NORTH FALLS

Offshore Wind Farm

ENVIRONMENTAL STATEMENT

Chapter 27 Traffic and Transport

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NORTH FALLS
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Glossary of Acronyms

AIL	Abnormal Indivisible Load
BEIS	Department for Business, Energy & Industrial Strategy
CEA	Cumulative Effect Assessment
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
DESNZ	Department for Energy Security and Net Zero
DMRB	Design Manual for Roads and Bridges
EATM	Environmental Assessment of Traffic and Movement
EEAST	East of England Ambulance Service Trust
EIA	Environmental Impact Assessment
ES	Environmental Statement
ESDAL	Electronic Service Delivery for Abnormal Loads
ETG	Expert Topic Group
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
PR1	Priority 1
PR2	Priority 2
PRoW	Public Rights of Way
RTRA	Road Traffic Regulation Act
TA	Transport Assessment
TMA	Traffic Management Act
TS	Transport Statement
TTSA	Traffic and Transport Study Area

Glossary of Terminology

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 export cables come ashore at Kirby Brook.
Landfall compound	Compound at landfall within which horizontal directional drill (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 route	Onshore route within which the onshore export cables and associated infrastructure would be located.
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 works area	Area within which all temporary and permanent works associated within the onshore substation are located, including onshore substation, construction compound, access, landscaping, drainage and earthworks.
Relevant Highway Authorities	The term relevant highway authorities for the Project includes all highway authorities within the traffic and transport study area, namely, Essex County Council and National Highways.
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.
Temporary 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 where required.
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 Environmental Statement (ES) 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 3.1):

   - ES Chapter 20 Onshore Air Quality (Document Reference: 3.1.22);
   - ES Chapter 26 Noise and Vibration (Document Reference: 3.1.28);
   - ES Chapter 28 Human Health (Document Reference: 3.1.30);
   - ES Chapter 31 Socio Economics (Document Reference: 3.1.33); and
   - ES Chapter 32 Tourism and Recreation (Document Reference: 3.1.34).

4. Additional information to support the traffic and transport assessment includes:

   - ES Appendix 27.1 Transport Assessment (TA) (Document Reference: 3.3.64);
   - ES Appendix 27.2 Abnormal Indivisible Load Access Report (Document Reference: 3.3.65);
   - ES Appendix 27.3 Inter-relationships (Document Reference: 3.3.66); and
   - ES Appendix 27.4 Traffic and Transport Consultation (Document Reference: 3.3.67).

27.2 Consultation

5. Consultation with regard to traffic and transport has been undertaken in line with the general process described in ES Chapter 6 EIA Methodology (Document Reference: 3.1.8). The key elements to date have included scoping and the ongoing technical consultation via the traffic and transport Expert Topic Group (ETG) meetings with the relevant highway authorities (Essex County Council and National Highways). The feedback received has been considered in preparing the ES. ES Appendix 27.4 Traffic and Transport Consultation (Document Reference: 3.3.67) provides a summary of how the consultation responses received to date have influenced the approach that has been taken.

6. This chapter has been updated following the consultation on the Preliminary Environmental Information Report (PEIR) in order to produce the final assessment. Full details of the consultation process are presented in the Consultation Report as part of the Development Consent Order (DCO) application.

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 has been agreed with the relevant highway authorities (see ES Appendix 27.4 (Document Reference: 3.3.67)).

8. The extent of the TTSA is shown in ES Figure 27.1 (Document Reference: 3.2.23). The TTSA is divided into 46 separate highway sections known as links, which are sections of road with similar characteristics and traffic flows. In total, the TTSA comprises of approximately 92km of highway network. The 46 links are notated 1 to 48, noting that some links have been omitted during the development of the Project.

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 ES Chapter 6 EIA Methodology (Document Reference: 3.1.8).

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 27.1. These are based on project parameters described in ES Chapter 5 Project Description (Document Reference: 3.1.7), which provides further details regarding specific activities and their durations.

12. The main grid connection options considered in the ES are outlined below:

    - Option 1: Onshore electrical connection at a National Grid connection point within the Tendring peninsula of Essex, with a project alone onshore cable route and onshore substation infrastructure.

- Option 2: Onshore electrical connection at a National Grid connection point within the Tendring peninsula of Essex, sharing an onshore cable route and onshore duct installation (but with separate onshore export cables) and co-locating separate project onshore substation infrastructure with Five Estuaries Offshore Wind Farm ('Five Estuaries').
- Option 3: Offshore electrical connection, supplied by a third party.

13. Grid connection Option 2 is considered the realistic worst case scenario for the onshore ecology assessment because the build out requires four sets of cable ducts and associated joint bays to be installed, impacting upon the largest footprint of the three grid connection options.

14. Under Option 2 the Project's onshore infrastructure comprises the following elements:

- Landfall, where the offshore export cables are brought ashore;
- Onshore cable route, which includes space for temporary works for the installation of cable ducts and buried onshore export cables, including areas for temporary construction compounds (TCCs), construction and operation and maintenance accesses (including Bentley Road improvement works);
- Onshore substation, proposed to be located west of Little Bromley;
- Onshore substation works area, which includes land required for temporary construction, export cables, means of access, drainage, landscaping and environmental mitigation for the onshore substation;
- The search area for the East Anglia Connection Node (EACN) (the Project's National Grid connection point), within which will be located the Project's National Grid substation connection works.

15. Collectively, the footprint of the Project's onshore infrastructure is referred to herein as the 'onshore project area', and is shown on ES Figure 5.2 (Document Reference: 3.2.3). The Project's onshore infrastructure outlined above is proposed to be located entirely within the Tendring peninsula of Essex.

16. The onshore parameters for the Project described in ES Chapter 5 Project Description (Document Reference: 3.1.7) and summarised in Table 27.1 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 from these overarching parameters.

17. Traffic demand has been forecast by applying a 'first principles' approach. The first principles approach derives 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.

    Detailed derivation and distribution of the traffic numbers and worst case parameters are provided within the TA (ES Appendix 27.1 (Document Reference: 3.3.64)).

Table 27.1 Realistic worst-case scenarios of effects arising from development of North Falls alone – Option 2 (installation of ducts for a second project)

Potential impact	Parameter	Notes
Construction		
Impact 1: Severance Impact 2: Amenity Impact 3: Highway Safety Impact 4: Driver Delay	The Project: Earliest construction commencement year = 2027 Landfall: Construction duration = 13 months Landfall construction compound dimensions = 75 x 150m No. of landfall HDD locations = 1 No. of transition joint bays = 2 Individual Transition Joint Bay (TJB) dimensions = 4 x 15m Onshore cable route: Onshore cable route works duration = 18 – 27 months, of which cable pull = 12 months No. of temporary construction compounds = 11 Temporary construction compound footprint = 150 x 150m (main) to 100 x 100m (satellite). Length of onshore cable route = Up to 24km Nominal onshore cable route width = 72m (open cut trenching), 90m (trenchless crossings), 130m (complex trenchless crossings) No. of circuits = 2 No. of cable trenches = 4 Cable trench dimensions = 3.5 – 1.2 x 2m (tapered top to bottom) Volume of cement bound sand (CBS) per m of trench = 0.47m^3 Haul road = 6m (10m wide total including verges, drainage and passing places) x up to 24km x 0.30m (width at surface x length x depth) Length of temporary access roads = 8.1km No. of joint bays = 96 – 192 (approximately every 500m) buried below ground Dimensions of joint bays (underground infrastructure) = 15 x 4m (length x width) Trenchless crossing compound dimensions = 75 x 150m Onshore substation: Construction duration = 21-27 months No. of onshore substations = 1	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 hourly traffic flows that could occur during the construction phase. Hourly flows are calculated from peak daily traffic flows. The assessment of all traffic and transport impacts presented within this chapter has been informed by the Projects' worst case peak construction traffic demand. Peak construction traffic demand is likely to occur for a short duration within the overall construction programme. Average traffic flows are provided within Table 27.16 (together with peak flows) to provide stakeholders and interested parties with an appreciation of 'typical' demand.

Potential impact	Parameter	Notes
	Volume of imported concrete = 7,957m^3 Length of fencing = 1,030m Tonnage of steel reinforcement = 796 tonnes Volume of chippings = 5,508m^3 Length of drainage = 2,147m Tonnage of structural steel = 507 tonnes Roofing and cladding area = 5,700m^2 Volume of bituminous road = 6,780m^3 Imported engineering fill = 64,771m^3 <u>A120 and Bentley Road improvement works:</u> Construction duration = 6 - 9 months HGV movements = Peak 50 HGV trips per day, average 20 HGV trips per day Light Vehicle (LV) movements = Peak 76 LV trips per day, average 41 LV trips per day (assuming an employee to vehicle ratio of 1.5 employees per vehicle). <u>Associated peak movements and routeing (for landfall, onshore cable route and onshore substation):</u> Peak HGV movements = 494 HGV trips per day (inclusive of contingencies for incidental deliveries) Peak LV movements = 1089 employee trips, 726 LV trips per day (applying an employee to vehicle ratio of 1.5 employees per vehicle) 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 an average of 1.5 employees per vehicle 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.	

Potential impact	Parameter	Notes
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 ES Appendix 27.4 (Document Reference: 3.3.67)), no operational scenarios will be assessed within this traffic and transport impact assessment. In support of this approach, section 27.6.2 provides an overview of the quantum of operational traffic movements and associated operational access strategy.		
Decommissioning		
No final decision has yet been made regarding the final decommissioning policy for the onshore project infrastructure including landfall, onshore cable route, 400kV cable route 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 impacts will be no greater than those identified for the construction phase.		

27.3.3 Summary of mitigation embedded in the design.

18. This section outlines the embedded mitigation relevant to the traffic and transport assessment, which has been incorporated into the design of North Falls (Table 27.2). Where other mitigation measures are proposed, these are detailed in the impact assessment (Section 27.6), where applicable.

Table 27.2 Embedded mitigation measures.

Parameter	Mitigation measures embedded into North Falls design
Construction phase	
Construction Traffic Management Plan	For the purposes of securing the traffic and transport assessment envelope, an Outline Construction Traffic Management Plan (OCTMP) (Document Reference: 7.16) is submitted with the DCO application. The OCTMP contains details of measures to control, monitor and enforce HGV movements and provides details of the mechanisms for managing design of accesses and highway works. The OCTMP also includes '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 OCTMP (Document Reference: 7.16) which is secured by DCO Requirement.
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 minimise 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 ES Figure 27.2 (Document Reference: 3.2.23).
	Haul Road A temporary haul road would be implemented 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 route 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 (ES Appendix 27.1 (Document Reference: 3.3.64)) and shown in ES Figure 27.2 (Document Reference: 3.2.23). In summary, it includes: • Little Clacton Road. To avoid construction traffic access via Little Clacton Road, Great Holland, vehicles would access from access (notated AC) AC-2 and travel north on the temporary haul road crossing (notated CR) over Little Clacton Road (CR-1) 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 (through AC-4). Traffic would then travel on the temporary haul road north from AC-4, crossing over at crossing points CR-2, CR-3, CR-4 and CR-5. • 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 AC-6 or AC-7 and travel south on the temporary haul road, crossing over at crossing points CR-8(A or B), CR-7 and CR-6. • Payne's Lane, Spratts Lane, Barlon Road and Ardleigh Road. To avoid construction traffic accessing via these narrow roads, all traffic would access from the east via access AC-9 or AC-11 and travel west on the temporary haul road, crossing over at crossing points CR-9(A), CR-10(A), CR-11(A) and AC-12 (Access

Parameter	Mitigation measures embedded into North Falls design
	AC-12 would be managed as a crossing with the exception of a limited number of movements from AC-12 along Ardleigh Road to AC-13 for drainage works). These measures are captured in the OCTMP (Document Reference: 7.16).
	Landfall access AC-1 and onshore cable route access AC-2, vehicle routeing strategy To avoid the necessity for HGVs to travel via the B1033 and Thorpe-le-Soken towards the landfall access (AC-1) and onshore cable route (AC-2) it was agreed with Essex County Council (at a meeting on the 5 May 2022, detailed in ES Appendix 27.4 (Document Reference: 3.3.67)) that all HGVs would be routed towards the A133.
	Onshore cable route, access AC-4 and AC-5, vehicle routing strategy To avoid the necessity for HGVs to travel via the B1035 and Tendring Green and Tendring towards access AC-4 and AC-5, it was agreed with Essex County Council (at a meeting on the 5 May 2022 (as detailed in ES Appendix 27.4 (Document Reference: 3.3.67)) that all HGVs would be routed south on the B1035 and then west on the B1033 towards the A133.
	Onshore cable route and onshore substation access AC-9, AC-10 and AC-11, vehicle routeing strategy To avoid the necessity for HGVs to travel via Little Bromley towards the onshore cable route and onshore substation access (AC-9, AC-10 and AC-11), all HGVs would be routed south on Bentley Road, towards the A120.
	Drainage works access AC-13, vehicle routeing strategy To avoid the necessity for HGVs to travel via Little Bromley or Great Bromley vehicles would travel from AC-12 a short distance (~350m) along Ardleigh Road to AC-13.

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 ES Figure 27.4 (Document Reference: 3.3.67):
	• The railway line towards Walton-on-the-Naze and Frinton-on-Sea.
	• All A and B roads and the following local roads:
	  ○ Little Clacton Road;
	  ○ Golden Lane;
	  ○ Lodge Lane
	  ○ Wolves Hall Lane;
	  ○ Stones Green Road
	  ○ Bentley Road; and
	  ○ Ardleigh Road.

Road closures	Where road closures are planned to install the Project's cables under local roads, it is proposed that access would be maintained through the closure for pedestrians and cyclists.
Crossing private access tracks	To avoid disruption to transport users whilst the Project's cables are installed under Lodge Lane and Spratts Lane, minimal impact localised temporary road diversions would be established. This would be via existing private tracks or a temporary access track within the onshore project area.
Bentley Road/A120 highway improvements	To facilitate the safe and efficient movement of construction traffic along Bentley Road to AC-9, AC-10 and AC-11 a series of highway improvements have been discussed and agreed with Essex County Council and National Highways (as detailed in ES Appendix 27.4 (Document Reference: 3.3.67)). These improvements comprise of: • Widening of the junction of the A120 and Bentley Road; • Widening of Bentley Road to between 6.0 and 6.5m in width; • A temporary 40mph speed limit from the junction with the A120 to the existing 40mph speed limit to the south of Little Bromley; and • Provision of a temporary offroad footway/cycleway along Bentley Road from the junction with the A120 to the north of AC-9, AC-10 and AC-11. These measures are captured in the OCTMP (Document Reference: 7.16) and described in more detail within the TA (ES Appendix 27.1 (Document Reference: 3.3.64)).

Parameter	Mitigation measures embedded into North Falls design
Operational phase	
Onshore substation access OA-39, vehicle routeing strategy	To provide for operational HGVs to periodically visit the onshore substation to carry out routine checks and maintenance, it may be necessary to implement 'access management measures', such as the use of escort vehicles to allow occasional HGV accessing to the onshore substation to pass oncoming traffic, reducing the potential for delays. Further details of the proposed operational access strategy are provided within section 27.6.2.

27.4 Assessment methodology

27.4.1 Legislation, guidance and policy

27.4.1.1 National Policy Statements

19. The assessment of likely significant effects upon traffic and transport has been made with specific reference to the relevant legislation and guidance, of which the principal policy document with respect to the Nationally Significant Infrastructure Projects (NSIP) are the NPS. Those relevant to the Project are:

- Overarching NPS for Energy (EN-1) (Department of Energy Security and Net Zero) (DESNZ, 2023a);
- NPS for Renewable Energy Infrastructure (EN-3) (DESNZ, 2023b);
- NPS for Electricity Networks Infrastructure (EN-5) (DESNZ, 2023c);

20. The specific assessment requirements for traffic and transport, as detailed in the NPS, are summarised in Table 27.3 together with an indication of the section of the ES chapter where each is addressed.

Table 27.3 NPS assessment requirements

NPS Requirement	NPS Reference	ES Reference
NPS for Energy (EN-1)		
If a project is likely to have significant transport implications, the applicant's ES should include a transport appraisal. The Department for Transport's Transport Analysis Guidance (TAG) and Welsh Governments WelTAG provides guidance on modelling and assessing impacts of transport schemes.	EN-1 paragraph 5.14.5	This chapter and the accompanying TA (ES Appendix 27.1 (Document Reference: 3.3.64)) have been produced in accordance with current transport guidance (referenced later within Section 27.4.1).
Applicants should consult with National Highways and Local Highways Authorities as appropriate on the assessment and mitigation to inform the application to be submitted.	EN-1 paragraph 5.14.6	As detailed in Section 27.3 the scope of the assessment presented in the chapter and supporting TA (ES Appendix 27.1 (Document Reference: 3.3.64)) have been discussed and agreed with the relevant highway authorities.
The applicants should prepare a travel plan including demand management and monitoring measures to mitigate transport impacts. The applicants should also provide details of proposed measures to improve access by active, public and shared transport.	EN-1 paragraph 5.14.7	Section 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 (Document Reference: 7.16) is provided in support of the DCO application.

NPS Requirement	NPS Reference	ES Reference
		The OCTMP includes outline travel plan measures, which would be developed further in consultation with the relevant highway authorities prior to the commencement of the Project.
The assessment should also consider any possible disruption to services and infrastructure (such as road, rail and airports).	EN-1 paragraph 5.14.8	Section 27.6 contains an assessment of the potential effects on the transport network associated with North Falls. No significant effects upon other transport services or infrastructure are anticipated.
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.		

27.4.1.2 Other legislation, policy and guidance

21. In addition to the NPS, there are a number of pieces of legislation, policy and guidance applicable to the assessment of traffic and transport and these are outlined further in section 27.4.1.2.1 to 27.4.1.2.2.

