	No emerging pattern of collisions is identified along these links and the types of existing collisions would not be disproportionately impacted by vehicle composition, therefore it is more appropriate to focus upon the total change in traffic rather than changes in HGVs. Link 35, 37, 39, 40 and 42 are projected to experience an increase in total traffic of up to 23%. It is assessed that a change in total traffic of up to 23% represents a low magnitude of impact.

27.6.1.4.2 Significance of effect

183. Table 27.24 provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of the highway safety effect.

Table 27.24 Significance of highway safety effect

Receptor	Magnitude of impact	Sensitivity	Significance of effect
Cluster Site 1	Low	High	Moderate adverse
Cluster Site 2	Negligible	Low	Negligible
Cluster Sites 3, 4, 5, 6	Negligible	High	Minor adverse
Links 28, 29, 30 and 32	Negligible	High	Minor adverse
Links 35, 37, 39, 40 and 42	Low	Low	Negligible

Additional mitigation

184. Table 27.23 identifies that there is an existing pattern of collisions at A133/B1027 St John's Roundabout (cluster site 1) involving collisions between pedestrians/cycles and vehicles. It is assessed that the change in HGV traffic associated with the construction of North Falls could result in a potentially significant highway safety effect at this roundabout.

185. It is therefore proposed that a series of additional mitigation measures will be outlined within a future OCTMP (as part of the DCO application) and secured by a DCO Requirement. The measures outlined in Table 27.25 are promoted in addition to those contained in a 'typical' CTMP and are included to make HGV drivers aware of the existing road safety risks at this location and consequently minimise potential impacts.

Table 27.25 Highway safety – additional mitigation measures

Measure	Rationale for measures
Driver inductions and training	Drivers would receive formal inductions to the Project. As part of the induction process, areas with existing highway safety issues would be highlighted and appropriate training provided.
Driver information packs	Drivers would be provided with delivery instructions. Where deliveries would be routed via cluster site 1, the existing highway safety issues at this location would be highlighted to drivers.
Near miss reporting	All drivers would be requested via their induction to report any collisions and near misses. This would allow any potential highway safety concerns to be identified early and remedial action taken.

186. Notwithstanding the above, prior to the submission of the DCO application it is proposed that these existing highway safety issues will be discussed with Essex County Council to understand if, in pursuit of their statutory duties, they have planned improvement works which may help to address inherent highway safety issues at this junction.

Residual significance of effect

187. The adoption of the proposed additional mitigation measures would serve to address the underlining issues that manifest in adverse highway safety impacts

(reducing the magnitude of this potential impact), and therefore, the residual effects on cluster site 1 are expected to be no greater than minor adverse.

27.6.1.5 Impact 4, 5 and 6: Driver Delay

188. The Driver Delay impact assessment has been sub-divided into three discrete impacts each of which have the potential to induce significant effects on highway network users. These impacts are:

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

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

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

27.6.1.6 Impact 4 Driver Delay (Capacity)

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

191. A review of the TTSA has been undertaken to identify sections of the TTSA that are identified by Essex County Council to suffer from journey unreliability (Section 27.4.3.1.1) and could therefore be sensitive to increases in North Falls traffic.

192. An 'initial assessment' of the forecast changes in traffic via these roads is presented within this PEIR to aid and inform further discussions with Essex County Council and National Highways (post PEIR) on sensitive junction locations that would be further assessed (and modelled, if required) within the ES submitted as part of the DCO application.

27.6.1.6.1 Magnitude of impact

193. Table 27.26 provides an initial assessment of the magnitude of impact of North Falls traffic in the context of the changes in forecast daily traffic flows in 2026. Details of the percentage changes in daily traffic flows have been extrapolated from Table 27.17.

Table 27.26 Magnitude of driver delay (capacity) impact

Link ID	Link description	Background 2026 annual average daily traffic flows	Forecast total daily construction vehicle trips		Percentage increase (based on peak trips)	Magnitude of impact
			Peak	Average		
1	A120 from the A12 to the A133	49,188	1,117	788	2%	It is observed that daily fluctuations in traffic are between 1% and 7% and therefore forecast increases within those bounds are assessed as a negligible magnitude of impact.
2	A120 from the A133 to Harwich Road	49,188	873	625	2%	
3	A120 from Harwich Road to Bentley Road	13,954	918	652	7%	
15	A120 from Bentley Road to the B1035	13,954	723	539	5%	
16	A120 from the B1035 to Colchester Road	13,954	785	579	6%	
18	A120 from Colchester Road to the B1352	11,564	574	438	5%	
19	A120 from the B1352 to Parkeston Road	11,564	565	432	5%	
20	A133 south of the A120	35,582	489	313	1%	
21	A133 to the B1033	34,140	506	323	1%	
22	A133 south of the B1033 to Progress Way	24,213	209	144	1%	

27.6.1.6.2 Sensitivity of receptors

194. Each of the 10 links (identified in Table 27.26) are on roads that Essex County Council have identified as suffering from journey reliability. The sensitivity of these links is therefore assessed to be high.

27.6.1.6.3 Significance of effect

195. Table 27.26 identifies that the magnitude of impact upon all sensitive links is negligible. A negligible magnitude of impact upon receptors identified to be high sensitivity would result in an assessed minor adverse effect.

27.6.1.7 Impact 5 Driver Delay (Highway Geometry)

196. Driver Delay (Highway Geometry) impacts are considered to have the potential for significant effects where the highway network within the TTSA is of constrained width to prevent two vehicles from passing (therefore leading to delays associated with waiting and manoeuvring). A review of all links has been undertaken (Section 27.4.3.1.1) to identify 'constrained width', defined as roads less than 5.5m wide.

