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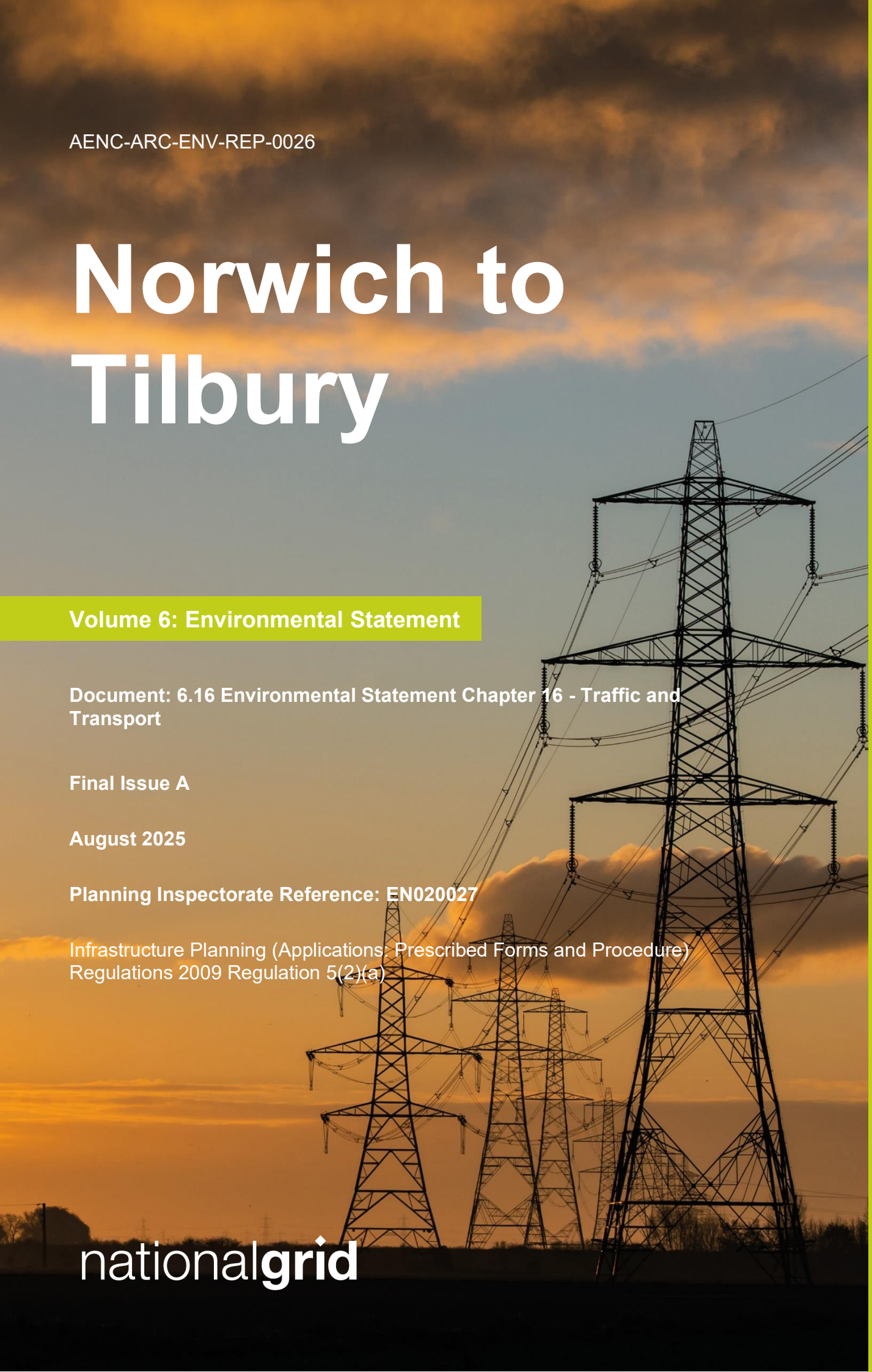

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16. Traffic and Transport

16.1 Introduction

16.1.1 This chapter of the Environmental Statement (ES) (Volume 6 of the Development Consent Order (DCO) application) details the assessment of the potential residual effects of Norwich to Tilbury (the 'Project') on Traffic and Transport. This chapter covers the temporary increase in baseline traffic flows as a result of the Project, due to the use of the surrounding local highway network by construction vehicles, and the potential effects related to the following during construction:

- Driver delay and public transport delay to passengers
- Pedestrian, cyclist and horse-rider delay
- Pedestrian, cyclist and horse-rider severance
- Pedestrian, cyclist and horse-rider amenity
- Fear and intimidation
- Collisions and road safety
- Parking and loading.

16.1.2 There are interrelationships related to the likely residual effects on Traffic and Transport and other environmental topics. Therefore, please also refer to the following chapters:

- Chapter 7: Air Quality (document reference 6.7)
- Chapter 8: Ecology and Biodiversity (document reference 6.8)
- Chapter 10: Health and Wellbeing (document reference 6.10)
- Chapter 14: Noise and Vibration (document reference 6.14)
- Chapter 15: Socio-economics, Recreation and Tourism (document reference 6.15).

16.1.3 This chapter is supported by the following figures and appendices:

- Figure 16.1: Primary Access Routes (document reference 6.16.F1)
- Figure 16.2: Sensitive Receptors (document reference 6.16.F2)
- Figure 16.3: Personal Injury Collision Data (document reference 6.16.F3)
- Figure 16.4: Traffic Counts and Public Rights of Way (PRoW) User Survey Locations (document reference 6.16.F4)
- Figure 16.5: Additional Mitigation Measures (document reference 6.16.F5)
- Appendix 16.1: Engagement Undertaken Relevant to Traffic and Transport (document reference 6.16.A1)
- Appendix 16.2: Traffic and Transport Baseline Conditions (document reference 6.16.A2)

- Appendix 16.3: Future Baseline (document reference 6.16.A3)
- Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4).

16.1.4 This chapter has also been drafted in parallel with the following DCO documents:

- Outline Construction Traffic Management Plan (CTMP) (document reference 7.3)
- Outline Public Rights of Way Management Plan (document reference 7.6)
- Transport Assessment (TA) (document reference 7.11)
- Access, Rights of Way and Public Rights of Navigation Plans (document reference 2.5).

16.2 Regulatory and Planning Policy Context

National Policy Statement (NPS)

16.2.1 Chapter 2: Key Legislation and Planning Policy Context (document reference 6.2) sets out the key overarching policy relevant to the Project. Overarching National Policy Statement for Energy (EN-1) (National Policy Statement EN-1) (Department for Energy Security and Net Zero (DESNZ), 2024a) is the key overarching policy relevant to the Project. This is supported by National Policy Statement for Electricity Networks Infrastructure (EN-5) (National Policy Statement EN-5) (DESNZ, 2024b).

16.2.2 Full consideration of the relevant NPSs for the Project and this chapter can be found in the Policy Compliance Document (document reference 5.7).

Overarching NPS for Energy (EN-1)

16.2.3 NPS EN-1 (DESNZ, 2024a) contains the following paragraphs relating to Traffic and Transport which have been considered within this chapter.

16.2.4 NPS EN-1 Paragraph 5.14.1 states '*The transport of materials, goods and personnel to and from a development during all project phases can have a variety of impacts on the surrounding transport infrastructure and potentially on connecting transport networks, for example through increased congestion. Impacts may include economic, social and environmental effects*'.

16.2.5 Paragraph 5.14.4 states '*The consideration and mitigation of transport impacts is an essential part of Government's wider policy objectives for sustainable development.*' As outlined in Section 2.6 'Sustainable development' the '*government's wider objectives for energy infrastructure include contributing to sustainable development and ensuring that our energy infrastructure is safe.'*

16.2.6 Paragraph 2.6.5 states '*the NPSs set out planning policies which both respect the principles of sustainable development and can facilitate, for the foreseeable future, the consenting of energy infrastructure on the scale and of the kinds necessary to help us maintain safe, secure, affordable and low carbon supplies of energy*'.

16.2.7 Paragraph 5.14.6 states '*National Highways and Highways Authorities are statutory consultees on NSIP* [Nationally Significant Infrastructure Projects] *applications including energy infrastructure where it is expected to affect the strategic road network and/or have an impact on the local road network. Applicants should consult with*

National Highways and Highways Authorities as appropriate on the assessment and mitigation to inform the application to be submitted'.

16.2.8 Paragraph 5.14.11 states '*Where mitigation is needed, possible demand management measures must be considered. This could include identifying opportunities to:*

- *Reduce the need to travel by consolidating trips*
- *Locate development in areas already accessible by active travel and public transport*
- *Provide opportunities for shared mobility*
- *Re-mode by shifting travel to a sustainable mode that is more beneficial to the network*
- *Retime travel outside of the known peak times*
- *Reroute to use parts of the network that are less busy*'.

16.2.9 Paragraph 5.14.12 states *'If feasible and operationally reasonable, such mitigation should be required, before considering requirements for the provision of new inland transport infrastructure to deal with remaining transport impacts. All stages of the project should support and encourage a modal shift of freight from road to more environmentally sustainable alternatives, such as rail, cargo bike, maritime and inland waterways, as well as making appropriate provision for and infrastructure needed to support the use of alternative fuels including charging for electric vehicles.'*

16.2.10 Paragraph 5.14.14 states '*The Secretary of State may attach requirements to a consent where there is likely to be substantial HGV* [Heavy Goods Vehicles] *traffic that:*

- *Control numbers of HGV movements to and from the site in a specified period during its construction and possibly on the routing of such movements.*
- *Make sufficient provision for HGV parking and associated high quality drive facilities either on the site or at dedicated facilities elsewhere, to support driver welfare, avoid 'overspill' parking on public roads, prolonged queuing on approach roads and uncontrolled on-street HGV parking in normal operating conditions.'.*

16.2.11 Paragraph 5.14.15 states *'The Secretary of State should have regard to the cost-effectiveness of demand management measures compared to new transport infrastructure, as well as the aim to secure more sustainable patterns of transport development when considering mitigation measures.'*

16.2.12 Paragraph 5.14.18 states *'A new energy NSIP may give rise to substantial impacts on the surrounding transport infrastructure and the Secretary of State should therefore ensure that the applicant has sought to mitigate these impacts, including during the construction phase of the development and by enhancing active, public and shared transport provision and accessibility.'*

16.2.13 Paragraph 5.14.19 states *'Where the proposed mitigation measures are insufficient to reduce the impact on the transport infrastructure to acceptable levels, the Secretary of State should consider requirements to mitigate adverse impacts on transport networks arising from the development.'*

16.2.14 NPS EN-1 Paragraph 5.14.21 states that '*The Secretary of State should only consider refusing development on highways grounds if there would be an unacceptable impact on highway safety, residual cumulative impacts on the road network would be severe,*

or it does not show how consideration has been given to the provision of adequate active public or shared transport access and provision'.

NPS for Electricity Networks Infrastructure (EN-5)

16.2.15 NPS EN-5 (DESNZ, 2024b) contains the following paragraph relating to Traffic and Transport which have been considered within this chapter.

16.2.16 Paragraph 2.5.1 states that '*When planning and evaluating the proposed development's contribution to environmental and biodiversity net gain, it will be important – for both the applicant and the Secretary of State – to supplement the generic guidance set out in EN-1 (Section 4.6) with recognition that the linear nature of electricity networks infrastructure can allow for excellent opportunities to:*

- *Reconnect important habitats via green corridors, biodiversity stepping zones, and reestablishment of appropriate hedgerows; and/or*
- *Connect people to the environment, for instance via footpaths and cycleways constructed in tandem with environmental enhancements*'.

Other National Legislation and Policy

16.2.17 Although the Project will be considered against National Policy stated above, the assessment has also been undertaken in accordance with, and with reference to, the following national legislation and policy:

- Transport Act 2000
- Highways Act 1980
- National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2025) and accompanying planning practice guidance.

Regional and Local Policy

16.2.18 Chapter 2: Key Legislation and Planning Policy Context (document reference 6.2), the Planning Statement (document reference 5.6) and Policy Compliance Document (document reference 5.7) set out relevant regional and local policy.

16.2.19 Key regional and local policy relevant to Traffic and Transport, that has informed the assessment within this ES (Volume 6 of the DCO application), comprises:

- Local Transport Plan 4, 2021-2036 (Norfolk County Council, 2022)
- The Greater Norwich Local Plan, 2018-2038 (Greater Norwich Development Partnership, 2024)
- Suffolk Local Transport Plan 2025-2040 (Suffolk County Council, 2024)
- Essex Transport Strategy: The Local Transport Plan for Essex (Essex County Council, 2011)
- Thurrock Transport Strategy 2013-2026 (Thurrock Council, 2022).

Guidance

16.2.20 Relevant guidance, specific to Traffic and Transport, that has informed this ES (Volume 6 of the DCO application), comprises:

- Transport Evidence Bases in Plan Making and Decision Taking (Department for Communities and Local Government, 2015)
- Travel Plans, Transport Assessments and Statements (Department for Communities and Local Government, 2014)
- Design Manual for Roads and Bridges (DMRB) LA 104 Environmental Assessment and Monitoring (National Highways, 2020)
- Institute of Environmental Management and Assessment (IEMA) Guidelines: Environmental Assessment of Traffic and Movement (EATM) (IEMA, 2023).