22. Further detail is provided in ES Chapter 3 Policy and Legislative Context (Document Reference: 3.1.5).

27.4.1.2.1 Local Planning Policy

23. 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.

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

25. Table 27.4 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 ES.

Table 27.4 Relevant local planning policies

Document	Policy	Policy / Guidance purpose	ES 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*	An OCTMP (Document Reference: 7.16) is provided in support of the DCO application. The OCTMP includes details of travel plan measures, which would be developed further in consultation with the relevant highway authorities prior to the commencement of the Project.

Document	Policy	Policy / Guidance purpose	ES Consideration
		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"*	Section 27.6 and the accompanying TA (ES Appendix 27.1 (Document Reference: 3.3.64) detail an assessment of the Project's traffic and transport effects.
	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 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 (ES Appendix 27.1 (Document Reference: 3.3.64) provides details of the outline designs of access, crossing and highway works. The TA also includes a Stage 1 Road Safety Audit for all the outline designs.

Traffic Management Act 2004

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

27. 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.

28. 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 (NRSWA).

New Roads and Street Works Act 1991

29. NRSWA 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.

30. 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

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

32. 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

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

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

27.4.1.2.2 Further Policy and Guidance

The Strategic Road Network and the Delivery of Sustainable Development

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

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

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

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

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

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

38. Circular 01/2022 requirements have been discussed with National Highways and are addressed within this ES and accompanying TA (ES Appendix 27.1 (Document Reference: 3.3.64)).

Environmental Assessment of Traffic and Movement

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

40. 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.

41. EATM 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 (PPG) - Travel Plans, Transport Assessment and Statements

42. For the purpose of assessing the effect of North Falls, the relevant PPG is 'Travel Plans, Transport Assessment (TA) and Statements' (henceforth referred to as the Transport PPG).

43. The Transport PPG (Department for Levelling Up, Housing and Communities, 2014) sets out the key principles to be adopted when developing a TA 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.

44. The Transport PPG key principles have shaped the development of this ES and accompanying TA (ES Appendix 27.1 (Document Reference: 3.3.64)) and can be seen throughout this chapter.

Further Technical Transport Guidance

45. Technical transport guidance has been used in the design of accesses / crossings and assessment of traffic impacts, this guidance is listed in Table 27.5.

Table 27.5 Supplementary technical transport guidance

Document	Purpose/Application
Design Manual for Roads and Bridges (DMRB) CD 123 – Geometric design of at-grade priority and signal-controlled junctions (National Highways, November 2021)	The DMRB has been prepared for trunk roads and motorways and has been adopted as best practice within this assessment for the design of accesses.
DMRB GG 119 - Road Safety Audit (Highways England, 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 main road speeds are below 40mph.
Manual for Streets 2 (Chartered Institute of Highways and Transportation, 2010)	
Traffic Signs Manual Chapter 8 Traffic Safety Measures and Signs for Road Works and Temporary Situations Part 1: Design (Department for Transport, 2009)	Provides guidance upon temporary traffic management that will be used to inform the assessment of driver delay impacts related to temporary road closures.

27.4.2 Data and information sources

27.4.2.1 Site Specific Surveys

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 27.6, full details are presented within the TA (ES Appendix 27.1 (Document Reference: 3.3.64)).

Table 27.6 Available sources of TTSA data

Data Set	Spatial Coverage	Date	Notes
Automatic Traffic Counts	24 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 (ES Appendix 27.1 (Document Reference: 3.3.64)).
	3 locations within the TTSA	Traffic flow data obtained for a period of seven days (20/09/2022 to 26/09/2022)	Traffic counts commissioned by Five Estuaries and were shared with the Applicant which provide classified hourly and daily count and speed data. Full

Data Set	Spatial Coverage	Date	Notes
			details are provided within the TA (ES Appendix 27.1 (Document Reference: 3.3.64)).
Pedestrian and cycle counts	One site within the TTSA on Bentley Road	Pedestrian and cycle counts for a period of four days (22/11/23 to 25/11/23).	Pedestrian and cyclist traffic counts commissioned by National Grid for the Norwich to Tilbury project and were shared with the Applicant which provide counts for pedestrians and cyclists on Bentley Road. Full details are provided within the TA (ES Appendix 27.1 (Document Reference: 3.3.64))

27.4.2.2 Other Available Sources

47. Other sources that have been used to inform the assessment are listed in Table 27.7.

Table 27.7 Site specific survey data

Data Set	Source	Spatial Coverage	Year	Notes
Traffic flows	Road Traffic Statistics (Department for Transport, 2022)	15 locations within the TTSA	Annual average daily traffic flows were obtained for 2022.	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 19 of the 46 links within the TTSA. Full details of the data and application in the TTSA is presented in the TA (ES Appendix 27.1 (Document Reference: 3.3.64)).
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 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 (ES Appendix 27.1 (Document Reference: 3.3.64)) 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 August 2015 to 31 July 2023.	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

Data Set	Source	Spatial Coverage	Year	Notes
				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 (ES Appendix 27.1 (Document Reference: 3.3.64)).
Public Rights of Way (PRoW)	Essex County Council	The extent of the TTSA.	n/a	Geographic Information Systems layer from Essex County Council.
National Cycle Network Routes	Sustrans (Sustrans, 2024)	The extent of the TTSA.	n/a	Map of the national cycle network from Sustrans.

48. The desk-based assessment of data sources was also supported by site visits 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

49. ES Chapter 6 EIA Methodology (Document Reference: 3.1.8) 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 EATM) to inform a significance evaluation.

50. 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 ES Appendix 27.4 (Document Reference: 3.3.67)).

51. 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) (detailed within ES Appendix 27.4 (Document Reference: 3.3.67)), 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.

52. With regard to driver delay (capacity), further engagement was undertaken to with the relevant highway authorities to agree the scope of the assessment.

53. During this engagement it was agreed with the relevant highway authorities at an ETG meeting on the 05 September 2023 (detailed within ES Appendix 27.4 (Document Reference: 3.3.67)) that no detailed assessment of driver delay (capacity) would be required. The rationale for this agreement was a commitment by the Applicant to ensuring that 80% of employees arrive prior to the morning network peak hour (07:15 to 08:15) and depart before or after the evening peak hour (16:30 to 17:45). Notwithstanding, the supporting TA (ES Appendix 27.1 (Document Reference: 3.3.64)) provides details of hourly traffic flows in support of this agreed approach.

54. This commitment is captured within the OCTMP (Document Reference: 7.16) which is secured by a DCO Requirement. Noting this agreement and commitment, no further assessment of driver delay (capacity) is presented.

55. With regard to driver delay (highway geometry), noting the commitments to widening of Link 4 (Table 27.2) all other links within the TTSA are assessed to be wide enough for vehicles to pass and therefore no further assessment of the Projects effects upon highway geometry is presented.

56. 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 ES Chapter 26 Noise and Vibration (Document Reference: 3.1.28), ES Chapter 20 Air Quality (Document Reference: 3.1.22), and ES Chapter 28 Human Health (Document Reference: 3.1.30) respectively.

27.4.3.1 Abnormal Loads

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

58. Loads that require Special Order 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 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).

59. 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.

27.4.3.1.1 Special Order AILs

60. The Applicants commissioned Wynns Ltd (consulting engineers specialising in the transportation of AILs) to undertake an AIL study assessing the effects of transporting the transformers to inform the management measures required for the transportation of AILs for the Project. The AIL study is provided as ES Appendix 27.2 (Document Reference: 3.3.65).

61. The AIL study has identified that the load could come from the nearest Port of Harwich and travel to the onshore substation via a preferred route of the A120 and Bentley Road. The load would then turn off Bentley Road onto the temporary haul road toward the onshore substation. National Highways (responsible for consenting AIL movements) have provided agreement in

principle to this proposed route (outlined in ES Appendix 27.2 (Document Reference: 3.3.65)).

62. As agreed with National Highways, to allow the AIL to traverse between the A120 and Bentley Road, the AIL would contraflow along the A120 for a short distance (under police escort). The AIL study provided as ES Appendix 27.2 (Document Reference: 3.3.65) includes a drawing showing that the AIL vehicle can complete this contraflow manoeuvre within the extents of the widened A120 and Bentley Road junction.

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

27.4.3.1.2 Non – Special Order Abnormal Loads

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

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

27.4.3.1.3 Abnormal Load Controls

66. To ensure that potential impacts associated with the transportation of all AILs are managed and coordinated, the OCTMP (Document Reference: 7.16) (which is secured by DCO Requirement) includes a commitment that, prior to the movement of any AILs, the contractor would be required to submit notifications to the relevant authorities (police, highway authorities and bridge/ structure owners) through the Electronic Service Delivery for Abnormal Loads (ESDAL). The ESDAL process would detail which proposed routes would be used and ensure the timings would be co-ordinated and potential effects would not be significant.

27.4.3.2 Definitions

67. 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 TA are provided in Section 27.4.3.2.1 and Section 27.4.3.2.2 respectively.

27.4.3.2.1 Sensitivity

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

69. Table 27.8 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 27.8 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 (Highway Geometry)	Drivers and passengers in vehicles	Highway links and junctions.
Driver Delay (Road Closures)		
Abnormal Loads	All road users	Highway links and junctions.

Severance and amenity

70. 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.

71. Definitions of the different sensitivity levels for highway traffic receptors are given in Table 27.9.

Table 27.9 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 EATM 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.

72. The definitions of the sensitivity levels based on the highway traffic receptors defined in Table 27.9 have been applied to all links in the TTSA and are detailed in Section 27.5.2.

Highway Safety

73. To assess the effects on highway safety, the TA (ES Appendix 27.1 (Document Reference: 3.3.64)) 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.

74. These sites (shown in ES Figure 27.3 (Document Reference: 3.2.23)) 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 (Highway Geometry)

75. 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.

76. Table 27.2 outlines a commitment to widening of Bentley Road (Link 4), therefore within the TTSA this is not identified as being of constrained width and no further consideration of driver delay (highway geometry) is provided.

Driver Delay (Road Closures)

77. 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.

78. The onshore cable route would cross approximately 21 public roads; of these, it is proposed that cables for North Falls would be installed under 18 roads using trenchless technologies (allowing the roads to remain open at all times).

79. ES Figure 27.4 (Document Reference: 3.2.23) 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.

80. The four 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.

27.4.3.2.2 Magnitude of impact

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

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

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

> *"Traffic forecasting is not an exact science, and the accuracy of projections is open to debate. It is generally accepted that accuracies greater than 10% are not achievable. It should also be noted that the day-to-day variation of traffic on a road is frequently at least + or -10%. At a basic level, it should therefore be assumed that projected changes in traffic of less than 10% create no discernible environmental impact."*

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

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

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

86. The following sub-sections provide detail of the adopted methodology for assessing each of these impacts.

Severance

87. 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).

88. EATM suggests that changes in total traffic flows of 30%, 60% and 90% are considered to be slight, moderate, and substantial respectively. These are transposed into the EIA magnitude of impact matrix (Table 27.10) as less than 30% as negligible, 30 – 60% as low, 60 – 90% as medium and greater than 90% as high respectively. However, EATM notes that these figures should be used cautiously, and the assessment should pay full regard to specific local conditions, e.g. sensitivity of adjacent land uses, prevalence of vulnerable people, whether or not crossing facilities are provided, traffic signal settings, etc.

89. 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

90. 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).

91. 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.

92. EATM suggests that a tentative threshold of a doubling of total traffic flow or the HGV component may lead to a negative effect upon amenity. However, EATM notes that this threshold should be used cautiously, and the assessment should pay full regard to specific local conditions.

Highway Safety

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

- The ‘traditional’ approach – whereby the assessor reviews historic collision data to understand existing trends which could be exacerbated by additional traffic from an examination of collision rates or clusters, etc; or

- Safe System approach – whereby a study area is identified using historic collision data (similar to the traditional approach) and then objective modelling techniques are used to establish a baseline and assess the effects of additional traffic.

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

95. In this context, the approach to considering road safety effects was discussed and agreed with the relevant highway authorities (sees ES Appendix 27.4 (Document Reference: 3.3.67)) and comprises of review of the existing collisions occurring within the TTSA to identify any areas of the highway with concentrations of collisions (clusters) with similar patterns and links with collision rates higher than the national average (for comparable roads). These sites are considered to be sensitive to changes in traffic flows (sensitive receptors) and therefore a more detailed analysis of significance has been undertaken in the context of the forecast changes in traffic. The magnitude of impact assessment is informed by professional judgement drawing upon the experience of qualified road safety professionals, informed by the quantum and types of collisions and forecast change in traffic flows and composition.

96. In addition to considering existing patterns of collisions, the TA (ES Appendix 27.1 (Document Reference: 3.3.64)) outlines how any new risks associated with the formation of new points of access to the Projects would be managed and mitigated.

Driver Delay (Road Closures)

97. Road users are likely to experience delays where road or lane closures may be required. Roadworks will 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 27.6.1.5 and shown in ES Figure 27.4 (Document Reference: 3.2.23).

98. 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 length and duration of the detour that may be required to close the road.

99. 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.

100. The assessment framework derived from Chapter 8 of the Traffic Signs Manual 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)

101. Table 27.10 details the assessment framework for magnitude thresholds adapted from EATM. These thresholds are guidance only and provide a starting point by which transport data will inform a local analysis augmented by professional judgement of the magnitude of impact.

Table 27.10 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 (Road Closures)	No or single lane road closure required, or delays of less than two minutes.	Delays two to 10 minutes.	Delays over 10 minutes and a review based upon the quantum of vehicles, scheduled buses and pedestrian and cycle traffic.	

27.4.3.3 Significance of effect

102. The assessment of significance of an effect is a function of the sensitivity of the receptor and the magnitude of the impact (see ES Chapter 6 EIA Methodology (Document Reference: 3.1.8) for further details). The determination of significance is guided by the use of a significance of effect matrix, as shown in Table 27.11. Definitions of each level of significance are provided in Table 27.12.

103. 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.

104. Should major or moderate effects be identified within the assessment, these would be regarded within this chapter as significant. Should the assessment indicate any likely significant effect, mitigation measures would be 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.

105. The assessment of likely significant effects has been undertaken assuming implementation of embedded mitigation and project commitments made as part of the design process. Where, following this assessment, likely significant effects (moderate or major) are identified, additional mitigation measures are then proposed. A final assessment of the residual effects remaining following implementation of these additional mitigation measures is then made.

Table 27.11 Significance of effect matrix

Sensitivity	Adverse magnitude				Beneficial magnitude			
	High	Medium	Low	Negligible	Negligible	Low	Medium	High
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 27.12 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

106. The CEA considers other plans, projects and activities that may result in cumulation with North Falls. ES Chapter 6 EIA Methodology (Document Reference: 3.1.8) provides further details of the general framework and approach to the CEA.

107. 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 within the planning process with design information in the public domain.

27.4.5 Transboundary effects assessment methodology

108. The transboundary assessment considers the potential for transboundary effects to occur on traffic and transport receptors as a result of North Falls; either those that might arise within the Exclusive Economic Zone (EEZ) of European Economic Area (EEA) states or arising on the interests of EEA states e.g., a non UK fishing vessel. ES Chapter 6 EIA Methodology (Document Reference: 3.1.8) provides further details of the general framework and approach to the assessment of transboundary effects.

109. For traffic and transport, no potential for transboundary effects have been identified and transboundary effects are not considered further within this chapter.

27.4.6 Assumptions and limitations

110. A comprehensive traffic data collection exercise has been undertaken, however, as identified by EATM:

"Traffic forecasting is not an exact science, and the accuracy of projections is open to debate. It is generally accepted that accuracies greater than 10% are not achievable. It should also be noted that the day-to-day variation of traffic on a road is frequently at least + or -10%. ..."

111. Where routine assumptions have been made in the course of undertaking the assessment, these are noted in Sections 27.5 to 27.10 and the accompanying TA (ES Appendix 27.1 (Document Reference: 3.3.64)).

112. Assumptions have needed to be made in relation to data used within the CEA in relation to other plans and projects, where either there is limited information the public domain, or where interpretation is required for the information which has been published in terms of how it relates to North Falls.

113. In particular, this applies to the data used when assessing the cumulative impacts of North Falls with the Norwich to Tilbury project. North Falls has remained in regular and on-going dialogue with National Grid in relation to Norwich to Tilbury. Through this dialogue, in December 2023 National Grid provided North Falls with initial forecast for the numbers of peak construction vehicles that could be routed via Bentley Road and the A120. These numbers were provided by National Grid to North Falls in order to undertake cumulative assessment of the Project in relation to Norwich to Tilbury and other projects including Five Estuaries, and form the basis of the assessment presented in section 27.8.3.2.

114. Subsequent to this, North Falls Offshore Wind Farm Limited (NFOW) have noted that the Norwich to Tilbury PEIR documentation, published on 10 April 2024, includes different numbers to those provided to North Falls in December 2023. NFOW have raised this discrepancy with National Grid are querying their derivation and engaging with National Grid to reach an agreement on the issue.

115. While these discussions are ongoing, NFOW have used the numbers provided in December 2023 within the cumulative assessment (presented in this ES chapter) until the queries regarding the numbers published in the Norwich to Tilbury PEIR are resolved, as at the time of writing these represent NFOWs understanding of the most realistic representation of National Grid's vehicle movement requirements.

27.5 Existing environment

116. 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.

117. Details of link characteristics for all 46 links within the TTSA are detailed in the following sections:
    - Estimated future traffic flows (Table 27.16);
    - An audit of the sensitive receptors in the TTSA (Section 27.5.3); and
    - A detailed review of the baseline highway safety conditions (Section 27.5.4).

27.5.1 Existing highway network

118. This section provides an overview of the baseline characteristics of the 46 links forming the TTSA. These links are illustrated in ES Figure 27.1 (Document Reference: 3.2.23).

119. 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.