27.6.1.7.1 Magnitude of impact and sensitivity of receptors

197. Table 27.27 provides a summary of the magnitude of impact and sensitivity of the two links identified as of constrained width in the context of the changes in forecast daily traffic flows in 2026. Details of the changes in daily traffic flows have been extrapolated from Table 27.17.

Table 27.27 Magnitude of driver delay (highway geometry) impact and sensitivity of receptors

Link ID.	Link description	Background link characteristics and sensitivity	Magnitude of impact
11	Parsonage Lane leading to Wolves Hall Lane east of the B1035	Parsonage Lane is approximately 250m long and 5.0m wide and currently allows two LVs to pass or an LV to pass an oncoming HGV. Wolves Hall Lane is however narrower (approximately 3.0m wide) and therefore two vehicles are unable to pass without overrunning the verge. From Parsonage Lane to access 8 and 9, North Falls traffic would be required to travel approximately 350m along Wolves Hall Lane. The link is therefore assessed to be of medium sensitivity.	It is proposed that there could be a peak increase in total traffic of up to 56% (equivalent to an additional 53 LV trips per day). These LVs would typically arrive at the start of the working day and depart at the end of the working day. No HGV trips are proposed via link 11. An increase of up to 27 LV trips in one hour could lead to potential conflict with background traffic. The magnitude of impact is therefore assessed as medium.
12	Stones Green Road	Stones Green Road is approximately 4.0m wide and therefore currently permits two LVs to pass slowly. LVs however are unable to pass an oncoming HGV without overrunning the verge. Stones Green Road is also designated as an on-road cycle route. North Falls construction traffic would be required to travel approximately 700m along Stones Green Road to accesses 10 and 11.	It is proposed that there could be a peak increase in total traffic of up to 19% (equivalent to an additional 53 LV trips per day). These LVs would typically arrive at the start of the working day and depart at the end of the working day. No HGV trips are proposed via link 12. An increase of 19% in LV would not lead to conflict with existing LVs as the road allows two LVs to pass, however, there could be a potential conflict with the baseline seven HGVs a day travelling via link 12. Recognising the low HGV baseline,

Link ID.	Link description	Background link characteristics and sensitivity	Magnitude of impact
		The link is therefore assessed to be of high sensitivity.	the magnitude of impact is therefore assessed as low.

27.6.1.7.2 Significance of effect

198. Table 27.28 provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of the driver delay (highway geometry) effect.

Table 27.28 Significance of driver delay (highway geometry) effect

Links	Magnitude of impact	Sensitivity	Significance of effect
11	Medium	Medium	Moderate adverse
12	Low	High	Moderate adverse

Additional mitigation

199. Table 27.28 identifies that North Falls construction traffic could result in potentially significant driver delay (highway geometry) effects upon the users of links 11 and 12 associated with 27 employees arriving and departing each day.

200. The assessment presented in Table 27.27 assumes a worst case, whereby each employee drives direct to the accesses on links 11 and 12, i.e. single occupancy. To reduce the potential for conflict along these links, it would therefore be proposed to reduce the number of single occupancy LV trips.

201. To ensure that LV numbers can be reduced, it is proposed that all employees would initially be required to drive to access 12a or b (shown in Figure 27.2, Volume II) to the south of the A120. Employees would then be grouped into vehicles to reduce the number of single occupancy vehicle trips.

202. Assuming a conservative estimate of four employees per vehicle, the peak LV trips via links 11 and 12 would be reduced from 54 to 14.

203. It is proposed that these additional mitigation measures will be outlined within a future OCTMP (as part of the DCO application) and secured by a DCO Requirement.

Residual significance of effect

204. Following the implementation of the proposed additional mitigation measures in relation to driver delay (highway geometry), the magnitude of impact is assessed as negligible on receptors of high to medium sensitivity resulting in a minor adverse residual effect.

27.6.1.8 Impact 6 Driver Delay (Road Closures)

205. During the cable installation works, within the onshore cable corridor(s) cables would need to be installed across a number of minor public roads using open-cut trenching techniques. To provide a safe working area for the installation it would be proposed to close the roads for a short period of time (up to six weeks).

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

27.6.1.8.1 Magnitude of impact

206. Table 27.29 provides a summary of the magnitude of impact and sensitivity of all open-cut onshore cable corridor crossings required during the cable installation works. The location of the proposed road closures are highlighted in Figure 27.4 (Volume II).

207. In assessing the sensitivity and magnitude of impact, consideration has been given to the volume of traffic (taken from Appendix 27.1, Volume III), the additional delay drivers would experience if a road is closed, and also, if the closed road impacts scheduled bus services.