16.3 Scope of the Assessment

16.3.1 The scope of the assessment has been informed by the Environmental Impact Assessment (EIA) Scoping Report (document reference 6.19) and EIA Scoping Opinion (document reference 6.20) provided by the Planning Inspectorate in 2022 on behalf of the Secretary of State. The scope has also been informed through consultation and engagement with relevant consultees. A summary of the scope of the Traffic and Transport assessment is provided in Appendix 5.2: Scope of the Assessment (document reference 6.5.A2).

16.3.2 In addition, the EIA Scoping Opinion, together with a response from National Grid against each point raised by the Planning Inspectorate relevant to Traffic and Transport is provided in Appendix 5.1: National Grid's response to the EIA Scoping Opinion (document reference 6.5.A1).

Project Engagement and Consultation

16.3.3 Consultation and engagement with relevant stakeholders has informed the assessment presented in this chapter. Responses to representations received during the statutory consultation in summer 2024 and subsequent consultations in 2025 are provided in Appendix K and Appendix M of the Consultation Report (document reference 5.1).

16.3.4 A summary of discussions and how these have influenced the Project, scope and the approach to the assessment are provided in Appendix 16.1: Engagement Undertaken Relevant to Traffic and Transport (document reference 6.16.A1).

16.4 EIA Approach and Methods

16.4.1 This section describes the methodology used to establish the existing and future baseline together with the methodology/approach used to undertake the assessment on Traffic and Transport. The overarching approach is also described in Chapter 5: EIA Approach and Method (document reference 6.5).

Data Sources

16.4.2 The existing baseline has been informed by a desk study and site survey data which has drawn on the following key information sources:

- Annual Average Daily Traffic (AADT) flows from the Department for Transport (DfT) traffic count data for 2023 on the road links that form the Primary Access Routes (PARs) to and from the Project
- Automatic Traffic Count (ATC) and manual classified link counts via cameras, and Radar Surveys in 2023, 2024, and 2025
- PRoW/non-motorised user (NMU) surveys undertaken in 2024 and 2025 recording pedestrians, cyclists and horse riders.
- TEMPro (Trip End Model Presentation Program) software
- DfT, Road traffic statistics - Table TRA0307
- DfT, Road traffic statistics - Average annual daily flow East of England
- DfT, Road traffic statistics - Road collisions (STATS19 database) latest three-year period 2021 to 2023
- Public transport information from Travel Norfolk, Suffolkonboard, Travel Essex and Thurrock Council
- PRoW maps obtained from Local Highways Authorities (LHAs) of Norfolk County Council, Suffolk County Council, Essex County Council and Thurrock Council
- Sustrans
- Google Maps satellite and street view images
- Ordnance Survey Digital Data
- Google Traffic
- Norfolk County Council (2022) Local Transport Plan 4 Strategy 2021-2036
- Norfolk County Council (2022) Local Transport Plan 4 Implementation Plan
- Broadland District Council and South Norfolk Council (2014) Joint Core Strategy for Broadland, Norwich and South Norfolk
- Suffolk County Council (2011) Suffolk Local Transport Plan 2011-2031, Part 1 Transport Strategy
- Essex County Council (2011) Essex Transport Strategy: The Local Transport Plan for Essex
- Thurrock Council (2013) Thurrock Transport Strategy, 2013-2026.

Study Area

16.4.3 The Study Area for Traffic and Transport includes all local roads to be used as construction routes (referred to as PARs), which connect the Project to the Strategic Road Network (SRN)/Major Road Network (MRN), and where they meet the following criteria based on the IEMA Guidelines: EATM (2023), as agreed in the EIA Scoping Opinion (document reference 6.20):

- Roads where traffic flows are predicted to increase by more than 30% (or the number of HGVs is predicted to increase by more than 30%)
- Other specifically sensitive areas where traffic flows are predicted to have an increase by 10% or more
- Any highway link where there are significant changes in the composition of traffic, e.g. a large increase in the number of HGVs
- Roads that are likely to be significantly affected by temporary road restrictions and traffic management measures required to construct the Project.

16.4.4 The PARs will also be used by construction workers and admin staff travelling to the temporary construction compounds and Site Access Points (SAPs).

16.4.5 Sensitive areas have been identified and are defined by the presence of sensitive receptors, such as hospitals, residential properties, community centres, conservation areas, schools, equestrian facilities, or collision black spots and routes with road safety concerns, or junctions and highway links that are currently at (or over) capacity, located within a 300m wide corridor along each PAR (radius of 150 m from the centreline of each PAR).

16.4.6 The Study Area outlined above is considered appropriate based on technical knowledge of similar projects and engagement with the Local Highways Authorities, and has been selected to consider the distance over which likely significant effects can reasonably be expected to occur. The Study Area was agreed within the EIA Scoping Opinion (document reference 6.20).

16.4.7 The main roads forming part of the SRN and MRN that provide access to the PARs are summarised in Table 16.1.

Table 16.1 Primary access routes – strategic road network/major road network

Project Section	Region	Road
Section A	Norfolk	A47 Norwich Southern Bypass
	Norfolk	A11 Wymondham Bypass
	Norfolk	A140 Ipswich Road
	Suffolk	A14
Section B	Norfolk	A47 Norwich Southern Bypass
	Norfolk/Suffolk	A140 Ipswich Road/Roman Road
	Suffolk	A14
	Suffolk	A143 Diss Road
Section C	Suffolk	A14
	Suffolk/Essex	A12 Ipswich Road
	Essex	A120
Section D	Suffolk	A14
	Essex	A12
	Essex	A120
Section E	Essex	A120

Project Section	Region	Road
	Essex	A12
Section F	Essex	A12 Chelmsford Bypass
	Essex	A120
Section G	Essex	A12 Brentwood Bypass/Mountnessing Bypass
	Essex	A127 Southend Arterial Bypass
Section H	Essex	A127 Southend Arterial Bypass
	Thurrock	A13 Stanford-Le-Hope Bypass
	Thurrock	A1089 Dock Approach Road

16.4.8 The road links on the Local Road Network (LRN) affected by the Project that form part of the Study Area are listed in in Table 16.2 and shown on Figure 16.1: Primary Access Routes (document reference 6.16.F1).

Table 16.2 Primary access routes - local road network

Project Section	Region	Road (PAR Reference Number)
Section A	Norfolk	A140 Ipswich Road (Link PAR 1)
	Norfolk	Mangreen Lane (Link PAR 2)
	Norfolk	Stansfield Road/Wymondham Road (Link PAR 3)
	Norfolk	B1113 (Link PAR 4)
	Norfolk	Wymondham Road (Link PAR 5)
	Norfolk	Fundenhall Road (Link PAR 6)
	Norfolk	B1134 Station Road/B1134 Long Row (Link PAR 7)
	Norfolk	A1066/A1066 Victoria Road/A1066 Park Road/A1066 High Road (Link PAR 8)
	Norfolk	A1066 High Road/A1066 Low Road/A1066 Diss Road/A1066 The Street/A1066 Thetford Road/A1066 Hurth Way/A1066 Mundford Road (Link PAR 9)
Section B	Suffolk	A143 Old Bury Road (Link PAR 10)
	Suffolk	Lion Road (Link PAR 11)
	Suffolk	B1113 Finningham Road/B1113 Walsham Road (Link PAR 12)
	Suffolk	Wickham Road (Link PAR 13)
	Suffolk	Eastland Lane (Link PAR 14)
	Suffolk	Thornham Road (Link PAR 15)
	Suffolk	A1120 Church Road/A1120 Bell's Lane (Link PAR 16)

Project Section	Region	Road (PAR Reference Number)
	Suffolk	A1120 south of A14 J50 (Link PAR 17)
	Suffolk	Mill Lane (Link PAR 18)
	Suffolk	B1113 Needham Road/B1113 Stowmarket Road (Link PAR 19)
	Suffolk	B1113 Bramford Road/B1113 Loraine Way (Link PAR 20)
	Suffolk	Bullen Lane (Link PAR 21)
Section C	Suffolk	A1214 London Road (Link PAR 22)
	Suffolk	A1071 (Link PAR 23)
	Suffolk	B1070 (A12 access) (Link PAR 24)
	Suffolk	B1070 Hadleigh Road (Link PAR 25)
	Essex	Ipswich Road (Link PAR 26)
	Essex	Birchwood Road (Link PAR 27)
	Essex	Wick Road/Grove Hill (Link PAR 28)
	Essex	Perry Lane (Link PAR 29)
	Essex	Bentley Road (Link PAR 30)
	Essex	Ardleigh Road/Little Bromley Road (Link PAR 31)
	Essex	Wick Lane (Link PAR 32)
	Essex	Old Ipswich Road (Link PAR 33)
	Essex	Turnpike Close (Link PAR 34)
Section D	Essex	A1341 Via Urbis Romanae (Link PAR 35)
	Essex	A134 Northern Approach Road/A134 Wildeve Avenue/A134 Nayland Road/A134 The Causeway (Link PAR 36)
	Essex	A1124 Halsted Road (Link PAR 37)
	Essex	Mill Road (Link PAR 38)
	Essex	Great Tey Road (Link PAR 39)
Section E	Essex	A120 Colchester Road (Link PAR 40)
	Essex	B1018 Braintree Road/B1018 Witham Road (Link PAR 41)
	Essex	B1389 Hatfield Road (Link PAR 42)
	Essex	Spinks Lane/Highfields Road/Spa Road/Flora Road/Faulkbourne Road/Church Hill (Link PAR 43)
	Essex	A131 Great Notley Bypass (Link PAR 44)
Section F	Essex	A131 Great Leighs Bypass/A131 Braintree Road (Link PAR 44)

Project Section	Region	Road (PAR Reference Number)
	Essex	B1008 Essex Regiment Way (Link PAR 45)
	Essex	B1008 Braintree Road/B1008 Main Road (Link PAR 46)
	Essex	Chatham Hall Lane (Link PAR 47)
	Essex	Chelmsford Road (Link PAR 48)
	Essex	A414 Three Mile Hill/A1114 London Road (Link PAR 49)
	Essex	A1016 Waterhouse Lane/A1016 Rainsford Lane (Link PAR 50)
	Essex	A1060 Rainsford Road/A1060 Roxwell Road (Link PAR 51)
	Essex	Vicarage Road (Link PAR 52)
	Essex	A414 Greenbury Way/A414 Ongar Road (Link PAR 53)
Section G	Essex	B1002 Main Road (Link PAR 54)
	Essex	Wantz Road (Link PAR 55)
	Essex	Ivy Barns Lane (Link PAR 56)
	Essex	Church Lane (Link PAR 57)
	Essex	A176 Noak Hill Road/A176 Laindon Road/A129 Southend Road (Link PAR 58)
	Essex	A129 Sun Street/A129 London Road/A129 Rayleigh Road (Link PAR 59)
	Essex	Dunton Road/Brentwood Road (Link PAR 60)
	Essex	B148 West Mayne (Link PAR 61)
	Essex	Lower Dunton Road (Link PAR 62)
Section H	Thurrock	A128 Brentwood Road (Link PAR 63)
	Thurrock	A1013 Stanford Road (east of Orsett Cock Roundabout) (Link PAR 64)
	Thurrock	Buckingham Hill Road (Link PAR 65)
	Thurrock	Brentwood Road (Link PAR 66)
	Thurrock	A1013 Stanford Road (west of Orsett Cock Roundabout) (Link PAR 67)
	Thurrock	Heath Road (Link PAR 68)
	Thurrock	Chadwell Hill (Link PAR 69)
	Thurrock	Linford Road (Link PAR 70)
	Thurrock	Muckingford Road (Link PAR 71)

16.4.9 The road links for the two alternative PARs to access the new Tilbury North Substation during construction are:

- A1013 Stanford Road (east of Orsett Cock Roundabout) (Link PAR 64) and Buckingham Hill Road (Link PAR 65)
- Brentwood Road (Link PAR 66).

16.4.10 These road links have been analysed based on the maximum traffic increase expected for each individual link, regardless of the alternative access option. Further details are provided within Section 16.9.

Desk Study

16.4.11 The baseline assessment has been informed by a desk study, comprising:

- Estimation of the baseline traffic flows from the AADT flows from the DfT traffic count data for 2023, ATC, manual classified link counts via cameras, and Radar Surveys for 2023 and 2024, traffic flow survey data held by Suffolk County Council for 2023, and from the Lower Thames Crossing (LTC) project team for June 2024.
- Identification of constraints on the highway network, such as height and width restrictions, on-street parking, visibility constraints or capacity issues on roads and junctions of the PARs, obtained from Google Maps satellite and street view images
- of the highway network
- Visual identification of congestion on local roads and junctions within the Study Area from Google Traffic, captured during different times of the day
- Identification of sensitive receptors in the vicinity of the road links forming the PARs, obtained from Ordnance Survey Digital Data and Google Maps satellite and street view images
- Identification of pedestrian, horse-riding and cycle infrastructure provision along the PARs, obtained from Google Maps satellite and street view images of the highway network
- Identification of long-distance trails, recreational circular routes or Local Planning Authority promoted routes from the Local Planning Authorities websites
- Public transport information on the roads along the PARs, including bus routes, bus frequencies and bus stop locations obtained from the Local Planning Authorities websites and Google Maps satellite and street view images of the highway network
- Identification of National Cycle Routes obtained from Sustrans
- Road collision data for the latest available three-year period (2021 to 2023) for all the roads and junctions on the PARs, from STATS19 database (DfT) to identify collision clusters and patterns in collision locations in order to establish any areas of safety concerns and estimate the collision rate per billion vehicle kilometres to compare against the national statistics
- Estimation of the future baseline traffic along these road links with TEMPro growth factors
- The planning applications that are listed in Appendix 17.1: Long List of Other Developments (document reference 6.17.A1) have been considered as having a potential cumulative impact. The documentation from the various planning

applications were initially reviewed to determine if there was any traffic data or traffic routes that would suggest they should be considered for the Traffic and Transport assessment.