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

121. 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.

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

123. 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.

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

125. 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’.

126. 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

127. 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.

128. 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.

129. 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

130. From the main PR1 Roads, in order to access all of the proposed construction access points for North Falls, construction vehicles would need to utilise the local road network. ES Figure 27.2 (Document Reference: 3.2.23) depicts the proposed access locations.

131. 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.
- The B1035 is a single carriageway ‘B’ road that links Thorpe Green to the south and Manningtree to the north with an intersection with the A120.
- 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.

132. These PR2 roads offer connectivity to minor roads along the onshore cable route.

27.5.2 Traffic flow data

133. Traffic flow data for all links within the TTSA have been informed by traffic counts. The TA (ES Appendix 27.1 (Document Reference: 3.3.64)) contains full details of these counts and a summary of the baseline traffic flows for all links within the TTSA.

134. 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.

135. These data (presented within the TA, ES Appendix 27.1 (Document Reference: 3.3.64)) 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.

136. 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.

137. 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 represents 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

138. 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 27.9 provides broad definitions of the different sensitivity levels (derived from EATM) which have been applied to the assessment.

139. A desktop exercise augmented by site visits has been undertaken to identify the sensitive receptors in the TTSA. Table 27.13 provides broad definitions of the different sensitivity levels (derived from EATM) which have been applied to the assessment. All 46 links within the TTSA have been assessed and assigned a sensitivity. ES Figure 27.5 (Document Reference: 3.2.23) illustrates these routes graphically.

Table 27.13 Link based sensitive receptors.

Link ID.	Link Description	Link sensitivity	Rationale for applied link sensitivity
1	A120 from the A12 to the A133	Negligible	A main A road, the primary function of which is to provide a bypass of Colchester for vehicular traffic.
2	A120 from the A133 to Harwich Road	Negligible	A main A road, the primary function of which is to provide route for vehicular traffic between Harwich and Colchester
3	A120 from Harwich Road to Bentley Road	Negligible	A main A road, the primary function of which is to provide route for vehicular traffic between Harwich and Colchester
4	Bentley Road from the A120 to Little Bromley	Low	The link is a PR2 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential developments.
5	Bentley Road through Little Bromley	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	B1035 south of the A120 to Tendring Green	Low	The link is a PR2 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic development.
7	Bromley Road north of Little Bromley	Low	The link is a PR2 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential developments.
8	Bromley Road south of the A137	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	A137 east-west through Lawford	Medium	The link is a PR1 main A road. There is a low concentration of sensitive receptors along the link

Link ID.	Link Description	Link sensitivity	Rationale for applied link sensitivity
			including residential properties and community centre. Limited separation from traffic is provided along the link.
10	A137 north-south through Lawford	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 shop. Footways are provided on both sides of the road in the vicinity of the sensitive receptors.
13	B1035 south of the B1352	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	B1035 north of the A120	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	A120 from Bentley Road to the B1035	Negligible	A main A road, the primary function of which is to provide a route for vehicular traffic between Harwich and Colchester.
16	A120 from the B1035 to Colchester Road	Negligible	A main A road, the primary function of which is to provide a route for vehicular traffic between Harwich and Colchester.
18	A120 from Colchester Road to the B1352	Negligible	A main A road, the primary function of which is to provide a route for vehicular traffic between Harwich and Colchester.
19	A120 from the B1352 to Parkeston Road	Negligible	A main A road, the primary function of which is to provide a route for vehicular traffic between Harwich and Colchester.
20	A133 south of the A120	Negligible	A main A road, the primary function of which is to provide a route for vehicular traffic from the main A120 to Clacton-on-Sea.
21a	A133 to Crown Lane	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.
21b	A133 from Crown Lane to the B1034	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	A133 south of the B1033 to Progress Way	Negligible	The link is a PR1 main A road, the primary function of which is to provide a route for vehicular traffic from the main A120 to Clacton-on-Sea. No sensitive receptors are noted along the link.
23	A133 south of Progress Way to the B1032	Negligible	The link is a PR1 main A road, the primary function of which 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	B1032 east of the A133 to Holland Road	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	B1032 from Holland Road to Kings Parade	High	
26	B1032 from Kings Parade to the south of Great Holland	Low	The link is a PR2 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential developments.

Link ID.	Link Description	Link sensitivity	Rationale for applied link sensitivity
27	B1032 through Great Holland	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	B1033 north of the B1032 through Kirby Cross to Pork Lane	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	B1033 from Pork Lane to the south of Thorpe-le-Soken	Low	The link is a PR1 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential developments.
30	B1033 south of the B1414 through Thorpe-le-Soken	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	B1414 east of the B1033	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	B1033 north of the B1414 through Thorpe-le-Soken	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	B1033 from the B1441 to the B1035 through Weeley	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	B1033 from the A133 to the B1441	Low	The link is a PR1 Road. There are few sensitive receptors along the link.
35	B1035 north of B1033 to Whitehall Lane	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	B1035 through Tendring Green from Parsonage Lane to Stones Green Road	Low	The link is a PR2 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential development.
37	B1035 north of Whitehall Lane to Swan Road	Low	The link is a PR2 Road. No sensitive receptors are noted along the link.
38	B1035 through Goose Green	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

Link ID.	Link Description	Link sensitivity	Rationale for applied link sensitivity
			from traffic for pedestrians is provided by a narrow footway.
39	B1035 north of Swan Road to the south of Tendring	Low	The link is a PR2 Road. There are few sensitive receptors along the link, predominantly comprising of sporadic residential development.
40	B1035 through Tendring to Crown Lane	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.
41	Crown Lane	Low	There are few sensitive receptors along the link, predominantly comprising of sporadic residential developments. Two PRoW are intersected by the link.
42	B1035 from Crown Lane to Lodge Lane	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.
43	A133/Colchester Road from A133/Colchester Road roundabout to end of TTSA	Low	The link is a PR1 road. There are few sensitive receptors along the link with few accesses to residential and commercial development being located along the link.
44	B1441 (Progress Way) from A133/St Osyth Road/Progress Way Roundabout to B1414	High	The link is a PR2 road. There are concentrations of sensitive receptors along the link including residential properties, shops, a public house, places of worship, a village hall, a play area and a primary school. A footway is located along most of the link.
45	B1414 east of B1441 to B1033 in Thorpe-le-Soken	High	The link is a PR2 road. There are concentrations of sensitive receptors along the link including residential properties, shops and a railway station. A narrow footway is sporadically located along the link through areas with frontage development.
46	B1441 from B1414 to B1033 in Weeley	High	The link is a PR2 road. There are concentrations of sensitive receptors along the link including residential properties, shops, places of worship, a railway station and a primary school. A footway is located along most of the link.
47	A120 from Parkeston Roundabout to St Nicholas Roundabout	Low	A main A road, the primary function of which is to provide a route for vehicular traffic between Harwich and Colchester.
48	St John's Road from St Osyth Roundabout to end of TTSA	High	The link is a PR1 Road. There is a concentration of sensitive receptors along the link primarily comprising of residential properties, shops, takeaways and a garden centre. Separation from traffic for pedestrians is provided by footways on both sides of the road.

27.5.4 Highway safety

140. 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.

141. It was agreed during the traffic and transport ETGs with the relevant highway authorities (refers) that the highway safety review should examine the baseline collision data to identify those areas that are potentially sensitive to changes in traffic and that this review should include:

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

142. The TA (ES Appendix 27.1 (Document Reference: 3.3.64)) details an audit of the TTSA and provides a highway safety baseline including collision rates and cluster locations within an eight-year study period (2015-2023).

143. 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 27.14 and Table 27.15 respectively. The location of the clusters is also shown graphically in ES Figure 27.3.

Table 27.14 Collision clusters

Cluster Reference	Location	Number and type of collisions
Cluster 1	Ardleigh Crown Roundabout, A12/A120/A1232	There have been a total of 22 collisions within Cluster 1, these comprised five serious and 17 slight collisions. No fatal collisions were recorded.
Cluster 2	A120/A133 junction	There have been a total of 14 collisions within Cluster 2, these comprised four serious and eight slight collisions. Two fatal collisions were recorded.
Cluster 3	A133 roundabout junction, Frating	There have been a total of 13 collisions recorded within Cluster 3, these comprised two serious and 11 slight collisions. No fatal collisions were recorded.
Cluster 4	A133/B1029 junction	There have been a total of 14 collisions recorded within Cluster 4, these comprised five serious and nine slight collisions. No fatal collisions were recorded.
Cluster 5	A133/Shair Lane	There have been a total of four collisions recorded within Cluster 5, these comprised one serious collision and three slight collisions. No fatal collisions were recorded.
Cluster 6	Weeley Roundabout junction, A133/Colchester Road	There have been a total of six collisions recorded within Cluster 6, these comprised one serious collision and five slight collisions. No fatal collisions were recorded.
Cluster 7	Bovill's Roundabout junction, A133/Progress Way/St Osyth Road	There have been a total of 13 collisions recorded in Cluster 7, these comprised three serious and ten slight collisions. No fatal collisions were recorded.
Cluster 8	St John's Roundabout junction, A133/St John's Road/London Road	There have been a total of 23 collisions recorded within Cluster 8, these comprised five serious and 18 slight collisions. No fatal collisions were recorded.
Cluster 9	B1027/B1369 junction	There have been a total of five collisions recorded within Cluster 9, these comprised one serious and four slight collisions. No fatal collisions were recorded.

Cluster Reference	Location	Number and type of collisions
Cluster 10	B1027/Oxford Road junction	There have been a total of five collisions recorded within Cluster 10, these comprised five slight collisions. No fatal collisions were recorded.
Cluster 11	B1033, Thorpe-le-Soken between the B1414 and Mill Lane	There have been a total of five collisions recorded within Cluster 11, these comprised two serious and three slight collisions. No fatal collisions were recorded.
Cluster 12	Hare Green Roundabout junction, A120/Harwich Road	There have been a total of nine collisions recorded within Cluster 12, these comprised one serious and eight slight collisions. No fatal collisions were recorded.
Cluster 13	Parkeston Roundabout junction, A120/Parkeston Road/Station Road/Europa Way	There have been a total of nine collisions recorded within Cluster 14, these comprised four serious and five slight collisions. No fatal collisions were recorded.

Table 27.15 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)
3, 15, 16	A120 from Harwich Road Roundabout and Colchester Road	197	193
22, 23	A133 from B1033 Roundabout to St John's Roundabout	225	193
45	B1414 from B1441 to B1033	603	333

27.5.5 Future trends in baseline conditions

144. In the event that the Project is not developed, a description 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

145. The earliest date that the main construction works could start would be 2027.

146. In order to consider a worst-case scenario, a reference year for baseline traffic of 2027 (i.e. without Project) has been derived. The rationale for this is later years would result in higher baseline traffic flows (due to growth in background traffic) and therefore a lesser magnitude of impact.

147. To take account of changes in travel patterns and sub-regional growth in housing and employment, a proportionate approach to forecasting future baseline traffic growth for the 2027 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) as detailed in ES Appendix 27.4 (Document Reference: 3.3.67).

148. Forecast 2027 future year baseline traffic flows are presented in Table 27.16, whilst the TA (ES Appendix 27.1 (Document Reference: 3.3.64)) includes

details of the approach to forecasting these flows using growth factors from the Department for Transport Trip End Model Presentation Programme software (known as TEMPro). During the Projects construction phase baseline traffic flows in Table 27.16 are forecast to increase further by approximately 1.2% per year.

27.5.5.2 Climate Change and Natural Trends

149. 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.

150. 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 2035.

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

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

152. Given the rate of technological advancement in the decarbonisation of transport, and legal commitments to net-zero, it is anticipated that GHG emissions will be reduced from current baseline levels. These predictions for forecast changes in vehicle emissions are reflected in the assessment of air quality (ES Chapter 20 Onshore Air Quality (Document Reference: 3.1.22)).

153. 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*".

27.6 Assessment of significance

154. The following sections describe the impacts upon the traffic and transport receptors described in Section 27.5 that have the potential to arise because of the construction, operation, and decommissioning phases of the Project. The assessment follows the methodology set out in Section 27.4.3. The assessments are based on the worst-case scenarios set out in Section 27.3.2 and include the incorporation of embedded mitigation and project commitments set out in Section 27.3.3.

155. All findings of this section are summarised in Table 27.42.

27.6.1 Potential effects during construction

156. 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 (ES Appendix 27.1 (Document Reference: 3.3.64)) contains the derivation of the Project's construction traffic flows and background (baseline) traffic flows that have informed this assessment.

27.6.1.1 Construction traffic impact screening

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

158. Table 27.16 summarises the assigned daily peak vehicle trips generated by all materials, personnel and plant associated with the construction of North Falls. Table 27.16 also provides a comparison of the peak daily construction flows with the forecast background daily traffic flows in 2027 and identifies the links exceeding the EATM screening thresholds (highlighted in blue).

159. Whilst the assessment of effects has been informed by consideration of peak changes in construction traffic flows, forecast for average construction traffic flows are also provided within Table 27.16 for context.

Table 27.16 Link screening

Link ID	Link Description	Link Sensitivity	Background 2027 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	44,925	2,635	780	494	560	381	1.7%	18.8%
2	A120 from the A133 to Harwich Road	Negligible	44,925	2,635	812	494	595	381	1.8%	18.8%
3	A120 from Harwich Road to Bentley Road	Negligible	15,706	1,797	812	494	595	381	5.2%	27.5%
4	Bentley Road from the A120 to Little Bromley	Low	1,026	17	506	235	301	135	49.3%	1393.9%
5	Bentley Road through Little Bromley	High	1,026	17	64	0	37	0	6.3%	0.0%
6	B1035 south of the A120 to Tendring Green	Low	5,740	91	255	72	175	50	4.4%	79.2%
7	Bromley Road north of Little Bromley	Low	1,674	30	64	0	37	0	3.8%	0.0%
8	Bromley Road south of the A137	High	1,674	30	64	0	37	0	3.8%	0.0%
9	A137 east-west through Lawford	Medium	13,196	373	0	0	0	0	0.0%	0.0%
10	A137 north-south through Lawford	High	13,196	373	6	0	6	0	0.0%	0.0%
13	B1035 south of the B1352	Medium	8,421	163	71	0	47	0	0.8%	0.0%

Link ID	Link Description	Link Sensitivity	Background 2027 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
14	B1035 north of the A120	Low	8,421	163	130	29	97	19	1.5%	17.5%
15	A120 from Bentley Road to the B1035	Negligible	15,706	1,797	851	494	617	381	5.4%	27.5%
16	A120 from the B1035 to Colchester Road	Negligible	15,706	1,797	535	494	409	381	3.4%	27.5%
18	A120 from Colchester Road to the B1352	Negligible	10,068	1,499	535	494	409	381	5.3%	33.0%
19	A120 from the B1352 to Parkeston Road	Negligible	10,068	1,499	520	494	398	381	5.2%	33.0%
20	A133 south of the A120	Negligible	32,006	1,273	459	265	291	177	1.4%	20.8%
21a	A133 to Crown Lane	Low	32,229	1,009	568	265	355	177	1.8%	26.3%
21b	A133 from Crown Lane to the B1034	Low	32,229	1,009	585	265	369	177	1.8%	26.3%
22	A133 south of the B1033 to Progress Way	Negligible	21,295	574	278	106	175	71	1.3%	18.5%
23	A133 south of Progress Way to the B1032	Negligible	21,295	574	263	106	146	71	1.2%	18.5%
24	B1032 east of the A133 to Holland Road	High	12,718	267	259	106	158	71	2.0%	39.7%

Link ID	Link Description	Link Sensitivity	Background 2027 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
25	B1032 from Holland Road to Kings Parade	High	13,252	192	259	106	158	71	2.0%	55.3%
26	B1032 from Kings Parade to the south of Great Holland	Low	7,395	96	259	106	158	71	3.5%	110.2%
27	B1032 through Great Holland	High	7,395	96	61	0	34	0	0.8%	0.0%
28	B1033 north of the B1032 through Kirby Cross to Pork Lane	High	9,861	151	91	0	54	0	0.9%	0.0%
29	B1033 from Pork Lane to the south of Thorpe-le-Soken	Low	9,861	151	181	33	105	22	1.8%	21.8%
30	B1033 south of the B1414 through Thorpe-le-Soken	High	9,861	151	181	33	105	22	1.8%	21.8%
31	B1414 east of the B1033	High	1,525	67	53	0	42	0	3.5%	0.0%
32	B1033 north of the B1414 through Thorpe-le-Soken	High	9,861	151	180	33	107	22	1.8%	21.8%
33	B1033 from the B1441 to the B1035 through Weeley	Medium	10,961	210	348	159	219	106	3.2%	75.6%
34	B1033 from the A133 to the B1441	Low	10,961	210	348	159	219	106	3.2%	75.6%

Link ID	Link Description	Link Sensitivity	Background 2027 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
35	B1035 north of B1033 to Whitehall Lane	Low	1,678	33	362	126	234	83	21.6%	385.2%
36	B1035 through Tendring Green from Parsonage Lane to Stones Green Road	Low	5,740	91	126	0	83	0	2.2%	0.0%
37	B1035 north of Whitehall Lane to Swan Road	Low	1,678	33	199	39	122	21	11.8%	119.2%
38	B1035 through Goose Green	High	5,740	91	126	0	83	0	2.2%	0.0%
39	B1035 north of Swan Road to the south of Tendring	Low	2,417	45	109	0	69	0	4.5%	0.0%
40	B1035 through Tendring to Crown Lane	High	2,417	45	109	0	69	0	4.5%	0.0%
41	Crown Lane	Low	3,310	47	17	0	14	0	0.5%	0.0%
42	B1035 from Crown Lane to Lodge Lane	High	2,417	45	126	0	83	0	5.2%	0.0%
43	A133/Colchester Road from A133/Colchester Road roundabout to end of TTSA	Low	12,327	641	96	0	56	0	0.8%	0.0%
44	B1441 (Progress Way) from A133/St	High	5,785	949	13	0	5	0	0.2%	0.0%

Link ID	Link Description	Link Sensitivity	Background 2027 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
	Osyth Road/Progress Way Roundabout to B1414									
45	B1414 east of B1441 to B1033 in Thorpe-le-Soken	High	5,402	746	4	0	2	0	0.1%	0.0%
46	B1441 from B1414 to B1033 in Weeley	High	5,785	949	0	0	0	0	0.0%	0.0%
47	A120 from Parkeston Roundabout to St Nicholas Roundabout	Low	13,753	1,341	499	494	385	381	3.6%	36.8%
48	St John's Road from St Osyth Roundabout to end of TTSA	High	15,751	215	48	0	22	0	0.3%	0.0%
%	Exceeds EATM screening thresholds									

160. In accordance with EATM, only those links that are showing greater than 10% increase in total traffic flows 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.