Table 27.29 Magnitude of driver delay (road closures) impact and sensitivity

Crossing location	Daily traffic flows	Foot way/ Cycle way	Bus route	Sensitivity	Alternative diversion route	Magnitude of impact	Rationale
Little Clacton Road	4,754	No	No	Little Clacton Road has relatively low daily traffic flows, has no scheduled bus services, footway or cycleway. The link is therefore assessed as of low sensitivity to driver delay effects.	Traffic would be diverted via the B1032 and Thorpe Road. Both these roads are of the same or higher classification as Little Clacton Road and could therefore be expected to accommodate a short term increase in traffic. This would result in an additional journey time of approximately 12 minutes. This diversion route is proposed to avoid diverting traffic via the weak bridge on Sladbury's Lane.	High	A suitable alternative route exists; however, this would add an additional 12 minutes to a journey.
Damant's Farm Lane	351	No	No	Damant's Farm Lane has very low daily traffic flows, has no scheduled bus services, footway or cycleway. The link is therefore assessed as of low sensitivity to driver delay effects.	Damant's Farm Lane is a narrow single track road. Traffic could be diverted via Walton Road and the B1034. Both these roads are of the same or higher classification as Damant's Farm Lane and could therefore be expected to accommodate a short term increase in traffic. This diversion would result in an additional two to three minutes journey time.	Low	A suitable alternative route exists which would add up to three minutes additional journey time.
Golden Lane	1,137	No	No	Golden Lane has very low daily traffic flows, has no scheduled bus services, footway or cycleway. The link is therefore assessed as of low sensitivity to driver delay effects.	Golden Lane is a narrow single track road. Traffic could be diverted to the B1414 and B1033. Both these roads are of a higher classification than Golden Lane and could therefore be expected to accommodate a short term increase in traffic. This diversion would result in an additional two to three minutes journey time.	Low	A suitable alternative route exists which would add up to three minutes additional journey time.
Swan Road	1,027	No	No	Swan Road has very low daily traffic flows, has no scheduled bus services, footway or cycleway. The link is therefore assessed as of low sensitivity to driver delay effects.	Swan Road is a single carriageway road. Traffic could be diverted to the B1414 and B1033. Both these roads are of a higher classification than Swan Road and could therefore be expected to accommodate a short term increase in traffic. This diversion would result in an additional five minutes journey time.	Low	A suitable alternative route exists which would add up to five minutes additional journey time.

Crossing location	Daily traffic flows	Foot way/ Cycle way	Bus route	Sensitivity	Alternative diversion route	Magnitude of impact	Rationale
Wolves Hall Lane	87	No	No	Wolves Hall Lane has very low daily traffic flows, has no scheduled bus services, footway or cycleway. The link is therefore assessed as of low sensitivity to driver delay effects.	Wolves Hall Lane is a single lane road. Traffic could be diverted to the nearby Tendring Road and Stones Green Road. The diversion route would be of the same road classification and similar characteristics. This diversion would result in an additional one minute journey time.	Negligible	A suitable alternative route exists which would add up to one minute additional journey time.
Spratts Lane	<1,000*	No	No	Spratts Lane has very low daily traffic flows, has no scheduled bus services, footway or cycleway. The link is therefore assessed as of low sensitivity to driver delay effects.	Spratts Lane is a single lane road. Traffic could be diverted to the nearby Barlon Road and Morebarn Road. The diversion route would be of the same road classification and similar characteristics. This diversion would result in an additional three minutes journey time.	Low	A suitable alternative route exists which would add up to three minutes additional journey time.
Barlon Road	<1,000*	No	No	Barlon Road has very low daily traffic flows, has no scheduled bus services, footway or cycleway. The link is therefore assessed as of low sensitivity to driver delay effects.	Barlon Road is a single lane road. Traffic could be diverted to the nearby Morebarn Road and Spratts Lane. The diversion route would be of the same road classification and similar characteristics. This diversion would result in an additional two minutes journey time.	Negligible	A suitable alternative route exists which would add up to two minutes additional journey time.
Ardleigh Road	72	No	No	Ardleigh Road has very low daily traffic flows, has no scheduled bus services, footway or cycleway. The link is therefore assessed as of low sensitivity to driver delay effects.	Ardleigh Road is a single lane road. Traffic could be diverted to the nearby Grange Road and Bromley Road. The diversion route would be of the same road classification and similar characteristics. This diversion would result in an additional five to six minutes journey time.	Low	A suitable alternative route exists which would add up to six minutes additional journey time.
Notes: * *Daily traffic flows estimated from recorded flows on comparable nearby roads.*							

27.6.1.8.2 Significance of effect

208. Table 27.30 provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of the driver delay (road closures) effect.

Table 27.30 Significance of driver delay (road closures) effect

Crossing locations	Magnitude of impact	Sensitivity	Significance of effect
Little Clacton Road	High	Low	Moderate adverse
Damant's Farm Lane	Low	Low	Negligible
Golden Lane	Low	Low	Negligible
Swan Road	Low	Low	Negligible
Wolves Hall Lane	Negligible	Low	Negligible
Spratts Lane	Low	Low	Negligible
Barlon Road	Negligible	Low	Negligible
Ardleigh Road	Low	Low	Negligible

Additional mitigation

209. Table 27.30 identifies that users of Little Clacton Road could experience moderate adverse driver delay (road closure) effects as a result of a temporary road closure. The remaining six road closures are assessed to result in negligible effects and are not assessed further.

210. Prior to the submission of the DCO application, the Applicant plans to undertake further site investigation works to establish the potential to use trenchless technologies at this location. If trenchless techniques cannot be used at this location, the following additional mitigation measures are proposed:

- Temporarily widening of the road to allow the works to be undertaken in two stages, thereby maintaining one lane for traffic, with traffic controlled via signal control;
- Working with Essex County Council and local stakeholders to agree an appropriate time to undertake the works (e.g. outside of summer holidays);
- Implementation of advanced signing to assist drivers in finding alternative routes; and
- Ensuring all road closure works are staggered to minimise any cumulative effects within close geographical areas.

211. If required, these additional mitigation measures will be outlined within a future OCTMP (as part of the DCO application) and secured by a DCO Requirement.

Residual significance of effect

212. Following the implementation of the proposed additional mitigation measures in relation to road closures, the magnitude of impact is assessed as low on a receptor of low sensitivity resulting in a negligible residual effect.