Site Survey

16.4.12 The desk study is supported by site surveys comprising:

- Automatic Traffic Counts
- Manual classified link counts via cameras
- Radar Surveys to estimate daily traffic volumes
- Manual and video surveys to record the number of users on PRoW and road locations where mitigation for pedestrians, cyclists and horse-riders has been considered.

Traffic Count Surveys

16.4.13 Traffic counts were undertaken in October and November 2023 during school term time on the road links forming the PARs, where DfT survey data was not available for 2023. As the Project developed, additional surveys were undertaken in November 2024 at the following PARs:

- Link PAR 8 - A1066 (between A140 and A1066 Victoria Road)
- Link PAR 8 - A1066 Victoria Road
- Link PAR 8 - A1066 Park Road
- Link PAR 8 - A1066 Stanley Road
- Link PAR 30 - Bentley Road
- Link PAR 31 - Ardleigh Road.

16.4.14 Traffic survey site locations are as shown on Figure 16.4: Traffic Counts and PRoW User Survey Locations (document reference 6.16.F4).

PRoW Surveys

16.4.15 PRoW usage data was initially collected in September and October 2024 during school term time over a 12-hour period (07:00 to 19:00) during one weekday and for one weekend (Saturday or Sunday). The surveys aimed to capture recreational usage on PRoWs that were likely to have high usage and extensive connectivity and/or social significance. The survey scope and locations were reviewed and agreed through engagement with the relevant PRoW Officers within each Local Planning Authority. The number of users is presented in Table A16.2.84 in Appendix 16.2: Traffic and Transport Baseline Conditions (document reference 6.16.A2).

16.4.16 Additional PRoW user surveys were undertaken in March 2025 at the request of Thurrock Council and Essex County Council, again over a 12-hour period (07:00 to 19:00) during one weekday and for one weekend (Saturday or Sunday). These routes were selected as they were deemed to provide a wider understanding of all types of NMUs, which included bridleways and byways. The additional surveyed PRoWs and the number of users is presented in Table A16.2.85 in Appendix 16.2: Traffic and Transport Baseline Conditions (document reference 6.16.A2).

16.4.17 The locations of all PRoW surveys are shown on Figure 16.4: Traffic Counts and PRoW User Survey Locations (document reference 6.16.F4). Further details of PRoWs are included within Chapter 15: Socio-economics, Recreation and Tourism (document reference 6.15).

Assessment Methodology

16.4.18 This section sets out the methodology used for assessing the effects on Traffic and Transport for those aspects scoped into the assessment, as set out within the EIA Scoping Report (document reference 6.19) and agreed in the EIA Scoping Opinion (document reference 6.20). The scope of the Traffic and Transport assessment is provided in Appendix 5.2: Scope of the Assessment (document reference 6.5.A2).

16.4.19 The assessment in this chapter assumes that all embedded (design measures), standard practice, and any additional mitigation measures (as defined in Chapter 4: Project Description (document reference 6.4)) are in place before assessing the effects. This is in accordance with guidance from IEMA as part of preparing a proportional assessment (IEMA, 2024) and the EIA Scoping Report (document reference 6.19).

16.4.20 Committed developments have also been considered within the assessment and have been discussed with Local Highways Authorities.

16.4.21 It should be noted that the IEMA Guidelines: EATM (IEMA, 2023) were published after the EIA Scoping Report (National Grid, 2022). Use of the latest guidance and assessment criteria was discussed and agreed with the Local Highways Authorities and National Highways and has been used for the Traffic and Transport assessment.

Value/Sensitivity

16.4.22 Resources are the assets and facilities which may be affected by the Project such as the highway network. Receptors are the users or beneficiaries of those resources such as pedestrians, cyclists and drivers who travel within the Study Area. This includes the areas along the PARs that could be sensitive to changes in traffic volumes. Sensitive areas are defined by the presence of sensitive receptors such as community centres, schools, equestrian facilities, and network characteristics such as narrow well-used footways along busy roads or collision black spots.

16.4.23 The criteria used to determine the value and sensitivity of receptors specific to traffic and transport are set out in Table 16.3. These values are based on the IEMA Guidelines: EATM (2023).

Table 16.3 Criteria for determining value/sensitivity of receptors

Sensitivity/Value	Resource	Receptor
High	Receptors of greatest sensitivity to traffic flow: schools, colleges, playgrounds, collision blackspots, retirement homes, urban/residential roads without footways that are used by pedestrians	Residents, workers, pedestrians (sensitive groups such as children, elderly and disabled), cyclists and equestrians using the highway.
Medium	Traffic flow sensitive receptors including: congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow	

Sensitivity/Value	Resource	Receptor
	footways, unsegregated cycleways, community centres, parks and recreational facilities.	
Low	Receptors with some sensitivity to traffic flow: places of worship, public open space, nature conservation areas, listed buildings, tourist attractions and residential areas with adequate footway provision.	
Negligible	Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions.	

Impact Magnitude

16.4.24 The expected traffic generated by the Project during construction has been quantified where appropriate and assessed against anticipated background traffic flows to outline the anticipated percentage increase in total vehicles and HGVs.

16.4.25 The methodology proposed for determining the magnitude of impact broadly follows the guidance set out by the DMRB LA 104 (National Highways, 2020), with Table 16.4 presenting the magnitude of change against change in baseline condition. Table 16.4 shows that where there is little change to baseline conditions the magnitude of impact would be negligible. Where baseline conditions notably change from baseline (e.g. as a result of a high volume of construction traffic on a road link), this would constitute a major magnitude of change.

Table 16.4 Magnitude of change (impact) categories

Magnitude of Change	Change from Baseline
Major	Total loss of or major alteration to key elements or features of the baseline conditions to the extent that the post-scenario character or composition of the baseline conditions would be fundamentally changed.
Moderate	Loss of or alteration to one or more key elements or features of the baseline conditions to the extent that the post-scenario character or composition of the baseline conditions would be materially changed.
Minor	Minor shift away from baseline conditions. Changes arising would be detectable but not material; the underlying character or composition of the baseline conditions would be similar to the pre-scenario situation.
Negligible	Very little change from baseline conditions. Change is barely distinguishable, approximating to a ‘no change’ situation.

16.4.26 The magnitude of impact (change) for each assessment criteria for Traffic and Transport is set out in Table 16.5 which follows IEMA Guidelines: EATM (2023) and uses the same principle as presented in Table 16.6. For example, a major change in traffic flow with an increase of 90% (and greater number of HGVs) when compared to future baseline flows, could represent a major change in character or composition to baseline conditions.

Table 16.5 Assessment of environmental effects and magnitude of impact

Environmental Impact	Assessment Criteria and Magnitude of Impact
Increase in traffic levels	The sensitivity of each road on the construction routes. The IEMA Guidelines: EATM (2023) recommends applying the following broad rules, based on the percentage increase in total traffic and/or HGVs as a result of the Project along each road on the construction routes, as criteria to delimit the scale and extent of the environmental assessment: • Rule 1: Include road links where total traffic or HGV flows will increase by more than 30% • Rule 2: Include road links through sensitive areas where total traffic will increase by more than 10% or where there are significant changes in the composition of traffic e.g. large increase in the number of HGVs In accordance with the IEMA Guidelines: EATM (2023), where Rule 1 or Rule 2 are above the identified significance thresholds, then further environmental effects to 'existing road users' will be considered, which includes driver and public transport passenger delay, pedestrian, cyclist and horse-rider user delay, severance and amenity, collision and road safety, and parking and loading.
Driver delay and public transport delay to passengers	Where there is a change in traffic flow of greater than 30% this is considered to indicate potential for congestion on road links. Net traffic and/or HGV flows of < 30%, 30 to 60%, 60 to 90% and > 90% are, respectively, considered to be negligible, minor, moderate and major changes in magnitude of impact. Changes to bus services/bus stops or taxi facilities for over four weeks in any 12-month period.
Pedestrian, Cyclist and Horse-Rider delay	Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. In general, increases in traffic levels are likely to lead to greater increases in delay. Pedestrian, cyclist and horse-rider delay has therefore been deemed to occur when there is difficulty experienced in crossing a heavily trafficked route. Changes in net traffic flows of < 30%, 30 to 60%, 60 to 90% and > 90% are considered to have negligible, minor, moderate and major impacts respectively. The magnitude of impact considered for the pedestrian, cyclist and horse-rider delay depends on the journey length increase as defined in the DMRB LA 104 Environmental Assessment and Monitoring. An increase of more than 500 m is major, between 250 and 500 m is moderate, between 50 and 250 m is minor and under 50 m is

Environmental Impact	Assessment Criteria and Magnitude of Impact
	negligible. The magnitude of the impact is adjusted based on the duration of the impact, if the temporary increase in journey length along a road or other PRoW is less than four weeks in any 12-month period.
Pedestrian, Cyclist and Horse-Rider severance	Severance can be seen as the perceived division that can occur within a community when people are separated from places and other people. Pedestrian, cyclist and horse-rider severance occurs when there is difficulty experienced in crossing a heavily trafficked route. Changes in net traffic flows of < 30%, 30 to 60%, 60 to 90% and > 90% are considered to have a magnitude of impact of negligible, minor, moderate and major impacts respectively on severance. Where a temporary increase is forecast of more than 30% in HGVs or total flow on a route intersecting a PRoW, bridleway or near an equestrian centre for more than four weeks in any 12-month period.
Pedestrian, Cyclist and Horse-Rider amenity	The pedestrian, cyclist and horse-rider amenity is defined as the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition and footway width/separation from traffic. The pedestrian, cyclist and horse-rider amenity threshold, as set out in the IEMA Guidelines: EATM (2023) to assess the significance of change, is where the traffic flow is doubled (increase over 100%). Professional judgement has also been used to assess where the HGV flows are 30-60%, 60-90% and >90% (considered to have minor, moderate, and major impacts respectively).
Fear and intimidation	Fear and intimidation occur through a combination of traffic flow, speed, HGV composition and its proximity to people or lack of protection caused by factors such as narrow pavements. The assessment has been based on the sensitivity established for the pedestrian, cyclist and horse-rider amenity and severance and a weighting system defined in the IEMA Guidelines: EATM (2023). This weighting system is based on the average hourly traffic flow, 18-hour heavy vehicle flow and average speed over an 18-hour day.
Collisions and road safety	Collisions and safety are assessed using personal injury collision data obtained from online DfT Road Collison Data. The IEMA Guidelines: EATM (2023) recommend that professional judgement is needed to assess the effects. The following criteria have been used to assess the effects: • Where junctions have had 10 or more collisions in a three-year period • Where links have recorded 10 or more collisions per 100 m lengths in a three-year period. The collision data has been analysed along the full length of the links to identify patterns in collision locations in order to establish any areas of safety concerns. This included a comparison with national statistics.

Environmental Impact	Assessment Criteria and Magnitude of Impact
Parking and loading	Loss of more than four weeks in any 12-month period of one or more on-street loading bays, five or more on-street residential/business bays; five or more cycle/motorcycle spaces or 20 general parking spaces or equivalent length of unrestricted kerbside spaces based on professional judgement. Site specific locations also take into consideration the adjacent land use and likely use of bays to understand overall impact and effects on receptors.

16.4.27 The duration of potential environmental residual effects are considered based on a short-term, medium-term and long-term approach during construction as detailed in Chapter 5: EIA Approach and Method (document reference 6.5) and can be temporary or permanent. However, in reality the duration of effects on any particular PAR or PRoW would be much shorter than the overall Project durations because of the nature of the construction activities, which involves peaks of activity at certain stages, which much less activity. All of the traffic and transport effects associated with the construction of the Project will also be temporary. Therefore, professional experience has been used to determine the duration over which these residual environmental effects are likely to be experienced when assessing the overall significance of effects on traffic and transport.

Significance

16.4.28 Significance of effect has been derived by considering the sensitivity (or value) of the receptors within the Study Area, and the magnitude of change (impact) likely to be caused by the activities of the Project. These factors are combined to give an overall significance of effect.

16.4.29 Significance has been derived using the matrix set out in Table 16.6. This has been supplemented by professional judgement which, where applicable, has been explained to give the rationale behind the values assigned. Likely significance effects, in the context of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, are considered to be effects of moderate or greater significance.