161. Disaggregating from Table 27.16, 10 of the 42 links are above the EATM screening thresholds. Table 27.17 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 27.17 Link screening summary

Links requiring further assessment	Links requiring no further assessment
4, 6, 24, 25, 26, 33, 34, 35, 37, and 47	1 – 3, 5, 7 – 23, 27 - 32, 36, 38, 39 – 46 and 48

27.6.1.2 Impact 1: Severance

162. 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

163. Table 27.18 provides a summary of the severance magnitude of impact for each of the screened links detailed in Table 27.16.

Table 27.18 Magnitude of severance impact

Links	Magnitude of impact	Rationale for magnitude
6, 24, 25, 26, 33, 34, 35, 37 and 47	Negligible	The peak daily change in total traffic flow is less than 30%
4	Low	The peak daily change in total traffic flow is between 30% and 60%.

27.6.1.2.2 Sensitivity of receptors

164. The sensitivity of each highway link is detailed in Table 27.13 and ES Figure 27.5 (Document Reference: 3.2.23).

27.6.1.2.3 Significance of effect

165. Table 27.19 provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of the severance effect.

Table 27.19 Significance of severance effect

Links	Magnitude of impact	Sensitivity	Significance of effect
6, 26, 34, 35, 37, 47	Negligible	Low	Negligible
33		Medium	Minor adverse
24, 25		High	Minor adverse
4	Low	Low	Negligible

166. All links are subject to at most a minor adverse significance of effect, which is not significant in EIA terms.

27.6.1.3 Impact 2: Amenity

167. 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

168. This section presents an assessment of the magnitude of amenity impact for each of the previously screened links (Table 27.16).

169. 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.

170. The Essex County Council County Routes Network therefore sets the context for the magnitude of impact assessment. The County Routes Network comprises PR1 and PR2 roads, with the remaining network categorised as 'Local Roads'.

171. 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.

172. Table 27.20 presents the resultant amenity magnitude of impact assessment for North Falls applying the thresholds set out in Table 27.10.

Table 27.20 Magnitude of amenity impact

Link	Link Description	Essex County Routes Network Priority	Magnitude of impact assessment	Assessed Magnitude of impact (peak traffic)	Assessed Magnitude of impact (average traffic)
4	Bentley Road from the A120 to Little Bromley	PR2	The link has a base flow of 1,026 vehicle trips (including 17 HGV trips) per day and would be subject to construction traffic of up to 506 vehicle trips (including 235 HGV trips) per day. Peak daily construction traffic would result in an increase in traffic of 49.3% for all vehicles and 1,393.9% for HGVs. Receptors along the link would experience a peak increase in flow of approximately 24 HGV trips per hour and an average of approximately 14 per hour. Applying the thresholds set out in Table 27.10 this would lead to an assessment of high magnitude of impact. However, noting the extensive package of embedded mitigation measures proposed for Link 4 (outlined in Table 27.2), a more detailed assessment has been undertaken of the factors that may be influencing the magnitude of impact upon this link. EATM outlines amenity can be affected by traffic flow, traffic composition and pavement width/separation from traffic. In this context, a review of the Link 4 highway baseline (outlined in Table 27.13) has established few sensitive receptors and surveys of pedestrian and cycle activity (provided within the TA (ES Appendix 27.1 (Document Reference: 3.3.64)) have noted limited existing demand along the road (less than four pedestrian trips and 18 cycle trips per day). When considering the existing environment for pedestrians and cyclists traveling along Bentley Road, it can be noted that a pedestrian or cyclist would currently be passed by an average of 68 vehicles per hour (07:00 to 19:00), and there would be no separation from traffic, with limited separation due to the width of the road and vehicles passing at speeds of up to 60mph. When considering the proposed future environment (during the Project's construction phase), it would be forecast that a pedestrian or cyclist would experience an average of 111 vehicles per hour (07:00 to 19:00), however, they would be separated from the traffic and traffic would pass at lower speeds (40mph). It is assessed that whilst pedestrians and cyclists would experience higher overall traffic flows, on balance, when considering the changes in separation from traffic and reduction vehicle speeds (Table 27.2), the overall magnitude of impact can be re-assessed as negligible to low. This re-assessment considers that, pedestrians and cyclists would benefit from: Being segregated from motorised traffic on a new temporary off road cycleway/footway;	Low	Negligible

Link	Link Description	Essex County Routes Network Priority	Magnitude of impact assessment	Assessed Magnitude of impact (peak traffic)	Assessed Magnitude of impact (average traffic)
			Be afforded greater separation from traffic due to the increased road width; and Be passed at reduced speeds, as a result of the temporary reduction in the speed limit from 60mph to 40mph.		
6	B1035 south of the A120 to Tendring Green	PR2	The link has a base flow of 5,740 vehicle trips (including 91 HGVs) per day and would be subject to construction traffic of up to 255 vehicle trips (including 72 HGV trips) per day. Peak daily construction traffic would result in an increase in traffic of 4.5% for all vehicles and 79.2% for HGVs.	Low	Low
24	B1032 east of the A133 to Holland Road	PR2	The link has a base flow of 12,718 vehicle trips (including 267 HGV trips) per day and would be subject to construction traffic of up to 259 vehicle trips (including 106 HGV trips per day. Peak daily construction traffic would result in an increase in traffic of 2.0% for all vehicles and 39.7% for HGVs.	Negligible	Negligible
25	B1032 from Holland Road to Kings Parade	PR2	The link has a base flow of 13,252 vehicle trips (including 192 HGVs) per day and would be subject to construction traffic of up to 259 vehicle trips (including 106 HGV trips) per day. Peak daily construction traffic would result in an increase of 2.0% for all vehicles and 55.3% for HGVs.	Low	Negligible
26	B1032 from Kings Parade to the south of Great Holland	PR2	The link has a base flow of 7,395 vehicle trips (including 96 HGVs) per day and would be subject to construction traffic of up to 259 vehicle trips (including 106 HGV trips) per day. Peak daily construction traffic would result in an increase of 3.5% for all vehicles and 110.2% for HGVs. Receptors along the link would experience a peak increase in flow of approximately 11 HGV trips per hour and an average of approximately seven per hour.	Medium	Low
33	B1033 from the B1441 to the B1035 through Weeley	PR1	The links have a base flow of 10,961 vehicle trips (including 210 HGVs) per day and would be subject to construction traffic of up to 348 vehicle trips (including 159 HGV trips) per day. Peak daily construction traffic would result in an increase of 3.2% for all vehicles and 75.6% for HGVs.	Low	Negligible
34	B1033 from the A133 to the B1441			Low	Negligible

Link	Link Description	Essex County Routes Network Priority	Magnitude of impact assessment	Assessed Magnitude of impact (peak traffic)	Assessed Magnitude of impact (average traffic)
35	B1035 north of B1033 to Whitehall Lane	PR2	The link has a base flow of 1,678 vehicle trips (including 33 HGVs) per day and would be subject to construction traffic of up to 362 vehicle trips (including 126 HGV trips) per day. Peak daily construction traffic would result in an increase of 21.6% for all vehicles and 385.2% for HGVs. Receptors along the link would experience a peak increase in flow of approximately 13 HGV trips per hour and an average of approximately eight an hour.	High	Medium
37	B1035 north of Whitehall Lane to Swan Road		The link has a base flow of 1,678 vehicle trips (including 33 HGVs) per day and would be subject to construction traffic of up to 199 vehicle trips (including 39 HGV trips) per day. Peak daily construction traffic would result in an increase of 11.8% for all vehicles and 119.2% for HGVs. Receptors along the link would experience a peak increase in flow of approximately four HGV trips per hour and an average of approximately two an hour.	Medium	Low
47	A120 from Parkeston Roundabout to St Nicholas Roundabout	PR1	The link has a base flow of 13,753 vehicle trips (including 1,341 HGVs) per day and would be subject to construction traffic of up to 499 vehicle trips (including 494 HGV trips) per day. Peak daily construction traffic would result in an increase of 3.6% for all vehicles and 36.8% for HGVs.	Negligible	Negligible

27.6.1.3.2 Sensitivity of receptors

173. The sensitivity of each highway link is detailed in Table 27.13 and ES Figure 27.5 (Document Reference: 3.2.23).

27.6.1.3.3 Significance of effect

174. Table 27.21 provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of the amenity effect.

Table 27.21 Significance of amenity effect.

Links	Magnitude of impact	Sensitivity	Significance of effect
35	High	Low	Moderate adverse
26, 37	Medium	Low	Minor adverse
4, 6, 34	Low	Low	Negligible
33		Medium	Minor adverse
25		High	Moderate adverse
24	Negligible	High	Minor adverse
47		Low	Negligible

175. Links 4, 6, 24, 26, 33, 34, 37, 47 are subject to at most a minor adverse significance of effect, which is not significant in EIA terms. Users of links 25 and 35 could potentially be subject to a moderate adverse significance of effect, which is significant in EIA terms.

Additional mitigation

176. Table 27.21 identifies that the Projects' peak daily construction traffic could result in potentially significant amenity effects upon the users of links 25 and 35 associated with the increase in construction traffic.

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

178. It is noteworthy that for both links the Projects' peak HGV traffic could lead to potentially significant amenity impacts for receptors located along these links. However, it should be noted that the assessment is based upon peak HGV flows and on average receptors would experience lower changes in HGV movements. In this regard, Table 27.20 identifies that the assessed magnitude of impact for both links would be lower when considering the average traffic flows.

179. To mitigate potentially significant amenity effects along links 25 and 35 the OCTMP (Document Reference: 7.16) (which is secured by DCO Requirement) contains a commitment to manage HGV trips along these links to not exceed the forecast average daily HGV demand.

Residual significance of effect

180. It is assessed that the residual amenity effect upon links 25 and 35 would be:

- Link 25 - negligible magnitude of impact on receptors of high sensitivity resulting in minor adverse residual effect; and

- Link 35 – medium magnitude of impact on receptors of low sensitivity resulting in a minor adverse residual effect.

181. Therefore, following mitigation, users of all links will be subject to effects which are not significant in EIA terms.

27.6.1.4 Impact 3: Highway Safety

182. 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

183. An 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. Table 27.14 and Table 27.15 provide full details on the methodology for identifying 13 collision clusters and three locations where collision rates are higher than the national average within the study period (2015 to 2023).

184. Table 27.22 outlines a review of the sensitivity of the selected collision clusters (depicted in ES Figure 27.3 (Document Reference: 3.2.23)) and the magnitude of impact of North Falls traffic in the context of the changes in forecast daily traffic flows in 2027. Details of the percentage changes in daily traffic flows have been summarised from Table 27.16.

185. Where the selected link review reveals a pattern of collisions that show a disproportionate involvement of larger/slower moving vehicles or the pattern of collisions could be disproportionately impacted by larger vehicles, further consideration is given to the HGV composition of the Projects' construction traffic demand when assessing the magnitude of impact. In other cases, the total construction traffic demand (LV + HGVs) is the key determinate when assessing the magnitude of impact for a selected link.

Table 27.22 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 1	Ardleigh Crown Roundabout junction	A total of 22 collisions have been recorded at the roundabout, these comprise of 17 slight and five serious collisions, no fatalities were recorded. None of the 22 collisions involved HGVs. The 22 collisions at Cluster 1 comprised: 11 rear-end shunt type collisions; three loss of control collisions; two failures to give way leading to collisions; two collisions caused by poor lane discipline upon exiting the roundabout; one collision with a cyclist; one collision caused by a car driver not adhering to traffic signals; one collision caused by a driver failing to give way when performing a 'U-turn'; and one collision which occurred during an overtaking manoeuvre. It can be considered that there is an emerging pattern of rear-end shunts within Cluster 1. Cluster 1 is therefore assessed to be of high sensitivity.	1	1.7%	18.8%	Cluster 1 is located at the end of link 1 between the A120 and A12 and is projected to experience an increase in total traffic of up to 1.7%. It is assessed that a change in total traffic of up to 1.7 % represents a negligible magnitude of impact.
Cluster 2	A120/A133 Junction	A total of 14 collisions have been recorded, of which eight were classified as slight and four as serious. Two fatal collisions were recorded. The 14 collisions at Cluster 2 comprised: Seven loss of control collisions, five rear-end shunt type collisions, one collision involving a pedestrian and one head-on collision caused by a car driver being on the wrong side of the road. It can be considered that there is an emerging pattern of loss of control collisions at Cluster 2.	1, 2, 20	1.4%-1.8%	18.8%-20.8%	Cluster 2 is located at a junction between links 1, 2 and 20, which are projected to experience an increase in total traffic of up to 1.8% It is assessed that a change in total traffic of up to 1.8% represents a negligible magnitude of impact.

Receptors	Location	Summary of collisions and sensitivity	Links	Percentage change		Magnitude of impact
				All vehicles	HGVs	
		Cluster 2 is therefore assessed to be of high sensitivity.				
Cluster 3	A133 Roundabout, Frating	A total of 13 collisions have been recorded within Cluster 3, 11 of these were classified as slight collisions and two as serious collisions. No fatal collisions were recorded. The 13 collisions at Cluster 3 comprised: Seven losses of control, five rear-end shunt type collisions and a collision caused by poor lane discipline. It can be considered that there is a pattern of loss of control and rear end shunt type collisions at Cluster 3. Cluster 3 is therefore assessed to be of high sensitivity.	20, 21b and 43	0.8%-1.8%	0%-26.3%	Cluster 3 is located at the roundabout junction between links 20, 21b and 43 that are projected to experience an increase in total traffic of up to 1.8%. It is assessed that a change in traffic of up to 1.8% represents a negligible magnitude of impact.
Cluster 4	A133/B1029 junction	A total of 14 collisions have been recorded at Cluster 4, five of which were classified as serious and nine as slight collisions. No fatal collisions were reported at this location. The collisions at Cluster 4 comprised: Ten collisions between drivers turning right and colliding with vehicles going ahead, two rear-end shunt type collisions, a failure to give way by a driver performing a 'U-turn' and a failure to adhere to traffic signals by a car driver resulting in a collision. It is considered that there is a pattern of collisions involving car drivers turning against opposing flows of traffic on the crossroads. The link is therefore assessed to be of high sensitivity.	43	0.8%	0%	Cluster site 4 is located along Link 43 that is projected to experience an increase in total traffic of up to 0.8% and no increase in HGV traffic. It is assessed up to 0.8% represents a negligible magnitude of impact.
Cluster 5	A133/Shair Lane	A total of four collisions have been recorded at Cluster 5, three of which were recorded as slight collisions and one as serious. No fatal collisions were recorded at Cluster 5. The collisions at Cluster 5 comprised: three failures to give way by car drivers and a rear-end shunt type collision. It can be considered there is a marginal pattern of car drivers failing to give way when exiting Shair	21b	1.8%	26.3%	Cluster 5 is located on Link 21b that is projected to experience an increase in total traffic of up to 1.8%. It is assessed that a change in total traffic of up to 1.8% represents a negligible magnitude of impact.