27.6.2 Potential effects during operation

213. The onshore substation is not expected to be permanently manned; however, staff will periodically visit to carry out routine checks and maintenance. Most annual maintenance will be short, but, if necessary, some campaigns may be longer. The proposed operational access strategy is outlined in the TA (Appendix 27.1, Volume III).

214. Any inspections/ maintenance of the onshore cable route will be infrequent and subject to very low vehicle demand.

215. Considering the activities above, no significant traffic and transport effects are anticipated during the Project's operational phase.

216. Consequently, as agreed during traffic and transport ETG meetings with Essex County Council (on the 9 July 2021) and National Highways (on the 7 June 2022) and Planning Inspectorate (Section 27.2) no operational phase assessment is presented within this traffic and transport impact assessment.

27.6.3 Potential effects during decommissioning

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

218. It is expected the onshore cables will be removed from ducts and recycled, with the transition pits and ducts left in-situ.

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

220. It is anticipated that the effects of decommissioning will be no greater in nature than those identified during construction (Section 27.6).

27.7 Potential monitoring requirements

221. An Outline Construction Traffic Management Plan (OCTMP) will be submitted alongside the DCO application and further developed and agreed with stakeholders prior to construction.

222. The OCTMP will provide details of the proposed approach to monitoring of traffic movements associated with North Falls. In summary, these are expected to include commitments to monitoring and reporting of:

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

27.8 Cumulative effects

27.8.1 Identification of potential cumulative effects

223. The first step in the CEA process is the identification of which residual effects assessed for North Falls on their own have the potential for a cumulative effect with other plans, projects and activities. This information is set out in Table 27.31. Only potential effects assessed in Section 27.6 as greater than negligible significance are included in the CEA (i.e. those assessed as 'negligible' are not taken forward as there is no potential for them to contribute to a cumulative effect).

Table 27.31 Potential cumulative effects

Impact	Potential for cumulative effect	Scale of CEA
Construction		
Impact 1: Severance	Yes	Cumulative effects are considered possible upon links 11, 12, 24, 25, 30, 32 and 33.
Impact 2: Amenity	Yes	Cumulative effects are considered possible upon links 4, 11, 12, 17, 24, 25, 26, 30, 32, 33, 35, 37 and 39.
Impact 3: Highway Safety	Yes	Cumulative effects are considered possible at cluster sites 1 (on link 23/24), 3 (on link 22/23), 4 (on link 30/32), 5 (on link 20/21) and 6 (on link 2/20) and links 28, 29, 30 and 32.
Impact 4: Driver Delay (Capacity)	Yes	Cumulative effects are considered possible upon links 1, 2, 3, 15, 16, 18, 19, 20, 21 and 22.
Impact 5: Driver Delay (Highway Geometry)	Yes	Cumulative effects are considered possible upon links 11 and 12.
Impact 6: Driver Delay (Road Closures)	No	The residual magnitude of effect for all links is assessed as a negligible significance of effect and are therefore not assessed further within this CEA.
Operation		
Operational impacts were scoped out of the primary assessment and therefore there would be no cumulative operational effects.		
Decommissioning		
Decommissioning strategies have not yet been finalised; however, the cumulative effects are expected to be no greater than those of construction.		

27.8.2 Other plans, projects and activities

224. The second step in the cumulative assessment is the identification of the other plans, projects and activities that may result in cumulative effects for inclusion in the CEA (described as 'project screening'). This information is set out in Table 27.32 below, together with a consideration of the relevant details of each, including current status (e.g. under construction), planned construction period, closest distance to North Falls, status of available data and rationale for including or excluding from the assessment.

225. The Project screening has been informed by the development of a CEA project list which forms an exhaustive list of plans, projects and activities within the

study area (Section 27.3.1) relevant to North Falls. The list has been appraised, based on the confidence in being able to undertake an assessment from the information and data available, enabling individual plans, projects and activities to be screened in or out.

Table 27.32 Summary of projects considered for the CEA in relation to traffic and transport (project screening)

Project	Status	Construction period	Closest distance from the onshore project area (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
National Infrastructure Planning						
Bradwell B new nuclear power station	Pre-application	Pre-application	21km	High	No	The traffic and transport study area for these projects does not overlap with the North Falls TTSA. Routes that extend outside of the TTSA are where construction traffic has dissipated and therefore, significant effects upon users of the highway network are unlikely. No cumulative effects are therefore anticipated.
Anglia TWO Offshore Windfarm	Approved (DCO Issued 2022)	Information unavailable.	47km north east	High	No	
Sizewell C Project	Approved (DCO Issued 2022)	2022 – 2034	49km north east	High	No	
Lake Lothing Third Crossing	Approved (DCO Issued 2020)	Construction over 2 years	76km north east	High	No	
Manston Airport		Information unavailable.	53km south	High	No	
Thanet Extension Offshore Wind Farm	Application refused	Application refused	52km east	High	No	
Sea Link	Pre-application	Pre-application	20km east	High	No	
Ipswich Rail Chord	Approved (DCO Issued 2012)	Built	17km north east	High	No	The projects are operational and therefore any changes in traffic movements would be captured within the surveys of baseline conditions.
Richborough Connection Project	Approved (DCO Issued 2017)	Built	55km south	High	No	
Kentish Flats Extension	Approved (DCO Issued 2013)	Built	46km south	High	No	
Galloper Offshore Wind Farm	Approved	Built	15km north east	High	No	
Nautilus Interconnector	Pre-application	Pre-application	44km north east	Low	No	The location of onshore infrastructure associated with this project is not known, however, it is highly unlikely to be within close proximity to the onshore project area