Table 16.6 Significance of effect matrix

Sensitivity of Receptor	Magnitude of Impact			
	Major	Moderate	Minor	Negligible
High	Large	Large/moderate	Slight/moderate	Slight
Medium	Large/moderate	Moderate	Slight	Neutral/slight
Low	Slight/moderate	Slight	Slight	Neutral/slight
Negligible	Slight	Neutral/slight	Neutral/slight	Neutral

16.4.30 Any combination of magnitude of impact and sensitivity of receptor which results in a significance of moderate or greater is considered to be significant. Any combination which results in a significance of slight or lower is considered to be not significant.

Limitations of Assessment

16.4.31 The following limitations are applicable to the assessment reported in this chapter:

- Several assumptions have been made when forecasting the traffic generation of the Project during construction. These forecasts have been developed based on professional judgement and derived from experience with other developments similar in size, scale and nature to the Project. Therefore, they are considered to represent a realistic estimation of traffic generation
- As with all types of assessment, the assessment depends on the accuracy of data provided by third parties. It has therefore been assumed that data provided by third parties is accurate at the time of the assessment, for example traffic count data obtained online from the DfT and provided by Suffolk County Council
- Receptor sensitivity values applied to road segments and PRoW have been based on a desk study of network characteristics and land use within a 150 m catchment of each location. Pedestrian, cyclist and horse-rider activity has not been quantified with the exception of PRoW surveys as previously described, and along Bentley Road and its junction with the A120 Harwick Road where pedestrian, cyclist and horse-rider provision is proposed as part of embedded mitigation
- Magnitude of impact for pedestrian, cyclist and horse-rider severance, amenity, and fear and intimidation has been defined by adding Project construction traffic estimates to future baseline traffic flows on road segments
- Project construction traffic has been estimated based on the use of PARs via both the A1066 Diss and through A1066 Thetford. Further details are set out in the TA (document reference 7.11)
- PRoW user surveys were undertaken in autumn 2024 and March 2025. Therefore, it should be noted that the number of users of the PRoW may be higher in the spring/summer months when the weather is more favourable and daylight hours are greater. The magnitude of impact of any temporary closures of PRoW or planned diversion routes has therefore considered this within the assessment on pedestrian, cyclist and horse-rider delay
- Due to the Project programme, traffic surveys were undertaken in what is considered a non-neutral month when traffic flows are not considered to be the most representative of ‘average conditions’. However, surveys conducted outside these periods still may reflect typical weekday and commuter traffic without significant distortions
- On roads where baseline traffic flows are low (such as on Link PAR 18 - Mill Lane), any increase in traffic flow may result in a predicted increase that will be higher than the Rule 1 or Rule 2 thresholds set out in the IEMA Guidelines: EATM (2023). However, it is important to consider any overall increase in road traffic in relation to the capacity of the road, including receptor sensitivity.

Key Parameters for Assessment and Assumptions

16.4.32 This section describes the key parameters and assumptions that have been applied when undertaking the assessment presented within this chapter. The assumptions are based on information presented within Chapter 4: Project Description (document reference 6.4), the Outline CTMP (document reference 7.3), and the Outline

Construction Worker Travel Plan (CWTP) (Appendix B of the Outline CTMP (document reference 7.3)) and include:

- Construction traffic forecasts are based on an initial high-level estimate of construction materials and programme and are considered to provide a reasonable worst-case scenario. It is considered that these limitations do not affect the robustness of the assessment
- Traffic flows for the year 2023 were obtained from DfT's static traffic counters and used to establish the future baseline (start of construction activities from 2027)
- An assessment has been undertaken to identify the percentage increase in HGVs and in total traffic because of construction traffic on the LRN using future baseline traffic flow data. Due to the extensive construction programme, each road link comprising the PARs may experience peak activity during a different month. The peak construction period for each link is presented in Table A16.3.1 within Appendix 16.3: Future Baseline (document reference 6.16.A3). The predicted increase has been assessed against 12-hour weekday flows (07:00 to 19:00) throughout the construction period
- The core working hours for construction are set out within Requirement 7 of the Draft DCO (document reference 3.1). Based on infrastructure projects of comparable size and complexity, construction activities at the weekend and on bank holidays may only take place between 07:00 to 17:00 (unless otherwise approved by the Local Planning Authority). It is anticipated that construction activities at the weekend would be notably less than those undertaken on a weekday between 07:00 and 19:00. As such the assessment of predicted effects from construction traffic against 12-hour weekday flows (07:00 to 19:00) represents the worst-case scenario
- Some construction operations may take place outside of the core working hours, for example deliveries of cable drums by abnormal indivisible loads (AILs), as set out within Requirement 7 of the Draft DCO (document reference 3.1)
- This Traffic and Transport assessment has been undertaken for the 'road only' strategy where materials are transported by vehicle and quarries used for sourcing aggregate. This differs from the multi-modal strategy, which looks at delivering construction materials via ports and rails sidings to try and reduce the impact on the wider transport network. Details of the multi-modal sensitivity assessment can be found within the TA (document reference 7.11)
- In line with general working practices in the industry, overhead line gangs are expected to sign in at their allocated temporary construction compound first and then travel on to their relevant work site, whilst cables and substation workers would travel directly to their work site. In terms of vehicle occupancy, admin workers (National Grid and contractor staff) have an assumed vehicle occupancy of one. Overhead line construction workers to temporary construction compounds have an assumed vehicle occupancy of two, and with the movement from temporary construction compound to site, a vehicle occupancy of six. Cables and substation construction staff have an assumed vehicle occupancy of two
- Trip generation for visitors, or additional tradesperson to temporary construction compounds during the construction period, has not been considered at this stage
- It has been assumed that all staff would be actively encouraged to use public transport to access the site and would be informed of the limited parking available

on site. They would be made aware of the local public transport provision through their information packs. Personal travel planning would also be offered. Parking on the public highway is not permitted

- The trip generation for construction traffic forecasts is based on the assumption that all vehicles travelling to the site would leave the site on the same day. This equates to one vehicle making two movements on the PARs (one in each direction)
- In addition to the PARs, there are roads located on the local highway network where a crossover point is provided. This allows construction vehicles to cross over the road and progress along the proposed haul roads. It is important to note that these intersections would not contribute to an increase in baseline traffic along the local road as no HGV construction traffic is proposed to access the haul roads from the public highway under typical operation, and vice versa; hence, an increase in baseline traffic is not expected and they have not been assessed within the ES (Volume 6 of the DCO application). Temporary traffic management measures will be provided to avoid delays at crossover points as described within the Outline CTMP (document reference 7.3).

16.5 Baseline Conditions

Existing Baseline

16.5.1 Baseline conditions have been gathered from desk-based information and site surveys (see Section 16.4) and presented with reference to the section of the Project that they are located.

16.5.2 A description of the road links forming the PARs can be found within Tables A16.2.1 to A16.2.71 within Appendix 16.2: Traffic and Transport Baseline Conditions (document reference 6.16.A2). The description includes the type of carriageway, character, speed limits, highway constraints, presence of street lighting, bus routes and on-carriageway parking, and pedestrian, cyclist and horse-rider provision. These roads are shown on Figure 16.1: Primary Access Routes (document reference 6.16.F1).

Baseline Traffic Flows

16.5.3 Baseline 2023 traffic flows have been obtained from the latest DfT static traffic counters for road links forming the PARs where available. The DfT static traffic counter sites are as shown on Figure 16.4: Traffic Counts and PRoW User Survey Locations (document reference 6.16.F4).

16.5.4 For links where recent DfT traffic flows were not available, traffic survey data was collected by the Project in 2023, November 2024, and May 2025. In addition, 2023 traffic flow data held by Suffolk County Council was obtained, and survey data from June 2024 was obtained from the LTC project team. Traffic survey site locations are as shown on Figure 16.1: Primary Access Routes (document reference 6.16.F1).

16.5.5 Appropriate growth factors derived from TEMPro were applied to the 2023/2024 traffic flows to account for growth in background traffic between the year the surveys were undertaken and future baseline year for peak construction activity.

16.5.6 The resultant AADT flows were converted into average weekday traffic flows and 12-hour flows (07:00-19:00) by applying an appropriate factor. This factor was derived

from a standard daily traffic profile from the DfT's online road traffic statistics Table TRA0307.

16.5.7 Baseline traffic flows on road links forming the PARs and links where surveys have been undertaken are presented in Table A16.2.72 in Appendix 16.2: Traffic and Transport Baseline Conditions (document reference 6.16.A2).

Public Transport Network

16.5.8 The buses that operate on the PARs are summarised in Tables A16.2.80 to A16.2.83 in Appendix 16.2: Traffic and Transport Baseline Conditions (document reference 6.16.A2).

16.5.9 Those road links with a high frequency of bus services operating on the PARs are shown on Table 16.7.

Table 16.7 Main bus routes on primary access routes

Project Section	Region	Road
Section A	Norfolk	A140 Ipswich Road (Link PAR 1)
	Norfolk	A1066/A1066 Victoria Road/A1066 Park Road/A1066 High Road (Link PAR 8)
	Norfolk	A1066 High Road/A1066 Low Road/A1066 Diss Road /A1066 The Street/A1066 Thetford Road/A1066 Hurth Way/A1066 Mundford Road (Link PAR 9)
Section B	Suffolk	B1113 Needham Road/B1113 Stowmarket Road (Link PAR 19)
Section C	Suffolk	A1214 London Road (Link PAR 22)
	Suffolk	A1071 (Link PAR 23)
Section D	Essex	A1341 Via Urbis Romanae (Link PAR 35)
	Essex	A134 Northern Approach Road/A134 Wildeve Avenue/A134 Nayland Road/A134 The Causeway (Link PAR 36)
	Essex	A1124 Halsted Road (Link PAR 37)
Section E	Essex	B1018 Braintree Road/B1018 Witham Road (Link PAR 41)
	Essex	B1389 Hatfield Road (Link PAR 42)
	Essex	Spinks Lane/Highfields Road/Spa Road/Flora Road/Faulkbourne Road/Church Hill (Link PAR 43)
Section F	Essex	A131 Great Leighs Bypass/A131 Braintree Road (Link PAR 44)
	Essex	B1008 Essex Regiment Way (Link PAR 45)
	Essex	B1008 Braintree Road/B1008 Main Road (Link PAR 46)

Project Section	Region	Road
	Essex	A414 Three Mile Hill/A1114 London Road (Link PAR 49)
	Essex	A1016 Waterhouse Lane/A1016 Rainsford Lane (Link PAR 50)
	Essex	A1060 Rainsford Road/A1060 Roxwell Road (Link PAR 51)
Section G	Essex	A176 Noak Hill Road/A176 Laindon Road/A129 Southend Road (Link PAR 58)
	Essex	A129 Sun Street/A129 London Road/A129 Rayleigh Road (Link PAR 59)
Section H	Thurrock	A1013 Stanford Road (east of Orsett Cock Roundabout) (Link PAR 64)
	Thurrock	A1013 Stanford Road (west of Orsett Cock Roundabout) (Link PAR 67)

16.5.10 Changes to baseline bus services/bus stops or taxi facilities are not anticipated prior to the construction of the Project. There is a proposed long-term road closure in Wymondham Road (Link PAR 5), however there are no bus services along this route.

16.5.11 As defined in the Outline CTMP (document reference 7.3), if a bus stop is required to be closed during construction, a temporary stop will be provided in a suitable location, following agreement with the relevant highway authority and the bus operators.

Public Rights of Way

16.5.12 Figure 16.1: Primary Access Routes (document reference 6.16.F1) shows all PRoWs that interact with the Project. There are no expected changes to existing PRoWs prior to the start of the Project construction phase other than those associated with nearby committed developments.

16.5.13 PRoW usage surveys included PRoWs such as long-distance trails, recreational circular routes or Local Planning Authority promoted routes. Surveys were undertaken in both 2024 and 2025 and recorded all NMUs on each PRoW.

16.5.14 The 2024 PRoW usage survey results are summarised in Table A16.2.84 in Appendix 16.2: Traffic and Transport Baseline Conditions (document reference 6.16.A2). The overall use of the monitored PRoW network during the weekday surveyed in 2024 was low except for the Saffron Trail PRoW Broomfield 1 where 92 users were recorded of which 70 were pedestrians and 22 were cyclists. On St Edmund Way and Stour Valley Path, west of Stratford St Mary Langham 1 a higher number of users was also recorded with a total of 52 users of which 30 were horse-riders and 22 were pedestrians.

16.5.15 In general, an increase in the number of users was observed at the weekend (2024 surveys), with Gislingham Circular Route 1 W-267/021/0 recording 94 pedestrians, and the Essex Way Walk, at Langham (West of Stratford St Mary) PRoW Langham 43 recording 53 users of which 35 were pedestrians and 18 were horse-riders.

16.5.16 The 2025 PRoW usage survey results are summarised in Table A16.2.85 in Appendix 16.2: Traffic and Transport Baseline Conditions (document reference 6.16.A2). The

overall use of the monitored PRoW network during the weekday surveyed in 2025 was low, with a maximum of 47 users recorded at Footpath 11 and Footpath 12, of which 45 were pedestrians and two were cyclists. Of the remaining 18 sites surveyed, five recorded between 25 and 33 users, whilst the rest recorded 13 users or below.