Receptors	Location	Summary of collisions and sensitivity	Links	Percentage change		Magnitude of impact
				All vehicles	HGVs	
		Lane onto the A133 and colliding with cars on the A133. Cluster 5 is therefore assessed to be of medium sensitivity.				
Cluster 6	Weeley Roundabout	A total of six collisions have been recorded at this junction, five of these were classified as slight collisions and one as a serious collision. No fatal collisions were reported. The collisions at Cluster 6 comprised: two rear-end shunt type collisions, two collisions between cars and bicycles, one loss of control collision and one failure to give way when changing lanes. It can be considered that there are no emerging patterns of collisions at Cluster 6. The cluster is therefore assessed as of low sensitivity.	21a, 22 and 33	1.3% - 3.2%	18.5% – 75.6%	Cluster 6 is located at the intersection of links 21a, 22 and 33 that are projected to experience an increase in total traffic of up to 3.2%. It is assessed that a change in total traffic of up to 3.2% represents a negligible magnitude of impact.
Cluster 7	Bovill's Roundabout	A total of 13 collisions have been recorded at Cluster 7, ten of which were slight collisions and three were serious collisions. No fatal collisions were reported. The collisions at Cluster 7 comprised: five rear-end shunt type collisions, four failures to give way, two loss of control collisions, a collision on the circulatory of the roundabout between two cars and a collision between a car and a cyclist. It can be considered that there is no emerging pattern in the collisions in Cluster 7. The cluster is therefore assessed as of being of low sensitivity.	22, 23, 44	0.2%-1.3%	0%-18.5%	Cluster 7 is located at the intersection of links 22, 23 and 44 that are projected to experience an increase in total traffic of up to 1.3%. It is assessed that a change in total traffic of up to 1.3% represents a negligible magnitude of impact.
Cluster 8	St John's Roundabout	A total of 23 collisions have been recorded at Cluster 8, 18 of which were classified as slight collisions and five as serious collisions. No fatal collisions were recorded. The collisions recorded at Cluster 8 comprised: eight rear-end shunt type collisions, five collisions between vehicles and pedestrians/cyclists on designated crossings, four collisions between cars and cyclists away from designated crossings, four	23, 24, 48	0.3%-2.0%	0%-39.7%	The types of existing collisions at Cluster 8 involving pedestrians and cyclists could be disproportionately impacted by vehicle composition, therefore consideration is given to the change in HGV traffic as well as the change in total traffic. Cluster 8 is located at the intersection of links 23, 24 and 48 that are projected to experience an

Receptors	Location	Summary of collisions and sensitivity	Links	Percentage change		Magnitude of impact
				All vehicles	HGVs	
		failure to give way collisions and two loss of control collisions. It can be considered that there is an emerging pattern of collisions involving pedestrians and cyclists and rear end shunts. The cluster is therefore assessed as of being of high sensitivity				increase in total traffic of up to 2.0% and HGV traffic of up to 39.7%. It is assessed that a change in total traffic of up 2.0% and HGV traffic of up to 39.7% represents a low magnitude of impact.
Cluster 9	B1027/B1369 junction	A total of five collisions have been recorded, four were classified as slight and one as serious. No fatal collisions were recorded. The collisions recorded at Cluster 9 comprised: four failures to give way and a collision between a car and a pedestrian. It can be considered that there is a slight pattern of failures to give way by car drivers at Cluster 9. The cluster is therefore assessed to be of medium sensitivity.	24	2.0%	39.7%	Cluster 9 is located on Link 24 that is projected to experience an increase in total traffic of up to 2.0%. It is assessed that a change in total traffic of up 2.0% represents a negligible magnitude of impact.
Cluster 10	B1027/Oxford Road	At total of five collisions have been recorded, all five of these collisions are classified as slight collision. No fatal collisions have been recorded. The collisions recorded at Cluster 10 comprised: three failures to give way, one rear-end shunt type collision and a collision between a mobility scooter and an HGV. It can be considered there is no pattern of collisions in this cluster. The cluster is therefore assessed to be of low sensitivity	24	2.0%	39.7%	Cluster 10 is located on link 24 that is projected to experience an increase in total traffic of up to 2.0%. It is assessed that a change in total traffic of up 2.0% represents a negligible magnitude of impact.
Cluster 11	B1033 through Thorpe-le-Soken	A total of five collisions have been recorded, three of which were classified as slight and two as serious. No fatal collisions were recorded. The collisions recorded at Cluster 11 comprised: three collisions between cars and pedestrians/cyclists, one collision during an undertaking attempt and one failure to give way collision. It is considered that there is a slight emerging pattern of collisions with pedestrians/cyclists at	32	1.8%	21.8%	The types of existing collisions at Cluster 11 involving pedestrians and cyclists could be disproportionately impacted by vehicle composition, therefore consideration is given to the change in HGV traffic as well as the change in total traffic. Cluster 11 is located on Link 32 that is projected to experience an

Receptors	Location	Summary of collisions and sensitivity	Links	Percentage change		Magnitude of impact
				All vehicles	HGVs	
		Cluster 11. The cluster is therefore assessed to be of medium sensitivity				increase of total traffic 1.8% and HGV traffic of up to 21.8%. It is assessed that a change in total traffic of up to 1.8% and HGV traffic of up to 21.8% represents a low magnitude of impact.
Cluster 12	Hare Green Roundabout	A total of nine collisions have been recorded in the cluster, eight of which were classified as slight collisions and one as a serious collision. There were no fatal collisions reported. The collisions recorded at Cluster 12 comprised: seven failures to give way, a loss of control collision and a collision caused by poor lane discipline. The seven failure to give way collisions occurred prior to the junction being upgraded in 2019 from a priority junction to a roundabout. Following the completion of the roundabout it can be observed there have been only two collisions, the cluster is therefore assessed of being of low sensitivity.	2 and 3	1.8%-5.2%	18.8%-27.5%	Cluster 12 is located at the roundabout junction between links 2 and 3 that are expected to experience an increase in total traffic of up to 5.2%. It is assessed that a change in traffic of 5.2% represents a negligible magnitude of impact.
Cluster 13	Parkeston Roundabout	A total of nine collisions have been recorded at Cluster 13, four of which have been classified as serious and five as slight collisions. No fatal collisions have been reported. The collisions recorded at Cluster 14 comprised: five collisions involving car drivers not giving way to cyclists on the roundabout, three rear-end shunt type collisions and a car driver failing to adhere to traffic signals leading to a collision. It can be considered that there is a pattern of collisions involving cars colliding with cyclists. The cluster is therefore assessed to be of high sensitivity.	19 and 47	3.6% - 5.2%	33.0% - 36.8%	The types of existing collisions at Cluster 14 involving cyclists could be disproportionately impacted by vehicle composition, therefore consideration is given to the change in HGV traffic as well as the change in total traffic. Cluster 14 is located at the roundabout junction between links 19 and 47 that are expected to experience an increase in total traffic of up to 5.2% and HGV traffic of up to 36.8%. It is assessed that a change in total traffic of up to 5.2% and HGV traffic of 36.8% represents a low magnitude of impact.

Receptors	Location	Summary of collisions and sensitivity	Links	Percentage change		Magnitude of impact
				All vehicles	HGVs	
Links 3, 15 and 16	A120 from Hare Green Roundabout junction to Colchester Road.	A total of 22 collisions have been recorded along these links, these comprise of 14 slight and seven serious collisions, no fatalities were recorded. Link 3 also includes Cluster 12. Of the 22 collisions along links 3, 15 and 16 and these comprise: Seven loss of control collisions; Seven rear-end shunt type collisions; Five failures to give way; One collision involving a car colliding with a cyclist; and One collision which took place during an overtaking manoeuvre. It can be considered that there is a slight emerging pattern of rear-end shunts and loss of control collisions on links 3, 15 and 16. The link is therefore assessed as being of medium sensitivity.	3, 15 and 16	3.4%-5.4%	27.5%	Links 3, 15 and 16 are projected to experience an increase in total traffic of up to 5.5%. It is assessed that a change in total traffic of up to 5.5% represents a negligible magnitude of impact.
Links 22 and 23	A133 from the junction with the B1033 to the St John's Roundabout junction	A total of 46 collisions have been recorded along links 22 and 23, these consist of four fatal collisions, 12 serious collisions and 30 slight collisions. Links 22 and 23 also contain collision clusters 6 and 7. Of the 46 collisions on links 22 and 23, these comprised: 12 rear-end shunt type collisions; seven collisions involving cars/motorcycles colliding with pedestrians or cyclists in locations other than designated pedestrian/cycle crossings; nine losses of control by car drivers which resulted in head-on collisions; eight collisions resulting from car drivers failing to give way before performing a 'U-turn'; four loss of control collisions;	22 and 23	1.2%-1.3%	18.5%	The types of existing collisions along links 22 and 23 involving pedestrians/cyclists could be disproportionately impacted by vehicle composition, therefore consideration is given to the change in HGV traffic as well as the change in total traffic. Links 22 and 23 are projected to experience an increase in total traffic of up to 1.3% and HGV traffic of up to 18.5%. It is therefore assessed that a change in total traffic of up to 1.3% and HGV traffic of up to 18.5% represents an overall low magnitude of impact.

Receptors	Location	Summary of collisions and sensitivity	Links	Percentage change		Magnitude of impact
				All vehicles	HGVs	
		four collisions resulting from car drivers or motorcyclists failing to give way to other motorised vehicles; one collision during an overtaking manoeuvre; and one collision caused by debris falling from the back of a vehicle. It can be considered that there is a pattern of rear-end shunt type and loss of control type collisions on this link as well as an emerging pattern of collisions involving cyclists/pedestrians. The link is therefore assessed to be of being of high sensitivity.				
Link 45	B1414 from the B1441 to the B1033	A total of 19 collisions have been recorded on Link 45, these comprised of: eight serious collisions and 11 slight collisions, no fatalities were reported. Of the 19 collisions reported on the link 45 during the study period, these comprised: seven rear-end shunt type collisions, six loss of control collisions, two failures to give way leading to collisions, two overtaking manoeuvres leading to collisions and two collisions with cyclists and pedestrians away from designated crossings. It can be considered that there is a pattern of rear-end shunt type collisions emerging on link 45 as well as losses of control. The link is therefore assessed as of being of high sensitivity.	45	0.1%	0%	Link 45 is projected to experience an increase in total traffic of up to 0.1% and no increase in HGV traffic. It is therefore assessed that a change in total traffic of up to 0.1% represents a negligible magnitude of impact.

27.6.1.4.2 Significance of effect

186. Table 27.23 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 27.23 Significance of highway safety effect

Receptor	Magnitude of impact	Sensitivity	Significance of effect
Clusters 1, 2, 3 and 4	Negligible	High	Minor Adverse
Cluster 5 and 9	Negligible	Medium	Minor Adverse
Clusters 6, 7, 10, 12 and 13	Negligible	Low	Negligible
Cluster 8	Low	High	Moderate Adverse
Cluster 11	Low	Medium	Minor Adverse
Links 3, 15 and 16	Negligible	Medium	Minor Adverse
Links 22 and 23	Low	High	Moderate Adverse
Link 45	Negligible	High	Minor Adverse

187. Clusters 1 – 7, 9 – 13, and the locations covered by links 3, 15 and 16, and 45, are subject to at most a minor adverse significance of effect, which is not significant in EIA terms. Cluster 8 and Links 22 and 23 could potentially be subject to a moderate adverse significance of effect, which is significant in EIA terms.

Additional mitigation

188. It is assessed that the change in HGV traffic associated with the construction of North Falls could result in a potentially significant highway safety effects upon pedestrians and cyclists at Cluster 8 and along links 22 and 23.

189. North Falls have discussed the pattern of collisions at Cluster 8 with Essex County Council's road safety engineering team at a meeting on the 08 February 2024 (see ES Appendix 27.4 (Document Reference: 3.3.67)).

190. During this meeting Essex County Council advised that their collision analysis had identified that the collisions primarily relate to pedestrians and cyclists not giving way to vehicles at the crossings on the approach to the roundabout. It was advised that road safety improvements have recently been implemented comprising of refreshing and enhancing the road and cycleway markings to ensure priorities are clear. Essex County Council also advised that they continue to monitor the effectiveness of these improvements.

191. It is therefore proposed that prior to the commencement of construction the condition of the markings and surfacing upon the approach to the roundabout will be reviewed and if markings and high friction surfacing (on the A133 approach to the roundabout) are deemed to require refreshing the Applicant will facilitate conversations with Essex County Council to prioritise the delivery of these maintenance measures.

192. This commitment is outlined within the OCTMP (Document Reference: 7.16) which is secured by a DCO Requirement. In addition to the maintenance of this roundabout, measures are outlined in Table 27.24 (and captured within the OCTMP) to make North Falls HGV drivers aware of the existing road safety

risks at this location and consequently minimise potential impacts. These enhanced driver education measures are promoted in addition to those contained in a 'typical' CTMP.

Table 27.24 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 links 22, 23 and Cluster 8, the existing highway safety issues 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.

193. With regard to links 22 and 23, a further analysis of the identified pattern of collisions involving pedestrians and cyclists has not identified any particular pattern in the location or cause of these collisions (other than involving pedestrians/cyclists). It is therefore considered that rather than localised mitigation measures (as proposed for Cluster 8), the enhanced driver inductions and training measures set out within Table 27.24 would be appropriate to assist in addressing driver behaviour.

Residual significance of effect

194. The adoption of the proposed enhanced mitigation measures would serve to address the underlying issues that manifest in adverse highway safety impacts and therefore reduce the sensitivity of Cluster 8 from high to low - medium. The additional enhanced driver inductions and training would serve to reduce the likelihood of North Falls construction traffic being involved in a collision, therefore the magnitude of impact along links 22, 23 and Cluster 8 could be reduced from low to negligible.

195. It is assessed that residual highway safety effect upon Cluster 8 would be of a negligible magnitude of impact on a receptor of low to medium sensitivity resulting in a minor adverse residual effect.

196. It is assessed that residual highway safety effect upon links 22 and 23 would be of a negligible magnitude of impact on a receptor of high sensitivity resulting in a minor adverse residual effect.

197. Therefore, following mitigation, residual highway safety effect will be at most minor adverse of all locations, which are not significant in EIA terms.

27.6.1.5 Impact 4 Driver Delay (Road Closures)

198. During the cable duct installation works, within the onshore cable route, 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). Table 27.2 however identifies a commitment to ensure that access through the closures would however be maintained for pedestrians and cyclists at all times.

27.6.1.5.1 Magnitude of impact

199. Table 27.25 provides a summary of the magnitude of impact and sensitivity of all open-cut onshore cable route crossings required during the cable duct installation works. The locations of the proposed road closures are highlighted in ES Figure 27.4 (Document Reference: 3.2.23).

200. In assessing the sensitivity and magnitude of impact, consideration has been given to the volume of traffic (taken from ES Appendix 27.1 (Document Reference: 3.3.64)), the additional delay drivers would experience if a road were closed, and also, if the closed road would impact scheduled bus services.

Table 27.25 Magnitude of driver delay (road closures) impact and sensitivity

Crossing location	Daily traffic flows	Footway/ Cycleway	Bus route	Sensitivity	Alternative diversion route	Magnitude of impact	Rationale
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.
Paynes Lane	<1,000*	No	No	Paynes 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.	Paynes Lane is a single carriageway road. Traffic could be diverted through Spratts Lane and Bentley Road. Both these roads are of the same classification as Paynes Lane and could therefore be expected to accommodate a short-term increase in traffic. 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.
Notes: ** Daily traffic flows estimated from recorded flows on comparable nearby roads.*							

27.6.1.5.2 Significance of effect

201. Table 27.26 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 27.26 Significance of driver delay (road closures) effect

Crossing locations	Magnitude of impact	Sensitivity	Significance of effect
Damant's Farm Lane	Low	Low	Negligible
Payne Lane	Negligible	Low	Negligible
Spratts Lane	Low	Low	Negligible
Barlon Road	Negligible	Low	Negligible

202. All crossings are subject to at most a negligible significance of effect, which is not significant in EIA terms.

27.6.2 Potential effects during operation

203. The onshore substation once constructed will be unmanned; 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.

204. Based upon experience of operating similar sites the Applicant estimates that there could be a total of one LV and two HGVs at an approximate frequency of every two to four months.

205. Noting the very low numbers of vehicle movements during the operational phase, access to the onshore substation would be provided via Ardleigh Road with 'access management measures', such as the use of escort vehicles implemented to allow occasional HGV access to the onshore substation to pass oncoming traffic, reducing the potential for delays.

206. Alternatively, National Grid are proposing the construction of a permanent access road (as part of the Norwich to Tilbury project) from Bentley Road to Ardleigh Road and the widening of Ardleigh Road. Subject to this project securing consent and agreement with National Grid this access road could also be used by North Falls.

207. The Project's transformers are designed not to require replacement during the lifetime of the Project and as such, operational access to the onshore substation for abnormal loads is not anticipated to be required, however in the unlikely event that replacement is required access would either be via the new National Grid access or if not available, the temporary haul road would be reinstated from Bentley Road. Should the Project's transformers require replacement, traffic movements would be planned and managed to ensure there are no significant traffic and transport effects.

208. The proposed operational access strategy is outlined further in the TA (ES Appendix 27.1 (Document Reference: 3.3.64)).

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

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

211. 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 (see ES Appendix 27.4 (Document Reference: 3.3.67)) no operational phase assessment is presented within this traffic and transport impact assessment.

27.6.3 Potential effects during decommissioning

212. 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 equipment will likely be removed and reused or recycled.

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

214. 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.

215. It is anticipated that the effects of decommissioning will be no greater in nature than those identified during construction (Section 27.6.1).

27.7 Potential monitoring requirements

216. An OCTMP (Document Reference: 7.16) is submitted alongside this DCO application and will be further developed and agreed with stakeholders prior to construction.

217. The OCTMP (Document Reference: 7.16) provides 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

218. 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 cumulative effects with other plans, projects and activities. This information is set out in Table 27.27 having regard to magnitude of impact assessed for each highway link. Only potential effects assessed in Section 27.6 as greater than negligible significance are included in the CEA.

219. The exception to this approach is Link 4, as whilst negligible effects are identified for all impacts, this relies upon an extensive package of embedded mitigation measures (outlined in Table 27.2), it is therefore considered necessary to test the ability of this mitigation to accommodate cumulative traffic.

Table 27.27 Potential cumulative effects

Impact	Potential for cumulative effect	Rationale
Construction		
Impact 1: Severance	Yes	Cumulative effects are considered possible upon links 4, 24, 25 and 33.
Impact 2: Amenity	Yes	Cumulative effects are considered possible upon links 4, 24, 25, 26, 33, 35 and 37.
Impact 3: Highway Safety	Yes	Cumulative effects are considered possible at the following clusters: Cluster 1, located on Link 1; Cluster 2; located between links 1, 2 and 20; Cluster 3, located between links 20, 21b and 43; Cluster 4, located on Link 43; Cluster 5, located on Link 21b; Cluster 8, located between links 23, 24 and 48; Cluster 9, located on Link 24; and Cluster 11, located on Link 32. Cumulative effects are also considered possible at the following links which have collision rates higher than the national average (Links 3, 15, 16, 22, 23 and 45)
Impact 4: Driver Delay (Road Closures)	No	The residual significance of effect for all links is assessed as a negligible significance (noting minimal delays to diverted traffic) and therefore impact 4 is unlikely to lead to significant cumulative effects.
Operation		
Operational effects 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

220. 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 27.28, 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.

221. 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.