Project	Status	Construction period	Closest distance from the onshore project area (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
						so will not likely have a cumulative effect on traffic and transport.
Five Estuaries Offshore Wind Farm	Pre-application	Pre-application	40km north east	Low	Yes	The traffic and transport scoping area overlaps with the TTSA for North Falls. The project is therefore included within the CEA.
East Anglia GREEN	Pre-application	Pre-application	75km	Low	Yes	The scoping report corridor for East Anglia GREEN overlaps with the TTSA for North Falls. The project is therefore included within the CEA.
A12 Chelmsford to A120 Widening Scheme	Pre-examination	Information unavailable.	27km south west	Low	No	The location of the proposed scheme is beyond the extents of the TTSA. Routes that extend outside of the TTSA are where construction traffic has and therefore, significant effects upon users of the highway network are unlikely. No cumulative effects are therefore anticipated.
Rivenhall IWMF and Energy Centre	Pre-application	Information unavailable.	27km west	-	-	The location of onshore infrastructure associated with this project is not known, however, it is highly unlikely to be within close proximity to the onshore project area so will not likely have a cumulative effect on traffic and transport.
Essex County Council						
Elmstead Hall, Elmstead, Colchester, Essex	Approved	Information unavailable.	5km	N/A	No	No assessment of traffic and transport impacts (e.g. a Transport Assessment/Statement) has been submitted in support of these applications. Traffic impacts are therefore anticipated to be not
St. George's Infant School and Nursery, Barrington Road, Colchester, Essex, CO2 7RW	Approved	Information unavailable.	9km	N/A	No	

Project	Status	Construction period	Closest distance from the onshore project area (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
Wilson Marriage Centre, Barrack Street, Colchester, Essex, CO1 2LR	Approved	Information unavailable.	8km	N/A	No	significant and no cumulative effects are anticipated.
Wivenhoe Quarry, Alresford Road, Wivenhoe, Essex, CO7 9JU	Report being prepared	Information unavailable.	7km	N/A	No	
Elmstead Hall, Elmstead, Colchester, Essex, CO7 7AT	Approved	Information unavailable.	5km	N/A	No	
Elmstead Hall, Elmstead, Colchester, Essex, CO7 7AT	Approved	Information unavailable.	5km	N/A	No	
Old Heath County Primary School, Old Heath Road, Colchester, Essex, CO2 8DD	Approved	Information unavailable.	8km	N/A	No	
Crown Quarry (Wick Farm), Old Ipswich Road, Ardleigh, CO7 7QR	Approved	Information unavailable.	6km	N/A	No	
Wivenhoe Quarry, Alresford Road Wivenhoe, Essex CO7 9JU	Approved	Information unavailable.	7km	N/A	No	
Martells Quarry, Slough Lane, Ardleigh, Essex, CO7 7RU	Out for consultation	Information unavailable.	3km	N/A	No	

Project	Status	Construction period	Closest distance from the onshore project area (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
Land at: Elmstead Hall, Elmstead, Colchester, Essex	Approved	Information unavailable.	5km	N/A	No	
Land at Martells Quarry, Slough Lane, Ardleigh, Essex, CO7 7RU	Approved	Information unavailable.	3km	N/A	No	
Land to the south of Colchester Main Road, Alresford, Nr Colchester, C07 8DB	Report being prepared	Information unavailable.	6km	N/A	No	
Land at: Martells Quarry, Slough Lane, Ardleigh, Essex, CO7 7RU	Approved	Information unavailable.	3km	N/A	No	
Tendring Education Centre, Jaywick Lane, Clacton On Sea, Essex, CO16 8BE	Approved	Information unavailable.	6km	N/A	No	
Tendring Education Centre, Jaywick Lane, Clacton On Sea, Essex, CO16 8BE	Approved	Information unavailable.	6km	N/A	No	
Land At Martells's Quarry, Slough Lane, Ardleigh, Essex CO7 7RU	Approved	Information unavailable.	3km	N/A	No	
Land At Martells's Quarry, Slough Lane, Ardleigh, Essex CO7 7RU	Approved	Information unavailable.	3km	N/A	No	
Crown Quarry (Ardleigh Reservoir Extension), Wick Farm, Old Ipswich	Approved	Information unavailable.	6km	N/A	No	

Project	Status	Construction period	Closest distance from the onshore project area (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
Road, Tendring, Colchester, CO7 7QR						
Elmstead Hall, Elmstead, Colchester, Essex	Approved	Information unavailable.	5km	N/A	No	
Ardleigh Waste Transfer Station, A120, Ardleigh, Colchester, CO7 7SL	Approved	Information unavailable.	4km	N/A	No	
35 Roach Vale, Colchester, CO4 3YN	Approved	Information unavailable.	6km	N/A	No	
Boxted Bridge, Boxted, Essex, CO4 5TB	Report being prepared	Information unavailable.	9km	N/A	No	
Elmstead Hall, Elmstead, Colchester, Essex	Approved	Information unavailable.	5km	N/A	No	
Lufkins Farm, Great Bentley Road, Frating, CO7 7HN	EIA not required	Information unavailable.	6km	N/A	No	
Lufkins Farm, Great Bentley Road, Frating, CO7 7HN	Resolution made/Awaiting Legal Agreement	Information unavailable.	6km	N/A	No	
Elmstead Hall, Elmstead, Colchester	Approved	Information unavailable.	5km	N/A	No	
Elmstead Hall, Elmstead, Colchester, CO7 7EX	Approved	Information unavailable.	5km	N/A	No	
Tendring District Council						
Land Between The A120 and A133, To The East of Colchester and of Elmstead Market	Awaiting decision	Information unavailable.	3km	High	No	The application is for a new link road between the existing A120 and A133 to facilitate the Tendring Borders Garden Community. If constructed, the new link road