16.5.17 The overall use of the monitored PRoW network during the weekend surveys undertaken in 2025 was also low, with the exception of Footpath 11 and Footpath 12 which recorded 72 users, of which 71 were pedestrians and one was a cyclist. The remaining 18 sites surveyed recorded 28 users or less in the weekend, with nine sites recording 10 users or less. The equipment at two sites during the weekend were vandalised and unable to record any data. However, it was noted that both sites recorded a relatively low number of users during the weekday. Repeat user surveys were not undertaken at these two sites due to the potential for further damage.

16.5.18 The location of all PRoW surveys are shown on Figure 16.4: Traffic Counts and PRoW User Survey Locations (document reference 6.16.F4). Further details of PRoWs are included within Chapter 15: Socio-economics, Recreation and Tourism (document reference 6.15).

National Cycling Network

16.5.19 The Study Area includes various National Cycle Network (NCN) routes along the various sections of the Project. These are summarised in Table 16.8 below and shown on Figure 16.4: Traffic Counts and PRoW User Survey Locations (document reference 6.16.F4).

Table 16.8 National cycling network

Project Section	Region	Description
Section A	Norfolk	The NCN Route 30 connects to A1066 Stanley Road along Denmark Street from Ling Road. There is no dedicated cycling infrastructure for this route along Denmark Street or at the connection with A1066 Stanley Road. A section of NCN Route 30 runs along A1066 Victoria Road between Lower Rose Lane and Station Road, in a shared use path on both sides of the road. The NCN Route 13 crosses the A1066 Mundford Road at Croxton Road, with an uncontrolled crossing and a segregated shared path on both sides of the approach to the crossing.
Section B	Suffolk	The NCN Route 30 crosses the A143 Old Bury Road on its connection between Palgrave to Thrandeston and a segregated cycleway is provided on the southern side of the A143 for cyclists after crossing. This route also runs along Ling Road, where there is a haul road crossing point. There is no dedicated cycling infrastructure for this route along Ling Road. The NCN Route 51 runs in a shared use path on the north verge of B1113 Needham Road/B1113 Stowmarket Road between the A1120 and the site access.

Project Section	Region	Description
Section C	Suffolk	The NCN Route 1 runs along the PAR at Grovel Hill between Perry Lane and St. Margaret's Cross. This route also runs along various roads where there would be haul road crossings such as Chattisham Road, Higham Road for the cabling section between River Stour and B1070, and Dedham Road for the cabling section between River Stour and A12. There is no dedicated cycling infrastructure for this route across these sections. Wolf Way runs along the A1214 London Road with a dedicated shared use path for pedestrians and cyclists.
Section D	Essex	The NCN Route 13 runs along Mill Road between the two site accesses. There is no dedicated cycling infrastructure for this route along Mill Road. The NCN Route 1 runs along Langham Lane where there is a haul road crossing point. There is no dedicated cycling infrastructure for this route along Langham Lane.
Section E	Essex	The NCN Route 16 coincides with the section of Spa Road between Spinks Lane and Highfield Road. There is no dedicated cycling infrastructure for this route along this section. An off-carriageway section of the route crosses Spa Road further north via a signalised crossing. This route also runs along Fairstead Road, where there is a haul road crossing point, with no dedicated cycling infrastructure along this section. The Cathedrals Cycle Route 15: St Edmundsbury Cathedral to Chelmsford Cathedral, crosses the B1389 Hatfield Road with a signalised crossing, following the River Brain walk.
Section F	Essex	The NCN Route 50 runs along Fuller Street, where there is a haul road crossing point. There is no dedicated cycling infrastructure for this route along Fuller Street.
Section G	Essex	The NCN Route 13 is coincident with A176 Noak Hill Road in the southern section between St. Agnes Road and Wash Road. There is no dedicated cycling infrastructure for this route, and cyclists cross A176 Noak Hill Road via an informal crossing. This route also runs along A176 Laindon Road between A129 London Road and School Road. In this section there is no dedicated cycling infrastructure.
Section H	Thurrock	There are no NCN routes or Regional Cycle Network along the PARs in Thurrock

Personal Injury Collision Data

16.5.20 Personal injury collision data has been obtained from DfT Road Safety Data for the roads along the PARs. The latest three-year personal injury collision data (2021-2023)

has been summarised in Table A16.2.74 within Appendix 16.2: Traffic and Transport Baseline Conditions (document reference 6.16.A2) for the roads on the PARs. The location of all collisions are shown on Figure 16.3: Personal Injury Collision Data (document reference 6.16.F3).

16.5.21 The TA (document reference 7.11) includes a collision assessment with the additional collision data for the junctions.

16.5.22 Within the Study Area, a total of 161 collisions were reported in the road links forming the PARs over the three-year period 2021 to 2023. From these collisions, 110 were classified as slight, 48 as serious and three as fatal.

16.5.23 The collisions involving pedestrian and cyclist casualties are recorded in Table A16.2.75 within Appendix 16.2: Traffic and Transport Baseline Conditions (document reference 6.16.A2).

16.5.24 A collision cluster has been determined by the following criteria:

- A location where six or more personal injury collisions have occurred within a junction or a 100 m section of road
- A location with three or more fatal and/or serious collisions happening either within a junction or within a 100 m section of road.

16.5.25 From the collision data analysis, the following collision clusters have been identified along the PARs and connecting LRN junctions:

- PAR 9: A1066 - To the east of the junction with Brettenham Road, a total of three serious collisions were recorded within a 100 m stretch located on a bend in the carriageway. None of these collisions involved pedestrians or cyclists
- PAR 36: A134 – A total of four collisions were recorded on the A134/Boxted Road roundabout, however they were not concentrated at any one location. Three of these collisions were classified as serious in severity, and one as slight. Three of these collisions involved cyclists, of which two were serious in severity and one slight in severity
- PAR 41: B1018 - To the south of the junction with Temple Lane, a cluster of three collisions have been recorded located on a bend in the carriageway. Two of these collisions were classified as serious in severity, and one was fatal. None of these collisions involved pedestrians or cyclists
- A1016 Rainsford Lane/A1016 Parkway junction – A total of 12 collisions have been recorded at this junction, however they were not concentrated at any one location. Nine of these collisions have been classified as slight in severity, and the remainder as serious in severity.

16.5.26 Additionally, the following collision clusters have been identified at SRN/MRN junctions that connect to PARs:

- A14 J50 Cedars Interchange – A total of nine collisions have been recorded at this junction, two of which have been classified as serious in severity, and the remainder as slight in severity. On the A14 off-slip (eastern arm), three collisions were recorded: one of serious severity (recorded in 2021) and two of slight severity (recorded in 2023). All three collisions occurred on the approach to the junction where there is a notable bend in the road alignment

- A14 J52 Claydon Roundabout - A total of eight collisions have been recorded at this junction, all of which were classified as slight in severity. On the A14 off-slip (southern arm), four collisions were recorded, all of slight severity (one collision occurred in 2021, and three in the year 2022). All four collisions occurred on the approach to the junction where there is a notable bend in the road alignment
- A14 J55 Copdock Interchange – A total of 12 collisions have been recorded at this junction, all of which were classified as slight in severity. On the A1214 approach (PAR 22), three collisions of slight severity were recorded (two occurred in 2022, and one in the year 2023). All three collisions occurred on the approach to the junction where there is a notable bend in the road alignment
- A12 J29/A120 Ardleigh Crown Interchange - A total of six collisions have been recorded at this junction, of which one has been classified as serious in severity, and the remainder as slight in severity. These collisions were not concentrated at any one location
- A12 J26 Eight Ash Green Interchange – A total of 11 collisions have been recorded at this junction, of which two have been classified as serious in severity, and the remainder as slight in severity. On the A12 on-slip (western arm), four collisions were recorded, all of slight severity (three recorded in 2021, and one in the year 2023). Similarly, on the A12 on-slip (eastern arm), three collisions were recorded, all of slight severity (two recorded in 2022, and one in the year 2021). All seven collisions recorded in the A12 on-slip roads occurred on the approach to the junction where there is a notable bend
- A12 J25 Marks Tey Interchange – A total of eight collisions have been recorded at this junction, of which one has been classified as serious in severity, and the remainder as slight in severity. Two of these collisions involved non-motorised road users: one of these collisions involved a pedestrian casualty, and the other involved a cyclist casualty. Both collisions were recorded on the A120 on the section fronting Marks Tey Railway Station, at/or in close proximity to controlled crossing facilities
- A120 Galleys Corner Roundabout – A total of 24 collisions have been recorded at this junction. Three of these collisions were classified as serious, and the remaining 21 collisions were classified as slight in severity. None of these collisions involved pedestrians or cyclists. There is a notable collision pattern of nine collisions on the circulatory/B1018 exit (PAR 41), two of which are serious in severity, and seven of which were classified as slight in severity, all recorded between 2021 and 2023
- A127 Southern Arterial Road/A176 Noak Hill Road Interchange – A total of seven collisions have been recorded at this junction, however they were not concentrated at any one location. Two of these collisions were classified as serious in severity, and the remainder were classified as slight in severity. One collision of serious severity involved a pedestrian casualty
- A127 Southern Arterial Road/A128 Tilbury Road Interchange – A total of six collisions have been recorded at this junction, however they were not concentrated at any one location. Two of these collisions were classified as serious in severity, and the remainder as slight in severity
- A13 Stanford-Le-Hope Bypass (Orsett Cock Roundabout) - A total of 13 collisions have been recorded at this junction, however they were not concentrated at any one location. Three of these collisions have been classified as serious in severity,

and the remainder as slight in severity. One collision of slight severity involved a pedestrian casualty.

16.5.27 Further analysis has been undertaken to consider up to a five-year period for the SRN junctions as National Highways typically consider this length of time for personal injury collision data on their network to better understand any causation factors. However, due to COVID-19, only data from 2019 (pre-COVID) has been considered, as 2020 data is likely to be impacted by the COVID-19 lockdown periods. This exercise has identified a further collision cluster based on the criteria stated in Paragraph 16.5.24:

- A47 Norwich Southern Bypass/A140 Ipswich Road Interchange – a total of seven collisions have been recorded at this junction between 2019 and 2023 (excluding 2020), however they were not concentrated at any one location. One of these collisions has been classified as serious in severity, and the remainder as slight in severity. None of these collisions involved pedestrians or cyclists.

16.5.28 In addition to these criteria, the collision data has been analysed along the full length of the links to identify patterns in collision locations in order to establish any areas of safety concerns. The light conditions, weather conditions and road surface conditions for the personal injury collision data over the three-year period 2021–2023 is presented in Table A16.2.76 within Appendix 16.2: Traffic and Transport Baseline Conditions (document reference 6.16.A2).

16.5.29 The analysis on the road links forming the PARs shows that in general the collisions happened during daylight hours or with lights lit, with fine weather conditions and with a dry road surface. No specific collision patterns were identified based on conditions.

16.5.30 A summary of the collision data reviewed for each section is presented in Table 16.9 below.

Table 16.9 Collision data review

Project Section	Region	Description
Section A	Norfolk	There were 26 collisions reported, of which 15 were slight and 11 were serious collisions. 62% of those collisions happened during daylight, and in 69% of them the road surface was dry. 81% of the collisions happened with fine weather conditions. There was one serious accident involving pedestrians, registered in A1066/A1066 Victoria Road/A1066 Park Road/A1066 High Road (Link PAR 8).
Section B	Suffolk	There were 17 collisions reported, of which 11 were slight and six were serious collisions. 76% of those collisions happened during daylight, and in 71% of them the road surface was dry. 94% of the collisions happened with fine weather conditions and the rest with rainy conditions. There was one serious accident involving pedestrians registered in A1120 Church Road/A1120 Bell's Lane (Link PAR 16).
Section C	Suffolk/Essex	There were seven collisions reported, of which four were slight and three were serious collisions.

Project Section	Region	Description
		71% of those collisions happened during daylight, and in 57% of them the road surface was dry. 100% of these collisions happened with fine weather conditions. There was one serious accident involving cyclists, registered in Bentley Road (Link PAR 30).
Section D	Essex	There were 24 collisions reported, of which 18 were slight and six were serious. 75% of those collisions happened during daylight, and in 75% of them the road surface was dry. 75% of the collisions happened with fine weather conditions, 13% with rainy conditions and the rest with fog, mist or other conditions. There were two slight accidents involving pedestrians, registered in A134 Northern Approach Road/A134 Wildeve Avenue/A134 Nayland Road/A134 The Causeway (Link PAR 36).
Section E	Essex	There were 20 collisions reported, of which nine were slight, nine were serious and two were fatal collisions. 75% of those collisions happened during daylight, and in 65% of them the road surface was dry. 90% of the collisions happened with fine weather conditions, 5% with rainy conditions and the rest with snow. Although at the A120 Colchester Road (Link PAR 40) there were no collisions in the vicinity of the SAP, there is a safety concern due to the high number of collisions along the A120 between Coggeshall and A12 J25 Marks Tey where 12 of the collisions reported are located in this section of the A120. Two fatal collisions have been reported at the B1018 Braintree Rd/B1018 Witham Rd (Link PAR 41), one of those involving cyclists. There were three accidents involving pedestrians, of which one was slight in B1018 Braintree Rd/B1018 Witham Rd (Link PAR 41) and two serious in Spinks Lane/Highfields Road/Spa Road/Flora Road/Faulkbourne Road/Church Hill (Link PAR 43).
Section F	Essex	There were 31 collisions reported, of which 25 were slight, five were serious and one was a fatal collision. 74% of those collisions happened during daylight, and in 74% of them the road surface was dry. 94% of the collisions happened with fine weather conditions, and the rest with rainy conditions. There were five accidents involving pedestrians, registered in A1016 Waterhouse Lane/A1016 Rainsford Lane (Link PAR 50) of which one was serious and four are slight. There were three accidents involving cyclists, of which one was serious (Link PAR 51 - A1060 Rainsford Road/A1060 Roxwell Road) and two were slight (Link PAR 46 - B1008 Braintree Road/B1008 Main Road and Link PAR 49 - A414 Three Mile Hill/A1114 London Road).