222. Within Table 27.28, schemes that have not been considered as resulting in likely cumulative significant effects for traffic and transport are as a result of the following broad considerations:

- **Rationale A.** No traffic and TA (e.g. a TA or ES traffic and transport chapter) have been provided in support of the planning application for the scheme and therefore by definition there is no potential for cumulative effects to occur;
- **Rationale B.** A Transport Statement (TS) is provided, however no assessment of traffic impacts is provided within the TS in support of the application. Therefore, by definition there is no potential for cumulative effects to occur;
- **Rationale C.** Where there would be no temporal overlap between the Project and other schemes; or
- **Rationale D.** Where there is no spatial overlap between the Projects' TTSA and the other schemes TTSA;
- **Rationale E.** The scheme is a residential development and as such, changes in traffic flows would be captured within the baseline traffic forecasts as part of TEMPRo.

Table 27.28 Summary of projects considered for the CEA in relation to traffic and transport (project screening)

Project	Status	Construction period	Confidence in data	Included in the CEA (Y/N)	Rationale
National Infrastructure Planning					
Five Estuaries Offshore Wind Farm EN010115	Pre-application	2027 - 2030	High	Yes	The onshore project area for Five Estuaries covers largely the same area as North Falls. There is also a possibility that both projects could be constructed at the same time, therefore, cumulative effects could occur.
Norwich to Tilbury (East Anglia GREEN) EN020027	Pre-application	2027 - 2031	Medium	Yes	The proposed substation area for Norwich to Tilbury is in close proximity to North Falls proposed onshore substation works area; and discussions with the scheme's promoters (National Grid) have identified that construction would share the same access route as North Falls from the A120 along Bentley Road and the temporary haul road to the new substation. Therefore, cumulative impacts could occur.
East Anglia TWO Offshore Windfarm EN010078	Approved (DCO Issued 2022)	Mid 2020s	High	No	Rationale D
Bradwell B new nuclear power station EN010111	Pre-application	Predicted 9 – 12 years	High	No	Rationale D
Ipswich Rail Chord TR040002	Approved (DCO issued 2012)	Built	High	No	Rationale C. Construction of the Ipswich Rail Chord has been completed and will therefore not contribute to cumulative effects during North Falls construction or decommissioning periods. Cumulative effects are not expected during operation as the Ipswich Rail Chord does not have operational effects that could contribute to cumulative effects with North Falls.
Sizewell C Project EN010012	Approved (DCO issued 2022)	2022 – 2034	High	No	Rationale D
Nautilus Interconnector EN020023	Pre-application	Information unavailable	N/A	No	Rationale A

Project	Status	Construction period	Confidence in data	Included in the CEA (Y/N)	Rationale
Lake Lothing Third Crossing TR010023	Approved (DCO issued 2020)	Over 2 years	High	No	Rationale C. The project is scheduled to be complete by the end of 2024 and therefore no temporal overlap of project's construction or operational traffic is considered to have an impact on projects due to there being no spatial or temporal overlap.
Richborough Connection Project EN020017	Approved (DCO issued 2017)	Built	High	No	Rationale C. This scheme has been constructed and therefore traffic flows are considered to form part of the existing baseline.
Manston Airport TR02002	Information unavailable	Information unavailable	N/A	No	Rationale D
Kentish Flats Extension EN010036	Approved (DCO issued 2013)	Built	High	No	Rationale C. This scheme has been constructed and therefore traffic flows are considered to form part of the existing baseline. No significant operational traffic movements are reported.
Sea Link EN020026	Pre-application	Information unavailable	N/A	No	Rationale A
Galloper Offshore Windfarm EN010003	Approved	Built	High	No	Rationale C. This scheme has already been constructed and therefore traffic flows are considered to form part of the existing baseline. No significant operational traffic movements are reported.
A12 Chelmsford to A120 widening scheme TR010060	Pre-examination	Information unavailable	Medium	No	Rationale D
Rivenhall IWMF and Energy Centre EN010138	Pre-application	Information unavailable	Medium	No	Rationale D
Essex County Council					
Elmstead Hall, Elmstead, Colchester, Essex ESS/24/15/TEN	Approved	Information unavailable.	N/A	No	Rationale A

Project	Status	Construction period	Confidence in data	Included in the CEA (Y/N)	Rationale
St. George's Infant School and Nursery, Barrington Road, Colchester, Essex, CO2 7RW CC/COL/71/22	Approved	Information unavailable	N/A	No	Rationale D
Wilson Marriage Centre, Barrack Street, Colchester, Essex, CO1 2LR CC/COL/65/22	Approved	Information unavailable	N/A	No	Rationale A
Wivenhoe Quarry Alresford Road, Wivenhoe, Essex, CO7 9JU ESS/80/20/TEN/42/2	Report being prepared	Information unavailable	Medium	No	TA for the scheme identifies that there would be no net increase in traffic movements above existing levels, there is no potential for cumulative effects to occur.
Elmstead Hall, Elmstead, Colchester, Essex, CO7 7AT ESS/24/15/TEN/55/1/NMA	Approved	Information unavailable.	N/A	No	Rationale B
Elmstead Hall, Elmstead, Colchester, Essex, CO7 7AT https://planning.essex.gov.uk/Planning/Display/ESS/24/15/TEN ESS/24/15/TEN/2/1/NMA	Approved	Information unavailable.	N/A	No	Rationale B
Crown Quarry (Wick Farm), Old Ipswich Road, Ardleigh, CO7 7QR ESS/57/04/TENLA4	Approved	Information unavailable.	N/A	No	Rationale B
Wivenhoe Quarry, Alresford Road Wivenhoe, Essex CO7 9JU ESS/80/20/TEN/42/2	Approved	Information unavailable.	N/A	No	TA for the scheme identifies that there would be no net increase in traffic movements above existing levels, there is no potential for cumulative effects to occur.
Martell's Quarry, Slough Lane, Ardleigh, Essex, CO7 7RU ESS/42/22/TEN	Out for consultation	Information unavailable	N/A	No	TA for the scheme identifies that there would be no net increase in traffic movements above existing levels, there is no potential for cumulative effects to occur.

Project	Status	Construction period	Confidence in data	Included in the CEA (Y/N)	Rationale
Land at: Elmstead Hall, Elmstead, Colchester, Essex ESS/105/21/TEN	Approved	Information unavailable.	N/A	No	Rationale B
Land at Martells Quarry, Slough Lane, Ardleigh, Essex, CO7 7RU ESS/39/22/TEN	Approved	Information unavailable.	N/A	No	The schemes transport documents propose to scope out transport effects due to the forecast low numbers of additional traffic movements. Therefore there is no potential for cumulative effects to occur.
Land to the south of Colchester Main Road, Alresford, Colchester, CO7 8DB ESS/17/18/TEN/NMA2	Report being prepared	Information unavailable	N/A	No	TA for the scheme identifies that there would be no net increase in traffic movements above existing levels, there is no potential for cumulative effects to occur.
Land at: Martells Quarry, Slough Lane, Ardleigh, Essex, CO7 7RU ESS/39/22/TEN/NMA/1, ESS/39/22/TE, ESS/39/22/TEN/NMA/1	Approved	Information unavailable	N/A	No	The schemes transport documents propose to scope out transport effects due to the forecast low numbers of additional traffic movements. Therefore there is no potential for cumulative effects to occur.
Crown Quarry (Ardleigh Reservoir Extension), Wick Farm, Old Ipswich Road, Tendring, Colchester, CO7 7QR ESS/57/04/TENLA4	Approved	Information unavailable.	N/A	No	Rationale B
Elmstead Hall, Elmstead, Colchester, Essex ESS/24/15/TEN	Approved	Information unavailable.	N/A	No	Rationale B
Ardleigh Waste Transfer Station, A120, Ardleigh, Colchester, CO7 7SL ESS/04/17/TEN	Approved	Information unavailable.	N/A	No	Rationale D
35 Roach Vale, Colchester, CO4 3YN	Approved	Information unavailable.	N/A	No	Rationale A

Project	Status	Construction period	Confidence in data	Included in the CEA (Y/N)	Rationale
CC/COL/07/22					
Boxted Bridge, Boxted, Essex, CO4 5TB CC/COL/106/21	Report being prepared	Information unavailable	N/A	No	Rationale A
Elmstead Hall, Elmstead, Colchester, Essex ESS/24/15/TEN	Approved	Information unavailable.	N/A	No	Rationale B
Lufkins Farm, Great Bentley Road, Frating CO7 7HN ESS/99/21/TEN/SO	EIA not required	Information unavailable.	N/A	No	Rationale A
Lufkins Farm, Great Bentley Road, Frating CO7 7HN ESS/99/21/TEN	Resolution made/ awaiting legal agreement	Information unavailable.	N/A	No	Rationale A
Elmstead Hall, Elmstead, Colchester ESS/24/15/TEN	Approved	Information unavailable.	N/A	No	Rationale B
Elmstead Hall, Elmstead, Colchester, CO7 7EX ESS/24/15/TEN	Approved	Information unavailable.	N/A	No	Rationale B
Tendring District Council					
Land to The South of Thorpe Road Weeley Essex CO16 9AJ 19/00524/OUT	Approved	Information unavailable.	High	Yes	A TA is provided in support of this scheme. A review of these documents identifies a potential temporal overlap and spatial and overlap between the schemes and North Falls TTSA. Therefore, it is assessed that there is the potential for cumulative effects to occur.

Project	Status	Construction period	Confidence in data	Included in the CEA (Y/N)	Rationale
Land Between the A120 and A133, To The East of Colchester and of Elmstead Market 21/01502/CMTR	Awaiting decision	Information unavailable.	N/A	No	Rationale C - No temporal overlap between the scheme and North Falls is identified as the scheme is due to be completed in 2026, thus is not considered for the cumulative assessment.
Hamilton Lodge Parsons Hill Great Bromley Colchester Essex CO7 7JB 20/00547/OUT	Approval-outline	Information unavailable.	N/A	No	Rationale A
Land adjacent to Lawford Grid Substation Ardleigh Road Little Bromley Essex CO11 2QB 21/02070/FUL	Approved	Information unavailable.	N/A	No	Rationale B
Land at Briarfields Kirby Le Soken Essex CO13 0HE 21/02070/FUL	Refused	Information unavailable.	N/A	No	Rationale A
Sato UK Ltd Valley Road Dovercourt Harwich Essex CO12 4RR 22/01920/DETAIL	Approved (April 2023)	Information unavailable.	N/A	No	Rationale A
Land to The South of Weeley Road Great Bentley Essex 22/01818/FUL	Awaiting decision	Information unavailable	N/A	No	Rationale A
Land East of Halstead Road Kirby Cross Essex CO13 0LR 22/01746/FUL	Awaiting decision	Information unavailable	N/A	No	Rationale A
Land South of Long Road Mistley Essex CO11 2HN 23/00026/DOVU5	Awaiting decision	Information unavailable	N/A	No	Rationale A
Thorpe Park Solar Farm Land South of Thorpe-Le-Soken Tendring Essex CO16 0HR	Approval (Feb 2023)	Information unavailable	Medium	No	Traffic and Transport data is presented in a report entitled 'Transport Report'. This report is equivalent to a TS and

Project	Status	Construction period	Confidence in data	Included in the CEA (Y/N)	Rationale
22/02117/FUL					presents no assessment of traffic impacts. Therefore, by definition there is no potential for cumulative effects to occur.
Land North and South of A133 Clacton Road at Finches Lane Elmstead Essex CO7 7FD 22/02076/FUL	Awaiting decision	Information unavailable	Medium	No	Rationale D
Land South of Holland Road Little Clacton Clacton On Sea Essex CO16 9QH 23/00365/FUL	Awaiting decision	Information unavailable	N/A	No	Rationale A
Honeycroft & 2 Waldegrave Way Lawford Manningtree Essex CO11 2DX 23/00929/FUL	Approval (Sep 2023)	Information unavailable	Medium	No	TA for the scheme identifies that there would be no net increase in traffic movements above existing levels, there is no potential for cumulative effects to occur.
Chancery Farm Park Road Ardleigh Colchester Essex CO7 7SS 23/00913/FUL	Approval (Aug 2023)	Information unavailable	N/A	No	Rationale A
Land to The North of Stourview Close Mistley Esses 23/00992/DETAIL	Awaiting decision	Information unavailable	Low	No	Rationale B
Lifehouse Spa and Hotel Frinton Road Thorpe Le Soken Clacton On Sea Essex CO16 0JD 23/01231/FUL	Awaiting decision	Information unavailable	N/A	No	Rationale A
Land to The rear of 173 - 203 Thorpe Road Kirby Cross Essex CO13 0NH	Awaiting decision	Information unavailable	N/A	No	Rationale A
Bathside Bay Stour Road Harwich Essex CO12 3HF 23/01594/FUL	Awaiting decision	2026-2028 (For Green Energy Hub)	High	Yes	A TA and ES traffic and transport chapter is provided in support of this scheme. A review of these documents identifies a potential temporal overlap and spatial and overlap between the

Project	Status	Construction period	Confidence in data	Included in the CEA (Y/N)	Rationale
					schemes and North Falls TTSA. Therefore, it is assessed that there is the potential for cumulative effects to occur.
Lower Farm East End Green Brightlingsea Colchester Essex CO7 0SX 23/01196/FUL	Awaiting decision	Information unavailable	Medium	No	Rationale D
Land at Broadfields Wivenhoe Colchester 23/01001/NACON	Awaiting decision	Information unavailable	N/A	No	Rationale A
Crown Quarry Old Ipswich Road Ardleigh Essex CO7 7QR 23/01033/DETAIL	Approved (Oct 2023)	Information unavailable	N/A	No	Rationale A
Land South West of Colchester Main Road Alresford Essex CO7 8DG 23/00709/CMTR	Approved (Oct 2023)	Information unavailable	N/A	No	Rationale A
Railway Land Behind Oxford Road Clacton On Sea Essex CO15 6ED 22/01475/FUL	Approved (Apr 2023)	Information unavailable	N/A	No	Rationale A
Land to The North West of Hardys Green Birch Colchester 22/01467/NACON	Approved (Mar 2023)	Information unavailable	N/A	No	Rationale A
The Farm Office Allens Farm Tye Road Elmstead Colchester Essex CO7 7BB 22/01782/FUL	Approved (Feb 2023)	Information unavailable	N/A	No	Rationale A
Lufkins Farm Great Bentley Road Frating Colchester Essex CO7 7HN	Approved (Dec 2022)	Information unavailable	N/A	No	Rationale A

Project	Status	Construction period	Confidence in data	Included in the CEA (Y/N)	Rationale
21/02006/CMTR					
Land to The South of Thorpe Road Weeley Essex CO16 9AJ 22/00979/DETAIL	Approved (Oct 2023)	Information unavailable	N/A	No	Rationale A
Oakwood Park Land to The East of Thorpe Road Little Clacton Clacton On Sea 20/00179/FUL	Approved (Jan 2022)	Information unavailable	N/A	No	Rationale A
Land to The South of Long Road and to West of Clacton Road Mistley Essex CO11 2HN 21/00197/DETAIL	Approved (Dec 2021)	Information unavailable	N/A	No	Rationale A
Sato UK Ltd Valley Road Dovercourt Harwich Essex CO12 4RR 18/02109/OUT	Appeal allowed	Information unavailable	N/A	No	Rationale A
Land East of Lodge Road Thorpe Le Soken Essex CO16 0HR 21/00393/EIASCR	Request for a Screening Opinion	Information unavailable	N/A	No	Rationale A
Foots Farm Land South of Centenary Way and West of Thorpe Road Clacton On Sea Essex CO15 4QD 20/01130/FUL	Awaiting decision	Information unavailable	N/A	No	Rationale E.
Land West of Roundabout at Brook Park West Little Clacton Bypass Clacton On Sea Essex 19/01945/DETAIL	Approved (Jun 2020)	Information unavailable	N/A	No	Rationale A
Land North of Cockaynes Lane Alresford Essex CO7 8BT 18/00367/FUL	Approved (Sep 2019)	Information unavailable	N/A	No	Rationale A

Project	Status	Construction period	Confidence in data	Included in the CEA (Y/N)	Rationale
Land to The East of Kirby Road Great Holland Essex CO13 0HL 17/01988/FUL	Approved (Jun 2019)	Information unavailable	Medium	No	Rationale B
Land South West of Horsley Cross Roundabout Clacton Road Horsley Cross Essex CO11 2NZ 13/00745/OUT	Approved – Outline (Aug 2014)	Information unavailable	High	Yes	A TA is included in the application and presents operational traffic impacts of the project. Thus, the project is included in cumulative assessment.
The Tendering Colchester Garden Community	Allocated within the Local Plan	2023-2051	Low	No	Rationale E. The site is allocated in the Tendring District local plan, however, at this stage there is however insufficient information regarding traffic demand, distribution and buildout rates to inform a cumulative assessment. Notwithstanding, noting that the site is allocated, trips would be captured within TEMPro growth factors used during the trip generation for North Falls. The scheme is therefore not considered further within the cumulative assessment.

27.8.3 Assessment of cumulative effects

223. Five Estuaries is also in its application phase, having submitted a DCO to the Planning Inspectorate for the project, which was accepted on 22nd April 2024. Although subject to a separate DCO, Five Estuaries shares the same landfall location and onshore cable route (including Bentley Road improvement works) as North Falls, with the two projects also having co-located onshore substations within the same onshore substation works area. The two projects also have the same National Grid connection point.

224. Five Estuaries Offshore Wind Farm Limited (VEOWL) and NFOW have sought to collaborate and coordinate where possible, which has led to collaborative design of the projects' onshore infrastructure, and also to sharing of detailed project design information. As a result, a detailed CEA for effects arising from the development of Five Estuaries can be undertaken. The CEA section of this chapter is therefore split into two sections:

- the first describing a detailed CEA covering effects predicted to arise from development of Five Estuaries and North Falls;
- the second, detailing effects predicted to arise from the development of Five Estuaries, North Falls and other projects.