Project	Status	Construction period	Closest distance from the onshore project area (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
						would result in traffic reassigning and therefore typically reduce traffic flows in the vicinity of the North Falls TTSA. Changes in traffic flows associated with the Tendring Borders Garden Community would also be captured within TEMPRro growth factors.
Hamilton Lodge Parsons Hill Great Bromley Colchester Essex CO7 7JB	Approval - Outline	Information unavailable.	2km south	N/A	No	No assessment of traffic and transport impacts (e.g. a Transport Assessment/Statement) has been submitted in support of these applications. Traffic impacts are therefore anticipated to be not significant and no cumulative effects are anticipated.
Land adjacent to Lawford Grid Substation Ardleigh Road Little Bromley Essex CO11 2QB	Approved	Information unavailable.	0.3km	High	No	The proposed battery energy storage scheme would be located in close proximity to the proposed onshore substation for North Falls. A Transport Statement and outline CTMP have been submitted in support of the application. The TS outlines that the (BESS) would be unmanned and there would therefore only be occasional access required for maintenance, estimated to be approximately 1 – 2 visits per month. The outline CTMP details that construction would take up to a year and result in a peak of 2 – 5 HGV deliveries per day. The outline CTMP identifies that traffic would access the BESS by Little Bromley Road, and Waterhouse Lane before travelling south via Great Bromley. Recognising the low levels of daily traffic movements for construction and operation of the BESS and that North Falls would use alternative access routes to

Project	Status	Construction period	Closest distance from the onshore project area (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
						the BESS no significant cumulative effects are anticipated.

27.8.3 Assessment of cumulative effects

226. Following a review of projects (presented in Table 27.32) which have the potential to overlap temporally or spatially with North Falls, two developments have been scoped into the CEA for this chapter, these are:

- East Anglia GREEN; and
- Five Estuaries Offshore Wind Farm.

227. These two projects are further considered further below.

27.8.3.1 East Anglia GREEN

228. At the time of drafting this PEIR, the latest publicly available information for East Anglia GREEN comprises of a Scoping Report (National Grid, 2022).

229. The level of information contained within this Scoping Report is not sufficient to undertake a full CEA. However, the Applicant is in regular and on-going dialogue with National Grid and will seek to continue working closely with National Grid, and with statutory consultees to assess potential cumulative effects. This approach complies with the relevant EIA Regulations and is consistent with that taken for other applications, where relevant environmental information has become available after the point of the DCO application submission.

230. The Applicant will incorporate relevant new information presented by East Anglia GREEN within the CEA in the ES.

27.8.3.2 Five Estuaries Offshore Wind Farm

231. At the time of drafting this PEIR, the latest publicly available information for Five Estuaries Offshore Wind Farm comprises of a Scoping Report (Five Estuaries Offshore Wind Farm Ltd., 2021).

232. The level of information contained within the scoping report is not sufficient to undertake a full CEA. However, the Applicant is in regular and on-going dialogue with Five Estuaries Offshore Wind Farm Ltd. and have established that the location of the landfall, onshore cable corridor and onshore substations will be broadly the same as North Falls and construction could occur at the same time and for a similar duration.

233. Recognising that the two projects (Five Estuaries and North Falls) are broadly comparable in terms of location and scale, it is possible to initially forecast the cumulative construction traffic flows by doubling those presented within Table 27.17 for North Falls. The exception to this is via the B1033 (links 32, 33 and 34), where discussions with Five Estuaries Offshore Wind Farm Ltd. have established that they would instead use the B1414.

234. Table 27.33 provides an initial high level forecast of the worst case scenario assuming both projects are constructed concurrently and no reductions in vehicle movements are applied to account for potential to share infrastructure (e.g. haul roads, compounds, etc.).

235. Table 27.33 also details the proposed worst case change in traffic flows for all links where Table 27.31 has identified that there is the potential for cumulative impacts. A preliminary assessment of the potential for significant cumulative effects is detailed as follows.

Table 27.33 Indicative Cumulative Traffic Flows

Link ID	Link Description	Link Sensitivity	Background 2026 annual average daily traffic flows		Cumulative North Falls and Five Estuaries Indicative Peak Daily Trips		Percentage increase	
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
1	A120 from the A12 to the A133	Negligible	49,188	3,047	2,235	1,130	5%	37%
2	A120 from the A133 to Harwich Road	Negligible	49,188	3,047	1,746	1,130	4%	37%
3	A120 from Harwich Road to Bentley Road	Negligible	13,954	1,819	1,835	1,130	13%	62%
4	Bentley Road from the A120 to Little Bromley	Low	1,048	17	1,166	503	111%	2959%
11	Parsonage Lane and Wolves Hall Lane east of the B1035	Medium	94	2	106	0	113%	0%
12	Stones Green Road	High	286	7	106	0	37%	0%
15	A120 from Bentley Road to the B1035	Negligible	13,954	1,819	1,445	1,130	10%	62%
16	A120 from the B1035 to Colchester Road	Negligible	13,954	1,819	1,569	1,130	11%	62%
17	Colchester Road south of the A120	Low	1,274	27	590	158	46%	585%
18	A120 from Colchester Road to the B1352	Negligible	11,564	1,622	1,147	1,130	10%	70%
19	A120 from the B1352 to Parkeston Road	Negligible	11,564	1,622	1,130	1,130	10%	70%
20	A133 south of the A120	Negligible	35,582	1,501	979	490	3%	33%
21	A133 to the B1033	Low	34,140	1,444	1,012	490	3%	34%
22	A133 south of the B1033 to Progress Way	Negligible	24,213	847	418	196	2%	23%
23	A133 south of Progress Way to the B1032	Negligible	24,213	847	427	196	2%	23%
24	B1032 east of the A133 to Holland Road	High	13,421	284	442	196	3%	69%
25	B1032 from Holland Road to Kings Parade	High	14,337	323	399	196	3%	61%
26	B1032 from Kings Parade to the south of Great Holland	Low	7,557	98	549	196	7%	200%
28	B1033 north of the B1032 through Kirby Cross to Pork Lane	High	10,078	154	160	0	2%	0%