Project Section	Region	Description
Section G	Essex	There were 16 collisions reported, of which 12 were slight and four were serious collisions. 75% of those collisions happened during daylight, and in 63% of them the road surface was dry. 63% of the collisions happened with fine weather conditions, 25% with rainy conditions and the rest with other conditions. There was one serious accident involving pedestrians, registered in A176 Noak Hill Road/A176 Laindon Road/A129 Southend Road (Link PAR 58). The data indicates that the pedestrian was on the footway or the verge in A176 Noak Hill Road.
Section H	Thurrock	There were 20 collisions reported, of which 16 were slight and four were serious collisions. 60% of those collisions happened during daylight, and in 65% of them the road surface was dry. 90% of the collisions happened with fine weather conditions and the rest with rainy conditions. The A128 Brentwood Road (Link PAR 63) registered a high number of collisions between A127 Southern Arterial Road and A128 Stanford-Le-Hope Bypass where nine of the collisions reported were located in this section of the A128. Recently this road has had speed cameras introduced as a road safety measure due to the collision record on the route. There were no registered accidents involving pedestrian, cyclist and horse-rider in this section.

16.5.31 An analysis of the accidents involving pedestrians, cyclist sand horse-riders indicates that, on the road links forming the PARs over the three-year period 2021 to 2023, there were 13 collisions involving pedestrians. From these collisions, seven were classified as slight and six as serious. There were five collisions involving cyclists, with two of those being slight, two serious and one fatal.

16.5.32 A detailed analysis of the accidents involving pedestrian, cyclist and horse-rider is described below:

- Section A
  - There is one serious accident involving a pedestrian, registered in A1066/A1066 Victoria Road/A1066 Park Road/A1066 High Road (Link PAR 8). The data indicates that the pedestrian was on the footway or the verge in A1066 Victoria Road.
- Section B
  - There is one serious accident involving a pedestrian, registered in A1120 Church Road/A1120 Bell's Lane (Link PAR 16). The data indicates that the pedestrian movement or location is unknown.
- Section C

- There is one serious accident involving a cyclist, registered in Bentley Road (Link PAR 30), where the data indicates that the cyclist was hit by the car when overtaking.

- Section D
  - There are two slight accidents involving pedestrians, registered in A134 Northern Approach Road/A134 Wildeve Avenue/A134 Nayland Road/A134 The Causeway (Link PAR 36). The data indicates that in both cases the pedestrians were crossing the carriageway, one in the signalised pedestrian crossing located east of A134 Northern Approach Road/Boxted Road roundabout and the other in the middle of the carriageway under the A12.
- Section E
  - A fatal collision involving a cyclist has been reported at the B1018 Braintree Rd/B1018 Witham Rd (Link PAR 41). The data indicates that the cyclist was in the footway in B1018 Braintree Rd
  - There is one slight accident involving a pedestrian in B1018 Braintree Rd/B1018 Witham Rd (Link PAR 41) where the data indicates that the pedestrian was standing in the carriageway, not crossing
  - There are two serious accidents involving pedestrians in Spinks Lane/Highfields Road/Spa Road/Flora Road/Faulkbourne Road/Church Hill (Link PAR 43). The data indicates that in one of the accidents the pedestrian was crossing on the pedestrian crossing facility in the Adult Community Learning centre at Witham and in the other the pedestrian was standing in the carriageway, not crossing.
- Section F
  - There is one slight accident involving a cyclist in B1008 Braintree Road/B1008 Main Road (Link PAR 46) where further details are unknown
  - A slight accident involving a cyclist has been identified in A414 Three Mile Hill/A1114 London Road (Link PAR 49) where the data indicates that the cyclist was hit by a car when overtaking
  - There are five accidents involving pedestrians, registered in A1016 Waterhouse Lane/A1016 Rainsford Lane (Link PAR 50), of which one is serious and four are slight. In the signalised pedestrian crossing in A1016 Waterhouse Lane north of Forest Drive there is one serious and one slight registered accident where the movement of the pedestrian is unknown. In the uncontrolled crossing of A1016 Rainsford Lane north of Rainsford Lane there is one slight accident where the pedestrian was crossing. Additionally, there are two slight accidents registered in the uncontrolled crossing of A1016 Waterhouse Lane south of Meteor Way, where the pedestrian was crossing or walking along the carriageway
  - There is one serious accident involving a cyclist in A1060 Rainsford Road/A1060 Roxwell Road (Link PAR 51) where the data indicates that the cyclist was hit by an HGV when crossing in the vicinity of the Tower Gardens Car Park
  - There are two slight collisions involving cyclists in the A127 Southend Arterial Road/B148 West Mayne. Both accidents occurred in the eastbound A127 off-slip road and data indicates that in both cases a car entering the roundabout hit a cyclist riding around the roundabout.

16.5.33 A calculation of the collision rate per billion vehicle kilometres has been carried out on the road links forming the PARs to compare against the national statistics. These calculations are presented in Table A16.2.77 within Appendix 16.2: Traffic and Transport Baseline Conditions (document reference 6.16.A2).

16.5.34 The DfT Table RAS0302: Reported road collision and casualty numbers and rates by severity, road type (urban and rural) and class, Great Britain, shows the following national collision rate per billion vehicle kilometres for 2023:

- Urban A roads: 389
- Urban Other roads: 362
- Rural A roads: 102
- Rural Other roads: 188.

16.5.35 The comparison of the road links forming the PARs with the collision rate of personal injury collisions per annum (p.a.) per billion vehicle kilometres for the period 2021-2023 shows that there are 14 links with an annual collision rate higher than the national average, as listed below:

- Lion Road (Link PAR 11), Wickham Road (Link PAR 13) and B1008 Essex Regiment Way (Link PAR 45) and Dunton Road/Brentwood Road (Link PAR 62) where the length of these road links is relatively short with 1 km or less which might distort the annual collision rate values
- Mill Lane (Link PAR 18), with two recorded collisions classified as slight. The total daily traffic is under 1,000 vehicles, which might distort the annual collision rate value
- A1071 (Link PAR 23), Bentley Road (Link PAR 30), A134 Northern Approach Road/A134 Wildeve Avenue/A134 Nayland Road/A134 The Causeway (Link PAR 36) and A1060 Rainsford Road/A1060 Roxwell Road (Link PAR 51). On these road links a the number of collisions that have actually been recorded is close to the national average
- A1066 High Road/A1066 Low Road/A1066 Diss Road /A1066 The Street/A1066 Thetford Road/A1066 Hurth Way/A1066 Mundford Road (Link PAR 9), A143 Old Bury Road (Link PAR 10) and A120 Colchester Road (Link PAR 40) where the collision rate is similar to the national average
- Old Ipswich Road (Link PAR 33), with two collisions recorded as slight and one recorded as serious
- Muckingford Road (Link PAR 71), with two collisions recorded as slight and two recorded as serios.

16.5.36 It was found that most of the road links forming PARs have a collision rate below or similar to the national collision rate per billion vehicle kilometres.

16.5.37 Where the collision rates exceed the national average, these can be influenced by various factors and should be interpreted with caution. For those road links where there are only one or two recorded collisions and the length of the section at the PAR is relatively short, there are no more collisions recorded in the full length of the road link. These collisions do not suggest a significant pattern of collisions on those road links.

16.5.38 On Mill Lane, the low baseline traffic volume should be considered in relation to the number of collisions (two). These collisions do not suggest a significant pattern or a presence of a hotspot on this link and should be interpreted with caution.

16.5.39 On Old Ipswich Road and Muckingford Road the values are similar to the national average. On Old Ipswich Road two collisions occurred in the A12 southbound arm approaching Ardleigh Crown Interchange. One of the collisions involved a car striking the car ahead when both were slowing or stopping, and in the other collision a motorcycle (over 500cc) was overtaking another vehicle. No specific collision patterns were identified based on conditions for both collisions.

16.5.40 On Muckingford Road, the collisions were recorded on the section between Hoford Road and High House Lane with no lighting and all with good weather conditions. In two of the accidents the vehicles skidded on a dry road surface.

Future Baseline

16.5.41 The future baseline relates to known or anticipated changes to the current baseline in the future which should be assessed as part of the Project in the ES (Volume 6 of the DCO application).

16.5.42 The peak year for construction activities and associated vehicle movements that will affect each road link forming the PARs has been estimated based on the construction programme for the Project. The peak year for each PAR varies due to the extent of the Study Area and Project activities within the period 2027 to 2031.

16.5.43 The future year baseline traffic along these road links has been calculated by firstly applying an appropriate growth factor derived from TEMPro to the baseline traffic flows for the year 2023 to the DfT traffic flows and the 2023/2024 surveyed traffic flows. These flows are summarised in Table A16.3.1 within Appendix 16.3: Future Baseline (document reference 6.16.A3).

16.5.44 A list of committed developments, which were discussed with Local Highways Authorities, considered within the assessment is presented in Tables A16.3.2 to A16.3.5 within Appendix 16.3: Future Baseline (document reference 6.16.A3). Consideration has been given to changes (temporary and permanent) to the surrounding highway and PRoW network as a result of other developments where construction programmes are known to overlap.

16.5.45 The future baseline flows with committed developments are summarised in Table A16.3.6 within Appendix 16.3: Future Baseline (document reference 6.16.A3). The net increase to the future baseline as a result of committed developments' vehicles flows on each PAR is presented for total flow (all vehicles) and HGVs.

16.5.46 A detailed assessment has been undertaken, which includes committed developments, and the significant effects of the Project have been assessed within Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4).

16.6 Proposed Mitigation

16.6.1 The approach to mitigation including a description of the mitigation hierarchy is set out in Chapter 5: EIA Approach and Method (document reference 6.5). Three types of mitigation have been incorporated into the Project and assessment: embedded, standard and additional environmental mitigation.

Embedded Mitigation

16.6.2 Environmental appraisal has been an integral part of the Project design from the outset, which has meant that the Project has been able to avoid environmentally sensitive features as far as reasonably practicable.

16.6.3 National Grid has also embedded measures into the design of the Project to avoid or reduce significant effects that may otherwise be experienced during construction and operation (and maintenance) of the Project.

16.6.4 Embedded measures are those that are intrinsic to and built into the design of the Project, which are presented in Table 4.2 in Chapter 4: Project Description (document reference 6.4). Embedded measures relevant to Traffic and Transport include:

- The inclusion of a largely continuous haul road to reduce effects on the local highway network during construction, which would only be discontinuous at major obstructions along the corridor (major roads, railways, areas of environmental or historical significance and/or major watercourses)
- Construction vehicles would use the haul road to move along the site, reducing construction traffic on the LRN and confining traffic to the PARs and designated crossing locations.

Standard Mitigation

16.6.5 Standard mitigation measures, comprising effective construction logistics practices, management activities, and techniques, would be implemented during construction of the Project to limit effects through adherence to good site practices and achieving legal compliance.