225. The latter section will be based on the project information available for each scheme in the public domain, and by definition is therefore less detailed than the Five Estuaries and North Falls CEA section.

226. Full details on the approach to CEA used within this chapter are set out in Chapter 6 EIA Methodology (Document Reference: 3.1.8).

27.8.3.1 Five Estuaries

27.8.3.1.1 Realistic worst-case scenario

227. North Falls and VEOWL are retaining three potential build out scenarios. The following section describes these scenarios and identifies the worst-case scenario for the purpose of the CEA.

228. Full details on the build out scenarios considered within this assessment are detailed in ES Chapter 5 Project Description (Document Reference: 3.1.7) ES Chapter 6 EIA Methodology (Document Reference: 3.1.8).

229. This realistic worst case cumulative scenario considers three potential cumulative scenarios, as outlined in ES Chapter 5 Project Description (Document Reference: 3.1.7):

- **Scenario 1:** North Falls 'Option 2' build out is progressed, and VEOWL undertakes landfall, onshore substation construction and cable pull which overlaps with North Falls equivalent works. In this scenario, onshore cable route associated works, including temporary construction compounds, accesses and haul road, all remain in place and are used by the second project during its construction.
- **Scenario 2:** North Falls 'Option 1 build out is progressed, and VEOWL undertakes landfall, onshore substation and onshore cable route construction and cable pull, all of which does not overlap with North Falls' equivalent works. There would be a gap of between 1 and 3 years between each Projects' construction. In this scenario, onshore cable route

associated works, including temporary construction compounds, accesses and haul road, all remain in place and are used by the second project during its construction.

- **Scenario 3:** North Falls 'Option 1' build out is progressed, and VEOWL undertakes a separate landfall, onshore substation and onshore cable route construction and cable pull with a multi-year (i.e. >3 year) gap between the two construction activities. In this scenario, there is no reuse in onshore temporary works between the two projects, and all onshore cable route associated works are rebuilt and reinstated in full by the second project.

230. The realistic worst-case scenario for likely cumulative effects scoped into the EIA for the traffic and TA are summarised in Table 27.29. These are based on project parameters for Five Estuaries described in ES Chapter 5 Project Description (Document Reference: 3.1.7), which provides further details regarding specific activities and their durations.

231. The onshore parameters for the Project described in ES Chapter 5 Project Description (Document Reference: 3.1.7) 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.

232. Traffic demand has been forecast by applying a 'first principles' approach. The first principles approach derives 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.

233. Detailed derivation and distribution of the traffic numbers and worst case parameters are provided within the TA (ES Appendix 27.1 (Document Reference: 3.3.64)). Table 27.29 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 North Falls and Five Estuaries (Scenario 1) (North Falls and Five Estuaries together).

Table 27.29 Realistic worst-case scenario of cumulative effects arising from development of North Falls and Five Estuaries– (Scenario 1) (North Falls and Five Estuaries together).

Potential impact	Parameter	Notes
Construction		
Impact 1: Severance Impact 2: Amenity Impact 3: Highway Safety Impact 4: Driver Delay	The Project: Earliest construction commencement year = 2027 Landfall: Construction duration = 13 months Landfall construction compound dimensions = 150 x 150m No. of landfall HDD locations = 1 No. of transition joint bays = 4 Individual Transition Joint Bay (TJB) dimensions = 4 x 15m Onshore cable route: Construction duration = 18 – 27 months, of which cable pull = 12 months No. of temporary construction compounds = 11 Temporary construction compound footprint = 150 x 150m (main) to 100 x 100m (satellite) Length of onshore cable route = Up to 24km Nominal onshore cable route width = 72m (open cut trenching), 90m (trenchless crossings), 130m (complex trenchless crossings) No. of circuits = 4 (2 per project) No. of cable trenches = 4 (2 per project) Cable trench dimensions = 3.5 – 1.2 x 2m (tapered top to bottom) Volume of cement bound sand (CBS) per m of trench = 0.47m^3 Haul road = 6m (10m wide total including verges, drainage and passing places) x up to 24km x 0.30m (width at surface x length x depth) Length of temporary access roads = 8.1km No. of joint bays = 192 (approximately every 500m) buried below ground	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 hourly traffic flows that could occur during the construction phase. Hourly flows are calculated from peak daily traffic flows. The assessment of all traffic and transport impacts presented within this chapter has been informed by the Projects' worst case peak construction traffic demand. Peak construction traffic demand is likely to occur for a short duration within the overall construction programme.

Potential impact	Parameter	Notes
	Dimensions of joint bays (underground infrastructure) = 15 x 4m (length x width) Trenchless crossing compound dimensions = 75 x 150m <u>Onshore substation:</u> Construction duration = 21-27 months No. of onshore substations = 2 Volume of imported concrete = 15,914m^3 Length of fencing = 2,060m Tonnage of steel reinforcement = 1,591 tonnes Volume of chippings = 11,016m^3 Length of drainage = 4,428m Tonnage of structural steel = 1,014 tonnes Roofing and cladding area = 11,400m^2 Volume of bituminous road = 13,966m^3 Imported engineering fill = 129,950m^3 <u>A120 and Bentley Road improvement works:</u> Construction duration = 6 - 9 months HGV movements = Peak 50 HGV trips per day, average 20 HGV trips per day LV movements = Peak 76 LV trips per day, average 41 LV trips per day (assuming an employee to vehicle ratio of 1.5 employees per vehicle). <u>Associated peak movements and routeing (for landfall, onshore cable route and onshore substation):</u> Peak HGV movements = 605 HGV trips per day (inclusive of contingencies for incidental deliveries) Peak LV movements = 1346 employee trips, 898 LV trips per day (applying an employee to vehicle ratio of 1.5 employees per vehicle) 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	

Potential impact	Parameter	Notes
	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 an average of 1.5 employees per vehicle 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 ES Appendix 27.4 (Document Reference: 3.3.67)), no operational scenarios will be assessed within this traffic and transport impact assessment. Details of strategy to access the onshore substation during the operational phase are presented within the TA (ES Appendix 27.1 (Document Reference: 3.3.64)).		
Decommissioning		
No final decision has yet been made regarding the final decommissioning policy for the onshore project infrastructure including landfall, onshore cable route, 400kV cable route 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 impacts will be no greater than those identified for the construction phase.		

27.8.3.1.2 During construction

Construction traffic impact screening table

234. Table 27.30 summarises the assigned daily peak vehicle trips generated by all materials, personnel and plant associated with the construction of North Falls for Scenario 1.

235. Table 27.30 also provides a comparison of the peak daily construction flows with the forecast background daily traffic flows in 2027 for Scenario 1.

Table 27.30 Cumulative Traffic Flows (Scenario 1)

Link ID	Link Description	Background 2027 annual average daily traffic flows		Cumulative Scenario 1 Peak Daily Trips		Percentage increase	
		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
1	A120 from the A12 to the A133	44,925	2,635	956	605	2.1%	23.0%
2	A120 from the A133 to Harwich Road	44,925	2,635	1,157	605	2.6%	23.0%
3	A120 from Harwich Road to Bentley Road	15,706	1,797	1,157	605	7.4%	33.7%
4	Bentley Road from the A120 to Little Bromley	1,026	17	823	365	80.2%	2,162.5%
15	A120 from Bentley Road to the B1035	15,706	1,797	1,157	605	7.4%	33.7%
16	A120 from the B1035 to Colchester Road	15,706	1,797	663	605	4.2%	33.7%
20	A133 south of the A120	32,006	1,273	492	268	1.5%	21.0%
21b	A133 from Crown Lane to the B1034	32,229	1,009	602	268	1.9%	26.6%
22	A133 south of the B1033 to Progress Way	21,295	574	311	109	1.5%	19.0%
23	A133 south of Progress Way to the B1032	21,295	574	292	109	1.4%	19.0%
24	B1032 east of the A133 to Holland Road	12,718	267	273	109	2.1%	40.8%
25	B1032 from Holland Road to Kings Parade	13,252	192	273	109	2.1%	56.9%
26	B1032 from Kings Parade to the south of Great Holland	7,395	96	273	109	3.7%	113.3%
32	B1033 north of the B1414 through Thorpe-le-Soken	9,861	151	205	33	2.1%	21.8%
33	B1033 from the B1441 to the B1035 through Weeley	10,961	210	351	159	3.2%	75.6%
35	B1033 from the A133 to the B1441	1,678	33	391	126	23.3%	385.2%
37	B1035 north of Whitehall Lane to Swan Road	1,678	33	225	39	13.4%	119.2%
43	A133/Colchester Road from A133/Colchester Road roundabout to end of TTSA	12,327	641	97	0	0.8%	0%
45	B1035 north of B1033 to Whitehall Lane	5,402	746	4	0	0.1%	0%

Link ID	Link Description	Background 2027 annual average daily traffic flows		Cumulative Scenario 1 Peak Daily Trips		Percentage increase	
		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
47	B1035 through Tendring Green from Parsonage Lane to Stones Green Road	13,753	1,341	618	605	4.5%	45.1%
48	St John's Road from St Osyth Roundabout to end of TTSA	15,751	215	58	0	0.4%	0%

Impact 1: Severance

236. 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.

Magnitude of impact

237. Table 27.31 provides a summary of the severance magnitude of impact for each of the screened links detailed in Table 27.27.

Table 27.31 Magnitude of severance impact (Scenario 1)

Links	Magnitude of impact	Rationale for magnitude
24, 25 and 33	Negligible	The peak daily change in total traffic flow is less than 30%
4	Medium	The peak daily change in total traffic flow is between 60% and 90%.

Sensitivity of receptors

238. The sensitivity of each highway link is detailed in Table 27.13 and ES Figure 27.5 (Document Reference: 3.2.23).

Significance of effect

239. Table 27.32 provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of the severance effect.

Table 27.32 Significance of severance effect (Scenario 1)

Links	Magnitude of impact	Sensitivity	Significance of effect
33	Negligible	Medium	Minor adverse
24, 25		High	Minor adverse
4	Medium	Low	Minor adverse

240. All links are subject to at most a minor adverse cumulative significance of effect, which is not significant in EIA terms.

Impact 2: Amenity

241. 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.

Magnitude of impact

242. Table 27.33 provides a summary of the amenity magnitude of impact (applying the thresholds set out in Table 27.10) for each of the screened links detailed in Table 27.27.

Table 27.33 Magnitude of amenity impact (Scenario 1)

Link	Link Description	Essex County Routes Network Priority	Magnitude of impact assessment	Assessed Magnitude of impact (Scenario 1)
4	Bentley Road from the A120 to Little Bromley	PR2	The link has a base flow of 1,026 vehicle trips (including 17 HGV trips) per day and would be subject to construction traffic of up to 823 vehicle trips (including 365 HGV trips) per day. Peak daily construction traffic would result in an increase in traffic of 80.2% for all vehicles and 2,162.5% for HGVs. Receptors along the link would experience a peak increase in flow of approximately 37 HGV trips per hour. Applying the thresholds set out in Table 27.10 this would lead to an assessment of high magnitude of impact. However, noting the extensive package of embedded mitigation measures proposed for Link 4 (outlined in Table 27.2), a more detailed assessment has been undertaken of the factors that may be influencing the magnitude of impact upon this link. EATM outlines amenity can be affected by traffic flow, traffic composition and pavement width/separation from traffic. In this context, a review of the Link 4 highway baseline (outlined in Table 27.13) has established few sensitive receptors and surveys of pedestrian and cycle activity (provided within the TA (ES Appendix 27.1 (Document Reference: 3.3.64)) have noted limited existing demand along the road (less than four pedestrian trips and 18 cycle trips per day). When considering the existing environment for pedestrians and cyclists traveling along Bentley Road, it can be noted that a pedestrian or cyclist would currently be passed by an average of 68 vehicles per hour (07:00 to 19:00), and there would be no separation from traffic, with limited separation due to the width of the road and vehicles passing at speeds of up to 60mph. When considering the proposed future environment, it would be forecast that a pedestrian or cyclist would experience an average of 136 vehicles per hour (07:00 to 19:00), however, they would be separated from the traffic and traffic would pass at lower speeds (40mph). It is assessed that whilst pedestrians and cyclists would experience higher overall traffic flows, on balance, the changes in separation from traffic and reduction vehicle speeds (Table 27.2), the overall magnitude of impact can be re-assessed as low. This re-assessment considers that, pedestrians and cyclists would benefit from: Being segregated from motorised traffic on a new temporary off road cycleway/footway;	Low

Link	Link Description	Essex County Routes Network Priority	Magnitude of impact assessment	Assessed Magnitude of impact (Scenario 1)
			Be afforded greater separation from traffic due to the increased road width; and Be passed at reduced speeds, as a result of the temporary reduction in the speed limit from 60mph to 40mph.	
24	B1032 east of the A133 to Holland Road	PR2	The link has a base flow of 12,713 vehicle trips (including 267 HGV trips) per day and would be subject to construction traffic of up to 273 vehicle trips (including 109 HGV trips) per day. Peak daily construction traffic would result in an increase in traffic of 2.1% for all vehicles and 40.8% for HGVs.	Negligible
25	B1032 from Holland Road to Kings Parade	PR2	The link has a base flow of 13,252 vehicle trips (including 192 HGVs) per day and would be subject to construction traffic of up to 273 vehicle trips (including 109 HGV trips) per day. However, the primary assessment (Section 27.6.1.3.3) identifies additional mitigation to cap HGV flows along this link. This cap would therefore be equally applicable to the Scenario 1 traffic flows. The assessed magnitude of impact upon Link 25 is therefore no greater than the residual magnitude of impact assessed in Section 27.6.1.3.3.	Negligible
26	B1032 from Kings Parade to the south of Great Holland	PR2	The link has a base flow of 7,395 vehicle trips (including 96 HGVs) per day and would be subject to construction traffic of up to 274 vehicle trips (including 109 HGV trips) per day. Peak daily construction traffic would result in an increase of 3.7% for all vehicles and 113.3% for HGVs. Receptors along the link would experience a peak increase in flow of approximately 11 HGV trips per hour.	Medium
33	B1033 from the B1441 to the B1035 through Weeley	PR1	The link has a base flow of 10,961 vehicle trips (including 210 HGVs) per day and would be subject to construction traffic of up to 351 vehicle trips (including 159 HGV trips) per day. Peak daily construction traffic would result in an increase of 3.2% for all vehicles and 75.6% for HGVs.	Low

Link	Link Description	Essex County Routes Network Priority	Magnitude of impact assessment	Assessed Magnitude of impact (Scenario 1)
35	B1033 from the A133 to the B1441	PR2	The link has a base flow of 1,678 vehicle trips (including 33 HGVs) per day and would be subject to construction traffic of up to 391 vehicle trips (including 126 HGV trips) per day. However, the primary assessment (Section 27.6.1.3.3) identifies additional mitigation to cap HGV flows along this link. This cap would therefore be equally applicable to the Scenario 1 traffic flows. The assessed magnitude of impact upon Link 35 is therefore no greater than the residual magnitude of impact assessed in Section 27.6.1.3.3.	Medium
37	B1035 north of Whitehall Lane to Swan Road	PR2	The link has a base flow of 1,678 vehicle trips (including 33 HGVs) per day and would be subject to construction traffic of up to 225 vehicle trips (including 39 HGV trips) per day. However, the primary assessment (Section 27.6.1.3.3) identifies additional mitigation to cap HGV flows along this link. This cap would therefore be equally applicable to the Scenario 1 traffic flows. The assessed magnitude of impact upon Link 37 is therefore no greater than the residual magnitude of impact assessed in Section 27.6.1.3.3.	Medium

Sensitivity of receptors

243. The sensitivity of each highway link is detailed in Table 27.13 and ES Figure 27.5 (Document Reference: 3.2.23).

Significance of effect

244. Table 27.34 provides a summary of the sensitivity of each receptor, the magnitude of impact and an evaluation of the significance of the amenity effect.

Table 27.34 Significance of amenity effect

Links	Magnitude of impact	Sensitivity	Significance of effect
4, 33	Low	Low	Negligible
24, 25	Negligible	High	Minor adverse
26, 35, 37	Medium	Low	Minor adverse

245. All links are subject to at most a minor adverse cumulative significance of effect, which is not significant in EIA terms.

Impact 3: Highway Safety

246. To understand the potential effect of changes in traffic (associated with North Falls and Five Estuaries cumulatively) 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.

Magnitude of impact and sensitivity of receptors

247. Table 27.35 provides a summary of the highway safety magnitude of impact for each of the screened links and collision clusters detailed in Table 27.27.