Link ID	Link Description	Link Sensitivity	Background 2026 annual average daily traffic flows		Cumulative North Falls and Five Estuaries Indicative Peak Daily Trips		Percentage increase	
			All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
29	B1033 from Pork Lane to the south of Thorpe-le-Soken	Low	10,078	154	452	104	4%	68%
30	B1033 south of the B1414 through Thorpe-le-Soken	High	10,078	154	445	104	4%	68%
35	B1035 north of B1033 to Whitehall Lane	Low	1,714	33	779	190	45%	576%
37	B1035 north of Whitehall Lane to Swan Road	Low	1,714	33	779	190	45%	576%
39	B1035 north of Swan Road to the south of Tendring	Low	2,470	46	779	190	32%	413%

27.8.3.2.1 Cumulative Impact 1 Severance

236. Table 27.31 identifies that cumulative severance effects are possible upon seven links (links 11, 12, 24, 25, 30, 32 and 33). Five Estuaries Offshore Wind Farm Ltd. have however confirmed that they would not utilise links 32, 33 and 34.

237. It is therefore assessed that there is the potential for significant cumulative severance effects upon the remaining four links (links 11, 12, 24 and 25).

27.8.3.2.2 Cumulative Impact 2 Amenity

238. Table 27.31 identifies that cumulative amenity effects are possible upon 13 links (links 4, 11, 12, 17, 24, 25, 26, 30, 32, 33, 35, 37 and 39). Five Estuaries Offshore Wind Farm Ltd. have however confirmed that they would not utilise links 32 and 33.

239. It is therefore assessed that there is the potential for significant cumulative amenity effects upon the remaining 11 links (links 4, 11, 12, 17, 24, 25, 26, 30, 35, 37 and 39).

27.8.3.2.3 Cumulative Impact 3 Highway Safety

240. Table 27.31 identifies that cumulative highway safety effects are possible upon links 10 links (links 2, 20, 21, 22, 23, 24, 28, 29, 30 and 32). Five Estuaries Offshore Wind Farm Ltd. have however confirmed that they would not utilise link 32.

241. It is therefore assessed that there is the potential for significant cumulative highway safety effects upon nine links (links 2, 20, 21, 22, 23, 24, 28, 29 and 30).

27.8.3.2.4 Cumulative Impact 4 Driver Delay (Capacity)

242. Table 27.31 identifies that significant cumulative driver delay (capacity) effects are possible upon links 10 links (links 1, 2, 3, 15, 16, 18, 19, 20, 21 and 22).

27.8.3.2.5 Cumulative Impact 5 Driver Delay (Highway Geometry)

243. Table 27.31 identifies that significant cumulative driver delay (highway geometry) effects are possible upon two links (links 11 and 12).

27.8.3.2.6 Further cumulative effects assessment

244. Recognising the broad assumptions adopted in relation traffic demand for Five Estuaries Offshore Wind Farm, the Applicant and Five Estuaries Offshore Wind Farm Ltd. will continue to work together to validate traffic demand and explore logistics options for reducing the cumulative impacts.

245. The preliminary assessment will inform refinement of traffic demand and provide the basis of the final cumulative effects assessment within the ES.

27.9 Transboundary effects

246. There are no transboundary effects with regard to traffic and transport as the onshore infrastructure for North Falls is within the UK and is not located near to any international boundaries. Transboundary effects are therefore scoped out of the assessment and are not considered further.

27.10 Interactions

247. In order to address the environmental effects of the Project as a whole, this section establishes the interactions between traffic and transport and other physical, environmental and human receptors. The objective is to identify where the accumulation of impacts on a single receptor, and the relationship between those impacts, may give rise to a need for additional mitigation.

248. Table 27.34 summarises the interactions that are considered of relevance to traffic and transport and identifies where they have been considered within this PEIR. The traffic and transport metrics established in this chapter have been used to inform the related chapters.

Table 27.34 Traffic and transport interactions

Topic and description	Related chapter (Volume I)	Where addressed in this chapter	Rationale
Construction			
Impact 1: Severance	Chapter 31 Socio-economics	Section 27.6.1.2	Traffic associated with construction may impact the local demography.
Impact 2: Amenity	Chapter 31 Socio-economics	Section 27.6.1.3	Traffic associated with construction may impact the local demography.
	Chapter 20 Onshore Air Quality	Section 27.6.1.3	Traffic has the potential to temporarily affect air quality and impact upon local residents.
	Chapter 26 Noise and Vibration	Section 27.6.1.3	Traffic has the potential to increase noise disturbance temporarily.
	Chapter 28 Human Health	Section 27.6.1.3	Traffic associated with construction may generate localised dust emissions leading to potential complaints.
Impact 3: Highway Safety	Chapter 31 Socio-economics	Section 27.6.1.4	Traffic associated with construction may impact the local demography.
Impact 4 to 6: Driver Delay	Chapter 20 Onshore Air Quality	Section 27.6.1.5	Traffic associated with construction may impact the local demography.
Operation			
No significant effects.			
Decommissioning			
Decommissioning strategies have not yet been finalised; however, the cumulative effects are expected to be no greater than those of construction.			