16.6.6 The Outline Code of Construction Practice (CoCP) (document reference 7.2) contains relevant standard/good practice measures relating to Traffic and Transport. Note that measures have been assigned references, for example (GG01). For ease of cross-reference, these align with the references provided in Table 6.1 of the Outline CoCP (document reference 7.2). These measures include but are not limited to:

- GG05: Construction workers will undergo training to increase their awareness of environmental issues as applicable to their role on the Project
- GG09: The Main Works Contractor(s) will undertake regular visual site inspections to check conformance to the Management Plans – which will be defined within the DCO
- GG30: Members of the community, local businesses and local stakeholders will be kept informed regularly of the works through active community liaison. This will typically include the notification of ‘noisy activities’, heavy traffic periods and start and end dates of key phasing. A contact number will be provided which members of the public can use to raise any concerns or complaints about the Project. All construction-related complaints will be logged by the Main Works Contractor(s) in a complaints register, together with a record of the responses given and actions taken
- GG33: The inclusion of a largely continuous haul roads to reduce effects on the local highway network during construction, that will only be discontinuous at major obstructions along the corridor (major roads, railways, areas of environmental or historical significance and/ or major watercourses)

- AS03: Where practicable and safe to do so, existing access to and from residential, commercial, community and agricultural land uses will be maintained throughout the construction period or as agreed through the landowner discussions. This may require signed diversions or temporary restrictions to access. The means of access to affected properties, facilities and land parcels will be communicated to affected parties at the start of the Project / at the start of the relevant sections, with any changes communicated in advance of the change being implemented. Where field-to-field access points require alteration because of construction, alternative field access will be provided in consultation with the landowner/occupier
- S02: PRoWs crossing the working areas will be managed in discussion with the relevant Local Planning Authorities and potential temporary closures and diversions applied, where required. Road closures and diversions will be kept as brief as possible, with alternative routes maintained where practicable. Access disruption would be reduced while construction activities occur where practicable. Any required temporary diversions will be clearly marked at both ends with signage explaining the diversion, the duration of the diversion and a contact number for any concerns. Management of PRoW during construction is detailed in the Outline PRoW Management Plan (document reference 7.6)
- T01: All pre-commencement works shall be carried out in accordance with the Outline CTMP (document reference 7.3). The Outline CTMP (document reference 7.3) will define traffic management required for delivery vehicles and other traffic generated during the construction phase and include measures designed to avoid and reduce the effect wherever practicable between construction site traffic and other road users.
- T02: The Main Works Contractor(s) and sub-contractor(s) vehicles arriving at site will comply with appropriate safety and environmental standards
- T03: All construction HGVs will adhere to the designated construction routes to and from the site
- T04: Emergency access protocols will be put in place and will be identified within the site health and safety procedures
- T05: The Main Works Contractor(s) will seek to ensure no debris deposits on to the public road occur due to construction traffic and that cleaning facilities are available where required
- T06: Appropriate road signs warning motorists of the site access/ egress and of construction HGVs turning in and out of the site will be provided and installed
- T07: Provision of appropriate road markings and signs will be in place to warn the public of increased traffic movements to and from the site during construction
- T08: Site inductions will cover traffic safety, highlighting the need to pay special attention to vulnerable road users
- T09: Main Works Contractor(s) will prepare a Driver Information Pack prior to construction commencing covering a variety of topics and providing information on the requirements of working on the Project, to form part of the CTMP
- T10: A Construction Worker Travel Plan will be prepared by the Main Works Contractor(s) prior to construction commencing with the aim of proactively managing trips to and from the site, to minimise local effects by reducing the

number of single occupancy vehicle trips and encouraging the uptake of sustainable modes of travel

- T11: Depending on the type and size of the equipment, the following measures for abnormal loads may be required:
  - Marker boards
  - Escort vehicles
  - Police escort
  - Appropriate notice
  - Speed restriction
  - Additional lights.
- T12: AIL routes and associated measures will be discussed and agreed with the Local Highway Authorities and National Highways and presented in the Outline CTMP

Outline Construction Traffic Management Plan

16.6.7 The Outline CTMP (document reference 7.3) provides details of the proposed traffic management of delivery vehicles and other traffic generated during the construction phase at this stage of the Project. The Outline CTMP sets out the strategy and measures which will be adopted by National Grid and the Main Works Contractor(s), subject to agreement with the Local Highways Authorities and National Highways. Compliance with the Outline CTMP is secured through Requirement 4 in Schedule 3 of the Draft DCO (document reference 3.1), with the intention that a detailed CTMP is to be agreed prior to the commencement of each stage of the authorised development. The purpose of the CTMP is to:

- Facilitate the site access points and routes for the delivery of construction materials, equipment and movement of construction workers, along the Primary Access Routes
- Provide temporary access routes within the site working areas
- Manage the impacts arising from temporary road closures that are required for various stages of the Project, including the provision of diversion routes where appropriate
- Maintain communication with the local authorities and residents throughout construction activities
- Monitor the structural condition of the public highway.

16.6.8 The Outline CTMP (document reference 7.3) identifies measures designed to avoid and reduce the effect wherever practicable between construction site traffic and other road users. The detailed CTMP will be implemented by the Main Works Contractor(s) to ensure that all traffic movements associated with the Project's construction works operate in a compliant manner.

16.6.9 Control measures specific to Traffic and Transport are included within the Outline CTMP (document reference 7.3). The Main Works Contractor(s) and National Grid would prepare documentation to manage the Project construction related vehicle movements to and from site. This may include the following:

- Implement a delivery management system
- Implement a Construction Employee Management Plan
- Implement a Construction Logistics Plan.

16.6.10 The Outline CTMP also includes an Outline CWTP in Appendix B of the document which provides measures for the management of construction worker travel. All delivery contractors and construction staff will be instructed to use the agreed construction access routes, complying with the agreed final CTMP for each work area. A number of measures would be implemented to ensure compliance with routeing:

- Construction access routes will have temporary signs posted along the proposed routes to site access prior to the commencement of construction activities, with the specification and location of signage to be agreed with the Local Highways Authorities. Where multiple access points use a common road to site, signage will be clearly distinguishable between access points
- Signage will also be placed at the exits of SAPs to instruct construction traffic to follow the designated route
- The delivery routes and timings would be communicated by the Main Works Contractor(s) to all companies and/or drivers involved in the transport of materials and plant to and from site by HGV construction vehicles
- An 'identifier' would be placed within the window of all delivery vehicles to enable residents to identify if an HGV is engaged on work on the Project. This identifier would be submitted to and approved by the relevant highway authorities as part of the final CTMP
- Monitoring data would be collected from HGVs fitted with monitoring devices (such as GPS tracking), including the routes taken, timing and speed of vehicles when making deliveries. This data could be used for auditing and complaint investigation. The Main Works Contractor(s) would be required to ensure the high proportion of HGVs are fitted with global positioning systems (GPS) so that route compliance can be checked
- The registration numbers for all HGVs making deliveries would be recorded. Alongside the HGV monitoring device data (where fitted) outlined above, this would allow a check of any reported breaches of the agreed delivery routes and enforcement action to be undertaken if required.

16.6.11 The Main Works Contractor(s) will set out their methods for mitigating, recording and monitoring the following safety related issues:

- Record of all logistics related collisions
- Modes of transport staff use to travel to site
- Vehicles and operations not meeting safety requirements
- Description of the Main Works Contractor(s) handbook
- Description of the driver information pack.

16.6.12 A CWTP will be prepared by the Main Works Contractor(s) prior to construction commencing with the aim of proactively managing trips to and from the site, to minimise local effects by reducing the number of single occupancy vehicle trips and encouraging the uptake of sustainable modes of travel. The Travel Plan Coordinator

will make sub-contractors aware of the existence of the Travel Plan by providing them with an information pack. The information pack will be issued on appointment of their contract and will be included as part of induction onto the Project.

16.6.13 An AIL Access Strategy has been prepared and is set out within Appendix A of the Outline CTMP (document reference 7.3). The AIL Access Strategy proposes the strategy and routes proposed for AILs movements and proposed temporary mitigation which will be developed through discussions with the relevant Local Highways Authority. The AIL Access Strategy identifies those prescribed access routes for AILs to the construction areas and includes and assessment of the weekly construction vehicle requirements on those access routes where AIL movements are expected.

16.6.14 The Outline CoCP (document reference 7.2) is secured by Requirement 4 in the Draft DCO (document reference 3.1) which will require the Main Works Contractor(s) to prepare the CoCP to discharge the Requirement.

Additional Mitigation

16.6.15 Additional mitigation comprises measures over and above any embedded and standard mitigation measures, for which the Traffic and Transport assessment has identified requirement further reduce significant environmental effects.

16.6.16 A summary of this assessment can be found within Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4) and has been described in Section 16.7. Locations of additional mitigation measures are shown on Figure 16.5: Additional Mitigation Measures (document reference 6.16.F5).

Pedestrian, Cyclist and Horse-rider Severance

16.6.17 Although severance is not identified within the assessment as an issue along road links within Thurrock, safety concerns were raised by the Local Highways Authorities. Informal pedestrian crossing locations along PARs were identified and a review of these locations was undertaken. Additional mitigation measures have been proposed and are summarised in Table 16.10.

Table 16.10 Pedestrian, cyclist and horse-rider severance – additional mitigation proposals

Project Section	Region	Location	Issue Detected	Mitigation Proposed
Section H	Thurrock	Link PAR 64 - A1013 Stanford Road (east of Orsett Cock Roundabout)	The McDonald's located on the A13 is currently accessed from the north side of A1013 Stanford Road through private land. People informally cross the A1013 Stanford Road away from designated crossings	Within the Outline CTMP (document reference 7.3) – Driver information pack will include areas with road safety concerns e.g. where pedestrians may be crossing the carriageway away from designated crossing point. Additionally, the construction traffic drivers will be subject to a driving briefing that will set out how to behave, specific routes and any potential conflict points.

Project Section	Region	Location	Issue Detected	Mitigation Proposed
Section H	Thurrock	Link PAR 65 - Buckingham Hill Road	Users of footpaths 41 and 42 are required to cross Buckingham Hill Road. Safety concerns have been raised at this location as currently the road is already heavily used by HGVs	Within the Outline CTMP (document reference 7.3) – Driver information pack will include areas with road safety concerns e.g. where pedestrians may be crossing the carriageway away from designated crossing point. Additionally, the construction traffic drivers will be subject to a driving briefing that will set out how to behave, specific routes and any potential conflict points. Facilities to be provided to improve connectivity and safety between the PRoWs. Further details are provided in the Transport Assessment (document reference 7.11), and provided on Section H of the Access, Rights of Way & Public Rights of Navigation Plans alteration plans (document reference 2.5). Adjacent vegetation is to be maintained to improve visibility between road users.
Section H	Thurrock	Link PAR 66 - Brentwood Road	Safety concerns have been raised about the crossing of pedestrians and cyclists on the approach to Orsett Cock Roundabout	Within the Outline CTMP (document reference 7.3) – Driver information pack will include areas with road safety concerns e.g. where pedestrians may be crossing the carriageway away from designated crossing point. The drivers delivery pack will include information on cycleways and warnings of routes which could have a higher volume of cyclists. Additionally, the construction traffic drivers will be subject to a driving briefing that will set out how to behave, specific routes and any potential conflict points.
Section H	Thurrock	Hoford Road	Popular route for pedestrians and cyclists connecting to	Temporary designated facilities for pedestrians and cyclists along Hoford Road between

Project Section	Region	Location	Issue Detected	Mitigation Proposed
			footpaths 45 and 43. Safety concerns at this location as currently a no-through road at Clearserve access. Road will be heavily used by construction traffic accessing Tilbury North construction site via Buckingham Hill Road.	Tilbury North SAP and Buckingham Hill Road to provide segregation from construction traffic and improve safety. Further details are provided in the Transport Assessment (document reference 7.11), and provided on Section H of the Access, Rights of Way & Public Rights of Navigation Plans alteration plans (document reference 2.5).

Pedestrian, Cyclist and Horse-rider Amenity

16.6.18 Table 16.11 presents the additional mitigation measures proposed to reduce the effects on pedestrian, cyclist and horse-rider amenity which have been discussed with Local Highways Authorities.

Table 16.11 Pedestrian, cyclist and horse-rider amenity – additional mitigation proposals

Project Section	Region	Location	Issue detected	Mitigation Proposed
Section A	Norfolk	Link PAR 1 - A140 Ipswich Road	Pedestrians and cyclists at the junction where there is an increase in HGV and total traffic. Although off-carriageway facilities are provided, the width of the shared footway is reduced by adjacent vegetation. This road does not form part of a designated cycle route and traffic surveys show a low number of cyclists on carriageway. Trip attractors appear limited for pedestrians, cyclists and horse-riders.	Within the Outline CTMP (document reference 7.3) – Driver information pack will identify locations where pedestrians/ cyclists cross the carriageway and appropriate signage provided where necessary. Maintenance of vegetation adjacent to shared footway to increase available width.
Section A	Norfolk	Link PAR 9 - A1066 High Road/A1066 Low Road/A1066 Diss Road/A1066 The Street/A1066 Thetford Road/A1066 Hurth Way/A1066 Mundford Road	The pedestrian, cyclist and horse-rider provision is adequate, but there is an uncontrolled crossing for pedestrians and cyclists near the junction of Old Croxton Road. The number of HGVs per hour is expected to increase by one every four minutes as a result of the Project at this location.	Within the Outline CTMP (document reference 7.3) – Driver information pack will identify locations where pedestrians/cyclists cross the carriageway and appropriate signage provided where necessary.
Section B	Suffolk	Link PAR 12 - B1113 Finningham	The stretch of B1113 between Gislingham Road and Wickham	Within the Outline CTMP (document reference 7.3) – Driver information pack will

Project Section	Region	Location	Issue detected	Mitigation Proposed
		Rd/B1113 Walsham Road	Road has no footway available. There is a connection for footpath W-246/013 that provides access to a the playground. Therefore, pedestrians may be walking on the road or adjacent verge. Speed limit of 30 mph but the signage is hidden behind vegetation.	identify locations where pedestrians cross the carriageway or could be walking on carriageway from playground. Cut back vegetation and maintain verge to improve visibility to PRoW access and existing advanced warning signage. Improve existing signage (height of post/backing boards and/or Variable Message Sign). Notices on PRoW access indicating construction route. Surface colouring under 'SLOW' markings
Section B	Suffolk	Link PAR 16 - A1120 Church Road/A1120 Bell's Lane	School route to Stowupland Freeman Primary School with direct access from Church Road. Likely congestion during school pickup/drop-off times	Construction vehicles will travel outside the weekday drop-off/pick-up times
Section C	Suffolk	Link PAR 25 - B1070 Hadleigh Road	Bellmouth access to haul road proposed on the same side of the footway that is used as a school route to schools within East Bergholt. Cycle route at B1070 has no dedicated cycling infrastructure for the cycle users and adjacent footway width is limited by overgrown vegetation.	Crossing facilities for pedestrians at the bellmouth access provided. Within the Outline CTMP (document reference 7.3) – Driver information pack will identify locations where pedestrians/ cyclists cross the carriageway or could be cycling on carriageway. Maintenance of adjacent vegetation along footway to ensure full width is accessible.
Section C	Essex	Link PAR 27 - Birchwood Road	Users of Birchwood Corner bus stops are not provided with footway or crossing facilities. However,	Within the Outline CTMP (document reference 7.3) – Driver information pack will identify locations where pedestrians may be walking to