Table 27.35 Magnitude of highway safety impact for Scenario 1

Receptors	Location	Links	Magnitude of impact
Cluster 1	Ardleigh Crown Roundabout junction	1	Cluster 1 is located at the end of link 1 between the A120 and A12 and is projected to experience an increase in total traffic of up to 2.1%. It is assessed that a change in total traffic of up to 2.1% represents a negligible magnitude of impact.
Cluster 2	A120/A133 Junction	1, 2, 20	Cluster 2 is located at a junction between links 1, 2 and 20, which are projected to experience an increase in total traffic of up to 2.6%. It is assessed that a change in total traffic of up to 2.6% represents a negligible magnitude of impact.
Cluster 3	A133 Roundabout, Frating	20, 21b and 43	Cluster 3 is located at the roundabout junction between links 20, 21b and 43 that are projected to experience an increase in total traffic of up to 1.9%. It is assessed that a change in total traffic of up to 1.9% represents a negligible magnitude of impact.
Cluster 4	A133/B1029 junction	43	Cluster 4 is located along link 43 that is projected to experience an increase in total traffic of up to 0.8% and no increase in HGV traffic. It is assessed that a change in total traffic of up to 0.8% represents a negligible magnitude of impact.
Cluster 5	A133/Shair Lane	21b	Cluster 5 is located along link 21b that is projected to experience an increase in total traffic of up to 1.9%. It

Receptors	Location	Links	Magnitude of impact
			is assessed that a change in total traffic of up to 1.9% represents a negligible magnitude of impact.
Cluster 8	St John's Roundabout	23, 24, 48	Table 27.22 identifies that the types of existing collisions at Cluster 8 involving pedestrians and cyclists could be disproportionately impacted by vehicle composition, therefore consideration is given to the change in HGV traffic as well as the change in total traffic. Cluster 8 is located at the intersection of links 23, 24 and 48 that are projected to experience an increase in total traffic of up to 2.1% and HGV traffic of up to 40.8%. It is assessed that a change in total traffic of up 2.1% and HGV traffic of up to 40.8% represents a low magnitude of impact.
Cluster 9	B1027/B1369 junction	24	Cluster 9 is located along Link 24 that is projected to experience an increase in total traffic of 2.1%. It is assessed that a change in total traffic of up to 2.1% represents a negligible magnitude of impact.
Cluster 11	B1033 through Thorpe-le-Soken	32	Cluster 11 is located along Link 32 that is projected to experience an increase in total traffic of 2.1%. It is assessed that a change in total traffic of up to 2.1% represents a negligible magnitude of impact.
Links 3, 15 and 16	A120 from Hare Green Roundabout junction to Colchester Road.	3, 15 and 16	Links 3, 15 and 16 are projected to experience an increase in total traffic of up to 7.4%. It is assessed that a change in total traffic of up to 7.4% represents a negligible magnitude of impact.
Links 22 and 23	A133 from the junction with the B1033 to the St John's Roundabout junction	22 and 23	The types of existing collisions along links 22 and 23 involving pedestrians/cyclists could be disproportionately impacted by vehicle composition, therefore consideration is given to the change in HGV traffic as well as the change in total traffic. Links 22 and 23 are projected to experience an increase in total traffic of up to 1.5% and HGV traffic of up to 19.0%. It is therefore assessed that a change in total traffic of up to 1.5% and HGV traffic of up to 19.0% represents a low magnitude of impact.
Link 45	B1414 from the B1441 to the B1033	45	Link 45 is projected to experience an increase in total traffic of up to 0.1% and no increase in HGV traffic. It is assessed that a change in total traffic of up to 0.1% represents a negligible magnitude of impact.

Sensitivity of receptors

248. The sensitivity of each receptor is detailed in Table 27.22.

Significance of effect

249. Table 27.36 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 27.36 Significance of highway safety effect

Receptor	Magnitude of impact	Sensitivity	Significance of effect
Clusters 1, 2, 3 and 4 and Link 45	Negligible	High	Minor Adverse
Clusters 9, 11 and Links 3, 15 and 16		Medium	Minor Adverse
Cluster 8 and Links 22 and 23	Low	High	Moderate Adverse

250. Cluster 8 and Links 22 and 23 are subject to a moderate adverse cumulative significance of effect, which is significant in EIA terms. All other receptors are subject to at most a minor adverse cumulative significance of effect, which is not significant in EIA terms.

Additional mitigation

251. It is assessed that the change in HGV traffic associated with the construction of North Falls and Five Estuaries could result in a potentially significant highway safety effect at Cluster 8 and along links 22 and 23.

252. Section 27.6.1.4 outlines a package of enhanced maintenance measures to address the underlying issues that manifest in adverse highway safety impacts and therefore reduce the sensitivity of Cluster 8 from high to low - medium. This mitigation aims to address the underlying issues with the highway environment at this location and therefore applies equally to all road users including existing road users, as well as North Falls and Five Estuaries construction traffic.

253. Section 27.6.1.4 also outlines a package of enhanced driver inductions and training would serve to reduce the likelihood of construction traffic being involved in a collision, therefore the magnitude of impact along links 22, 23 could be reduced from low to negligible.

Residual significance of effect

254. It is assessed that residual highway safety effect upon Cluster 8 would be of a low magnitude of impact on a receptor of low to medium sensitivity resulting in a minor adverse residual effect.

255. It is also assessed that residual highway safety effect upon links 22 and would be of a negligible magnitude of impact on a receptor of high sensitivity resulting in a minor adverse residual effect.

256. These residual cumulative effects are not significant in EIA terms.

27.8.3.1.3 Summary

257. Table 27.37 below provides a summary of the potential significant cumulative effects identified during the Traffic and Transport CEA in relation to Five Estuaries.

Table 27.37 Summary of potential cumulative effects in relation to Five Estuaries

Potential impact	Receptor	Cumulative effect	Embedded mitigation
Impact 1: Severance	Links 4, 24, 25 and 33	Minor adverse	n/a

Potential impact	Receptor	Cumulative effect	Embedded mitigation
Impact 2: Amenity	Links 44 and 33	Negligible	n/a
	Links 24, 25, 26, 35 and 37	Minor adverse	n/a
Impact 3: Highway Safety	Clusters 1, 2, 3, 4, 9, 11 and 45 and Links 3, 15, 16 and 45.	Minor adverse	n/a
	Cluster 8 and Links 22 and 23	Moderate adverse	Enhanced maintenance measures as well as enhanced driver inductions.

27.8.3.2 North Falls, Five Estuaries and other projects

258. Based on the project screening in Table 27.28, excluding Five Estuaries, a four of the other listed schemes will be included in the CEA.

259. Summary information on the short list schemes progressing through this exercise (i.e. the short list of other schemes) for assessment is provided below in Table 27.38 which presents the scenarios whereby the Project and the other schemes could potentially result in cumulative effects for traffic and transport.

Table 27.38 Short List of Schemes Considered Within and Traffic and Transport CEA

Scheme Name	Discussion
Norwich to Tilbury	As noted in Section 27.4.6, National Grid have provided North Falls with and initial forecast for the numbers of peak construction vehicles that could be routed via Bentley Road and the A120 in December 2023, and the cumulative assessment described in this chapter has been based on this information, while outstanding queries relating to data published by National Grid since this date are resolved. In summary National Grid have advised in December 2023 that Norwich to Tilbury could result in a peak of 213 HGV trips per day and 84 LV trips per day and that all HGVs would travel south on Bentley Road (Link 4) towards the A120 (Links 1, 2, 3, 15, 16, 18, 19 and 47). It can be noted from (Table 27.37) that Link 4 is scoped in to the CEA for the impacts of severance and amenity and links 1, 2, 3, 15 and 16 along the A120 are scoped in to the CEA for the impact of highway safety. Further consideration of the potential for cumulative effects with Norwich to Tilbury upon the impacts of severance, amenity and highway safety are therefore presented in Section 27.8.3.2.1.
Bathside Bay Container Terminal (Green Energy Hub use) (BBCT)	Construction of BBCT is anticipated in 2024 with Green Energy Hub operation commencing in 2026 (at the earliest). The application for BBCT includes a TA and an ES. The ES outlines that: “Due to the A120 being a large A-road with little interaction with local sensitive receptors, the impacts of severance, amenity and highway geometry are considered to be not significant and are scoped out of this assessment”. With regard to highway safety the ES for BBCT outlines that the impacts on road safety are negligible, i.e. the flows of such low magnitude that they are unlikely to lead to cumulative effects.

Scheme Name	Discussion
	It can be concluded that of all the impacts scoped into the CEA (Table 27.37) are either scoped out of the assessment or are assessed to be of negligible significance of effect for the BBCT. It is therefore assessed that there is no potential for cumulative effects to occur between BBCT and North Falls.
Land to the South of Thorpe Road, Weeley	A TA is submitted in support of the application for the construction of dwellings, offices, a primary school and a nursery to the south of Thorpe Road, Weeley. No assessment of severance, amenity or road safety impacts is presented within the TA. It can be concluded that of all the impacts scoped into the CEA (Table 27.37) have not been assessed for the scheme and by default have been accepted by stakeholders to be of negligible significance of effect. It is therefore assessed that there is no potential for cumulative effects to occur between the scheme and North Falls.
Land to the south west of Horsley Cross Roundabout.	A TA is submitted in support of the application for the construction of the southern site of Tendring Business Park. The TA includes an analysis of the scheme's operational phase upon the impacts and concludes that: "The introduction of the proposed site access roundabout is likely to improve road safety along the B1035 along the frontage of the site and on the approach to the Horsley Cross roundabout". No assessment of severance and amenity impacts is presented with the TA. It can be concluded that of all the impacts scoped into the CEA (Table 27.37) have either been assessed as beneficial or have not been assessed for the scheme and must therefore by default be of negligible significance of effect. It is therefore assessed that there is no potential for cumulative effects to occur between the scheme and North Falls.

27.8.3.2.1 Cumulative effects with Five Estuaries and Norwich to Tilbury

260. The following section provides a summary of the potential for cumulative effects with North Falls, Five Estuaries and Norwich to Tilbury. The traffic forecasts presented herein adopt an initial worst case that assumes that peak traffic demand from North Falls and Five Estuaries (Scenario 1) overlaps with the peak demand for Norwich to Tilbury.

Impact 1 and 2: Severance and Amenity

261. National Grid have advised that there could be peak increase in traffic via Bentley Road (Link 4) of up to 297 vehicle trips per day and an average of 110.

262. Assuming Norwich to Tilbury has a temporal overlap with North Falls / Five Estuaries there could therefore be a peak of an additional 1,193 vehicle trips per day via Bentley Road. It is important to note that this number assumes a worst case where the peak period for North Falls / Five Estuaries construction traffic overlaps with the peak period for Norwich to Tilbury.

263. These changes in vehicle and HGV trips via Bentley Road would result in significant percentage changes (due to a relatively low baseline). Table 27.20 however outlines that whilst pedestrians and cyclists would experience higher overall traffic flows, on balance, when considering the package of embedded mitigation measures (Table 27.2), the overall magnitude of impact can be assessed as negligible to low noting that, pedestrians and cyclists would benefit from:

- Being segregated from motorised traffic on a new temporary off road cycleway/footway;

- Be afforded greater separation from traffic due to the increased road width; and
- Be passed at reduced speeds, as a result of the temporary reduction in the speed limit from 60mph to 40mph.

264. It is assessed that these mitigation measures would be equally applicable to accommodating an additional peak 297 vehicle trips per day and therefore cumulative severance and amenity effects are assessed as negligible to minor adverse, i.e. not significant in EIA terms.

Impact 3: Highway Safety

265. National Grid have advised that there could be a peak increase in traffic of up to 297 vehicle trips per day and that the majority of these would be forecast to travel towards the A120.

266. Table 27.30 identifies that the construction of North Falls and Five Estuaries could generate a peak of up to 1,184 vehicle trips along the A120 (equivalent to a peak daily increase of up to 7.5%). Section 27.8.3.1.2 outlines that this level of change would be assessed as negligible on receptors of medium to high sensitivity.

267. An additional 1,481 vehicle trips per day (297 from Norwich to Tilbury + 1,184 from North Falls and Five Estuaries) along the A120 would result in a peak daily increase of up to 9.4% (assuming a worst case that all three projects peak traffic overlaps). It is assessed that a change in traffic of up to 9.4% would represent a negligible magnitude of impact on receptors of medium to high sensitivity. Cumulative highway safety effects are therefore assessed as minor adverse, i.e. not significant in EIA terms.

27.8.3.3 Summary of CEA

268. Table 27.39 provides a summary of the potential significant cumulative effects identified during the Traffic and Transport CEA in relation to North Falls, Five Estuaries and other projects.

Table 27.39 Summary of potential cumulative effects from the other projects

Potential impact	Receptor	Cumulative effect	Additional mitigation
Impact 1: Severance	Link 4	Negligible to Minor adverse	n/a
Impact 2: Amenity	Link 4	Negligible to Minor adverse	n/a
Impact 3: Highway Safety	Links 3, 15 and 16 and clusters 1, 2 and 12	Minor adverse	n/a

27.9 Interactions

270. The effects identified and assessed in this chapter have the potential to interact with each other, which could give rise to synergistic effects as a result of that interaction 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.

271. Table 27.40 summarises the interactions that are considered of relevance to traffic and transport and identifies where they have been considered within this ES. The traffic and transport metrics established in this chapter have been used to inform the related chapters.

Table 27.40 Traffic and transport interactions

Topic and description	Related chapter (Volume 3.1)	Where addressed in this chapter	Rationale
Construction			
Impact 1: Severance and Impact 2: Amenity	Chapter 20 Onshore Air Quality	Section 27.6.1.2 and 27.6.1.3	Traffic has the potential to temporarily affect air quality and impact upon local residents.
	Chapter 26 Noise and Vibration		Traffic has the potential to increase noise disturbance temporarily.
	Chapter 28 Human Health		The implications of changes in construction activities affecting highway safety and access as well as other PRoW and cycle routes and impact upon population health.
	Chapter 31 Socio-economics		Traffic associated with construction may impact the local demography.
Impact 3: Highway Safety	Chapter 31 Socio-economics	Section 27.6.1.4	Traffic associated with construction may impact the local demography.
Impact 4: Driver Delay	Chapter 20 Onshore Air Quality	Section 27.6.1.5	Traffic has the potential to temporarily affect air quality and impact upon local residents.
Operation			
No significant effects.			
Decommissioning			
Decommissioning strategies have not yet been finalised; however, the cumulative effects are expected to be no greater than those of construction.			

27.10 Inter-relationships

272. The effects 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 27.41. This provides a screening tool for which effects have the potential to interrelate.

273. Impacts 1 (severance) and 2 (amenity) are considered to be closely related and of a similar nature, and it is identified in Table 27.8 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 27.41 identifies this inter-relationship.

274. ES Appendix 27.3 (Document Reference: 3.3.66) contains a detailed assessment of the identified inter-relationships (impacts 1, 2 and 3) and concludes that there are no significant inter-relationships between impacts from the construction of North Falls on traffic and transport.

Table 27.41 Inter-relationships between impacts - screening

	Impact 1: Severance	Impact 2: Amenity	Impact 3: Highway Safety	Impact 4: Driver Delay
Construction				
Impact 1: Severance	-	Yes	Yes	No
Impact 2: Amenity	Yes	-	Yes	No
Impact 3: Highway Safety	Yes	Yes	-	No
Impact 4: Driver Delay	No	No	No	-
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.				

27.11 Summary

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

276. 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.

277. 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.

278. 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.

279. A total of 46 highway links and 13 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, as shown in Table 27.42.

280. An assessment of the potential for cumulative effects with other schemes has been undertaken, notable schemes considered included, Five Estuaries and the National Grid Norwich to Tilbury project. A summary of predicted cumulative effects is provided in Table 27.43. With the application of additional mitigation measures (as appropriate) the residual cumulative effects upon all receptors was assessed to be not significant in EIA terms.

Table 27.42 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, 26, 34, 35, 37, 39, 47	Low	Negligible	Negligible	n/a	Negligible
	Link 33	Medium		Minor adverse		Minor adverse
	Links: 24, 25	High		Minor adverse		Minor adverse
	Link 4	Low	Low	Negligible		Negligible
Impact 2: Amenity	Link 35	Low	High	Moderate adverse	Commitment to limit HGV numbers no greater than the average HGVs per link.	Minor adverse
	Links 26 and 37		Medium	Minor adverse	n/a	Minor adverse
	Links 4, 6 and 34		Low	Negligible		Negligible
	Link 47		Negligible	Negligible		Negligible
	Link 33	Medium	Low	Minor adverse		Minor adverse
	Link 25	High	Low	Moderate adverse	Commitment to limit HGV numbers no greater than the average HGVs per link.	Minor adverse
	Link 24		Negligible	Minor adverse	n/a	Minor adverse
Impact 3: Highway Safety	Clusters 6, 7, 10, 12 and 13.	Low	Negligible	Negligible	n/a	Negligible
	Clusters 5 and 9	Medium		Minor adverse		Minor adverse
	Clusters 1, 2, 3 and 4	High		Minor adverse		

Potential impact	Receptor	Sensitivity	Magnitude of impact	Pre-mitigation effect	Mitigation measures proposed	Residual effect
	Links 3, 15 and 16	Medium		Minor adverse		
	Link 45	High		Minor adverse		
	Cluster 11	Medium	Low	Minor adverse	n/a	Minor Adverse
	Cluster 8	High		Moderate adverse	Enhanced maintenance measures as well as enhanced driver.	
	Links 22 and 23	High		Moderate adverse	Enhanced maintenance measures as well as enhanced driver inductions	
Impact 4: Driver Delay (Road Closures)	Damant's Farm Lane	Low	Low	Negligible	n/a	Negligible
	Payne Lane		Negligible			
	Spratts Lane		Low			
	Barlon Road		Negligible			
Operation						
No significant effects.						
Decommissioning						
Decommissioning strategies have not yet been finalised for North Falls, Five Estuaries or Norwich to Tilbury; however, the cumulative effects are expected to be the same as those of the initial construction phase.						

Table 27.43 Summary of potential cumulative effects on traffic and transport

Potential impact	Significance of effect	Additional mitigation	Residual Significance of Effect
Construction			
Cumulative effect 1: Severance	Negligible to Minor adverse on Link 4.	n/a	Negligible to Minor adverse on Link 4
Cumulative effect 2: Amenity	Negligible to Minor adverse on Link 4.	n/a	Negligible to Minor adverse on Link 4
Cumulative effect 3: Highway Safety	Moderate adverse in Cluster 8 and on links 22 and 23. Minor adverse in Cluster 11.	Enhanced maintenance measures as well as enhanced driver inductions	Minor adverse in Clusters 8 and 11 and on links 22 and 23.
Cumulative effect 4: Driver Delay (road closures)	No potential for cumulative effects identified	n/a	No potential for cumulative effects identified.
Operation			
No significant effects.			
Decommissioning			
Decommissioning strategies have not yet been finalised for North Falls, Five Estuaries or Norwich to Tilbury; however, the cumulative effects are expected to be the same as those of the initial construction phase.			

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