27.11 Inter-relationships

249. The impacts identified and assessed in this chapter have the potential to interrelate with each other. The areas of potential inter-relationships between impacts are presented in Table 27.35. This provides a screening tool for which impacts have the potential to interrelate.

250. Impacts 1 (severance) and 2 (amenity) are considered to be closely related and Table 27.9 identifies that traffic would impact upon similar receptor groups (pedestrians, cyclists and equestrians). Therefore, the maximum forecast effect for impacts 1 or 2 would not be exceeded due to inter-relationships. However, there is potential for impacts 1 and 2 to collectively interrelate with impact 3 (highway safety). Table 27.35 identifies this inter-relationship.

251. Table 27.35 also identifies that impacts 4 (driver delay – capacity), 5 (driver delay – highway geometry) and 6 (driver delay – road closures) are also considered to be closely related and have potential to interrelate with each other to increase driver delay significance.

252. Appendix 27.2 (Volume III) contains a detailed assessment of the identified inter-relationships (impacts 1, 2 and 4, plus impacts 4, 5 and 6) and concludes that there are no significant inter-relationships between impacts from the construction of North Falls on traffic and transport.

Table 27.35 Inter-relationships between impacts - screening

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

27.12 Summary

253. This chapter has assessed the potential effects of the onshore infrastructure of North Falls on the surrounding traffic sensitive receptors.

254. This chapter has been developed with regard to the legislative and policy framework outlined in Section 27.4.1 and further informed by consultation with Essex County Council and National Highways.

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

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

257. A total of 42 highway links and six cluster sites within the TTSA have been assessed for the impacts of amenity, severance, highway safety and driver delay. With the application of additional mitigation measures (as appropriate) the residual effect upon all receptors was assessed to be not significant in EIA terms.

258. This detailed assessment concluded that no residual moderate or major adverse effects would arise, with all effects being of either minor adverse or negligible significance as shown in Table 27.36.

Table 27.36 Summary of potential likely significant effects on traffic and transport

Potential impact	Receptor	Sensitivity	Magnitude of impact	Pre-mitigation effect	Mitigation measures proposed	Residual effect
Construction						
Impact 1: Severance	Links: 6, 14, 17, 26, 29, 34, 35, 37, 39	Low	Negligible	Negligible	n/a	Negligible
	Link 33	Medium		Minor adverse		Minor adverse
	Links: 12, 24, 25, 30, 32	High		Minor adverse		Minor adverse
	Link 11	Medium	Low	Minor adverse		Minor adverse
	Link 4	Low		Negligible		Negligible
Impact 2: Amenity	Link 4	Low	High	Moderate Adverse	A range of potential noise mitigation measures are proposed, such as reducing peak LV and HGV numbers and the implementation a temporary reduction in the speed limit.	Minor adverse
	Links: 17, 26, 35, 37, 39	Low	Medium	Minor adverse	n/a	Minor Adverse
	Links: 6, 34	Low	Low	Negligible		Negligible
	Link 11, 33	Medium		Minor adverse		Minor adverse
	Links: 12, 24, 25, 30, 32	High	Negligible	Minor adverse		Minor adverse
	Links: 14, 29	Low		Negligible		Negligible
Impact 3: Highway Safety	Cluster Site 1	High	Low	Moderate adverse	Enhanced CTMP measures, e.g. driver training and near miss reporting, etc.	Minor adverse

Potential impact	Receptor	Sensitivity	Magnitude of impact	Pre-mitigation effect	Mitigation measures proposed	Residual effect
	Cluster Site 2	Low	Negligible	Negligible	n/a	Negligible
	Cluster Sites 3, 4, 5, 6	High	Negligible	Minor Adverse		Minor Adverse
	Links 28, 29, 30 and 32	High	Negligible	Minor Adverse		Minor Adverse
	Links 35, 37, 39, 40 and 42	Low	Low	Negligible		Negligible
Impact 4: Driver Delay (Capacity)	Links: 1, 2, 3, 15, 18, 19, 19, 20 and 21	High	Negligible	Minor Adverse	n/a	Minor Adverse
Impact 5: Driver Delay (Highway Geometry)	Link 11	Medium	Medium	Moderate Adverse	Single occupancy vehicle trips to be reduced by grouping employees into vehicles.	Minor Adverse
	Link 12	High	Low	Moderate Adverse		Minor Adverse
Impact 6: Driver Delay (Road Closures)	Little Clacton Road	Low	High	Moderate Adverse	Potential measures could include the use of trenchless technologies is possible, or alternatively: • Temporary widening to allow shuttle working; • Agreeing timing of works and other road works; and • Implementing diversion signing.	Negligible
	Damant's Farm Lane		Low	Negligible	n/a	Negligible
	Golden Lane		Low			
	Swan Road		Low			

Potential impact	Receptor	Sensitivity	Magnitude of impact	Pre-mitigation effect	Mitigation measures proposed	Residual effect
	Wolves Hall Lane		Negligible			
	Spratts Lane		Low			
	Barlon Road		Negligible			
	Ardleigh Road		Low			
Operation						
No significant effects.						
Decommissioning						
Decommissioning strategies have not yet been finalised; however, the effects are expected to be no greater than those of construction.						

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