Project Section	Region	Location	Issue detected	Mitigation Proposed
			the number of construction vehicles expected along this section of Birchwood Road towards Wick Lane is expected to be low.	bus stops either on verge or carriageway. Ensure adjacent vegetation is maintained to keep verge clear. Place signs to warn drivers of upcoming pedestrians in road ahead that may be crossing the carriageway.
Section C	Essex	Link PAR 28 - Wick Road/Grove Hill	Adequate width for the footway serving mainly residential properties. NCN along Wick Road, however dedicated cycling infrastructure not provided.	Within the Outline CTMP (document reference 7.3) – Driver information pack will identify NCN location where higher number of cyclists may be on the carriageway. Place signs to warn drivers of upcoming pedestrians in road ahead that may be crossing the carriageway.
Section D	Essex	Link PAR 36 - A134 Northern Approach Road/A134 Wildeve Avenue/A134 Nayland Road/A134 The Causeway	Potential use of verge by pedestrian, cyclist and horse-rider at locations where there are PRoW access points.	Within the Outline CTMP (document reference 7.3) – Driver information pack will identify locations where pedestrians may be walking either on verge or carriageway. Ensure adjacent vegetation is maintained to keep verge clear. Place signs to warn drivers of upcoming pedestrians in road ahead crossing the carriageway.
Section D	Essex	Link PAR 37 - A1124 Halsted Rd	Potential use of verge by pedestrians and Horse-rider at locations where there are PRoW access points.	Within the Outline CTMP (document reference 7.3) – Driver information pack will identify locations where pedestrians may be walking either on verge or carriageway. Ensure adjacent vegetation is maintained to keep verge clear. Place signs to warn drivers of upcoming pedestrians in road ahead crossing the carriageway.
Section D	Essex	Link PAR 38 - Mill Rd	NCN Route 13 is located along this road link but no	Within the Outline CTMP (document reference 7.3) – Driver information pack will

Project Section	Region	Location	Issue detected	Mitigation Proposed
			dedicated cycling infrastructure is provided.	identify NCN location where higher number of cyclists may be on the carriageway. Potential speed limit reduction through this section (from national speed limit 60 mph).
Section E	Essex	Link PAR 43 - Spinks Lane/Highfields Road/Spa Road/Flora Road/Faulkbourne Road/Church Hill	Potential use of verge by pedestrians and horse-riders at locations where there are PRoW access points.	Within the Outline CTMP (document reference 7.3) – Driver information pack will identify locations where pedestrians may be walking either on verge or carriageway. Ensure adjacent vegetation is maintained to keep verge clear. Place signs to warn drivers of upcoming pedestrians in road ahead crossing the carriageway.
Section F	Essex	Link PAR 49 - A414 Three Mile Hill/A1114 London Rd	Good pedestrian, cyclist and horse-rider provision for pedestrians, accessing from PRoW and to the bus stops but no crossings provided on this dual carriageway.	Within the Outline CTMP (document reference 7.3) – Driver information pack will identify locations where pedestrians may be crossing. Ensure adjacent vegetation is maintained to allow visibility. Place signs to warn drivers of upcoming pedestrians in road ahead that may be crossing the carriageway.
Section F	Essex	Link PAR 51 - A1060 Rainsford Rd/A1060 Roxwell Rd	No footway or path to access the bus stop at Reeds Farm. Evidence of pedestrians using verge to walk adjacent to fence line opposite bus stop.	Within the Outline CTMP (document reference 7.3) – Driver information pack will identify locations where pedestrians may be walking on verge. Ensure vegetation is maintained to provide adequate visibility and use of the verge. Place signs to warn drivers of upcoming pedestrians in road ahead that may be crossing the carriageway.

Project Section	Region	Location	Issue detected	Mitigation Proposed
Section G	Essex	Link PAR 54 - B1002 Main Road	Potential presence of horse-riders on the carriageway. School route to Margaretting Church of England Primary School.	Within the Outline CTMP (document reference 7.3) – Driver information pack will identify locations where horse-riders may be on the carriageway. Construction vehicles will travel outside the weekday drop-off/pick-up times
Section H	Thurrock	Link PAR 67 - A1013 Stanford Road (west of Orsett Cock Roundabout)	Cyclists on the shared use footway are required to join the carriageway at the A1013 Stanford Road overbridge over A1089.	Within the Outline CTMP (document reference 7.3) – Driver information pack will identify NCN location and warning of off-carriageway section over bridge where higher number of cyclists may be joining the carriageway.
Section H	Thurrock	Link PAR 68 - Heath Road	Heath Road used as route to school between the bus stops at A1013 Stanford Road and schools located in Chadwell St. Mary. Adequate pedestrian and cyclist provision. The PAR at this location is for a short section and the bellmouth access is located on the opposite side of the footway, on the east side.	Within the Outline CTMP (document reference 7.3) – Driver information pack will identify school routes.

Pedestrian, Cyclist and Horse-rider Fear and Intimidation

16.6.19 The additional mitigation measures proposed for pedestrian, cyclist and horse-rider amenity shown in Table 16.13 are also relevant to fear and intimidation for the following PARs:

- Link PAR 9 - A1066 High Road/A1066 Low Road/A1066 Diss Road/A1066 The Street/A1066 Thetford Road/A1066 Hurth Way/A1066 Mundford Road
- Link PAR 36 - A134 Northern Approach Rd/A134 Wildeve Avenue/A134 Nayland Rd/A134 The Causeway
- Link PAR 67 - A1013 Stanford Road (west of Orsett Cock Roundabout).

16.7 Residual Effects

16.7.1 The likely significant effects of the Project have been assessed using current available data relating to the construction phase of the Project. The residual effects are outlined below. As previously stated, this section assumes that all mitigation – embedded (design measures), standard practice, and any additional mitigation measures are in place before assessing the effects. This is in accordance with guidance from IEMA as part of preparing a proportional assessment (IEMA, 2024).

16.7.2 Table A16.4.1 Construction Effects in Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4) presents the future baseline traffic flows on local road links forming the PARs derived from applying TEMPro growth factors. The predicted future baseline have been combined with the Project construction traffic flows for the average daily two-way movements during the worst-case construction peak year. The increase in these combined total and HGV traffic flows against the future baseline have been presented, identifying where further environmental assessment is required in line with the assessment criteria outlined within Table 16.7.

16.7.3 The total daily construction traffic flow (07:00 to 19:00) generated by the Project at each PAR for the peak week has been graphically presented, identifying the split between HGVs and total traffic as presented in Section 16.5 of Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4).

16.7.4 The Traffic and Transport significance of effects has been assessed in relation to the following environmental impacts:

- Driver delay and public transport delay to passengers
- Pedestrian, cyclist and horse-rider delay
- Pedestrian, cyclist and horse-rider severance
- Pedestrian, cyclist and horse-rider amenity
- Fear and intimidation
- Collisions and road safety
- Parking and loading.

16.7.5 A summary of effects for all road links forming the PARs is presented in Table A16.4.8 within Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4).

Driver Delay

16.7.6 The assessment for the road links forming the PAR is presented Table A16.4.2 in Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4).

16.7.7 There are instances where the future baseline traffic flows are notably low on the road links, meaning that even a small number of construction vehicles results in a large percentage change. Where this occurs, it is considered unlikely that significant effects would be realised given the low number of construction vehicles expected, and therefore professional judgement has been applied, with the significance of effects adjusted where appropriate. However, this assessment has been undertaken on a site-by-site case, examining road link characteristics and sensitivity of receptors.

16.7.8 An example of this is Link PAR 18 - Mill Lane, where there is a predicted increase in HGVs of 214%, but the estimated maximum number of HGVs on the worst-day during peak construction is only expected to be 14 HGVs an hour (seven HGVs in each direction). The estimated total traffic percentage increase on this road link (22%) is also below the IEMA Guidelines: EATM (2023) Rule 1 30% threshold. Therefore, the magnitude of impact on this road link has been reduced from major to **moderate**, with the level of significance of effect reducing from moderate to **slight adverse** and **not significant**.

16.7.9 The receptor sensitivity and magnitude of impact varies between PARs which results in a range of significance of effects for road links from short-term neutral to large adverse effects. The majority of links would have a magnitude of impact of short-term **minor adverse**, resulting in a significance of effects of **slight adverse** and **not significant**. Where receptor sensitivity is high to medium and the magnitude of impact is short-term **moderate or large adverse**, this results in a significance of effects of short-term **large or moderate adverse** and is deemed **significant**, as noted for the following link PARs:

- Link PAR 23 – A1071
- Link PAR 35 - A1341 Via Urbis Romanae
- Link PAR 36 - A134 Northern Approach Road/A134 Wildeve Avenue/A134 Nayland Road/A134 The Causeway
- Link PAR 37 - A1124 Halsted Rd
- Link PAR 49 - A414 Three Mile Hill/A1114 London Road
- Link PAR 50 - A1016 Waterhouse Lane/A1016 Rainsford Lane
- Link PAR 51 - A1060 Rainsford Road/A1060 Roxwell Road
- Link PAR 59 - A129 Sun Street/A129 London Road/A129 Rayleigh Road
- Link PAR 64 - A1013 Stanford Road (east of Orsett Cock Roundabout)
- Link PAR 65 - Buckingham Hill Road
- Link PAR 66 - Brentwood Road
- Link PAR 67 - A1013 Stanford Road (west of Orsett Cock Roundabout).

16.7.10 The **large or moderate** effects identified for the PARs listed above would only occur during the peak of construction activity and would be realised over a short duration (e.g. one week). Outside of this peak construction period the construction traffic flows

would be lower but over a longer duration within the construction programme. Therefore, the level of significance of effects for these road links may be reduced.

16.7.11 The modelling of the junctions in the road links listed above identified additional mitigation required in some of the junctions. Further details are provided in the Transport Assessment (document reference 7.11).

16.7.12 In addition to the volume of traffic, driver delay may also occur as a result of temporary planned road closures or highway mitigation works. A long-term road closure of Wymondham Road (Link PAR 5) is needed, with a 2.4 km diversion route required between via Flordon Road and B1113 Norwich Road. This diversion route has been agreed with the Local Highways Authorities who advised this would have **no significant effects** on the local highway network given an increase of journey time of just two minutes is anticipated for drivers.

16.7.13 Short-term road closures associated with overhead line stringing, construction of highway mitigation works, construction of bellmouth junctions and the open-cut cable swathe are expected on some of the roads. Full road closures are expected to be for no more than four weeks and would require a diversion. Other roads are expected to be managed through: Managed/ Road Open/Single Lane Running/Single Lane Running with widening avoiding the need to close the road. The duration of these would be between six to eight weeks and would maintain access for vehicles on the affected roads. Minimal driver delay is expected and the residual construction effect would be temporary with the magnitude of impact being short-term **minor adverse**, and therefore **not significant**. Details on the proposed approach for road closures and management is set out in Section 5.8 of the Outline CTMP (document reference 7.3). Proposed road closures are shown on the Access, Public Rights of Way and Public Rights of Navigation Plans (document reference 2.5) and the Traffic Regulation Order plans (document reference 2.4). Further details can be found within the relevant schedules of the Draft DCO (document reference 3.1).

16.7.14 The TA (document reference 7.11) provides an assessment of the future baseline traffic flows for the peak year of construction traffic flows for each PAR. The flows from the committed developments have been included within the future baseline. The junction modelling assesses the impact the increase in traffic as a result of the Project would have in combination with committed developments at key junctions on or connecting to the PARs. The residual construction effect would be temporary, and in general, the magnitude of impact is expected to be short to medium-term **minor adverse** where mitigation is provided, and therefore **not significant**.

16.7.15 It is anticipated that the Main Works Contractor(s) will be responsible for ensuring mitigation measures are enforced and will monitor any subsequent delay/congestion along the PARs and at key junctions in partnership with the Local Highway Authority, as detailed within the Outline CTMP (document reference 7.3).

Public Transport Delay to Passengers

16.7.16 The impact to bus passenger delay would primarily be attributed to the increase in traffic flows along the PARs due to changes to traffic flows associated with committed developments and as a result of construction vehicles associated with the Project. In addition, delays may also occur through any proposed changes to bus routeing or relocation of bus infrastructure as a result of temporary planned road closures or highway mitigation works, where walking distance or overall journey time may be impacted by the Project.

16.7.17 The assessment for the road links forming part of the PAR is presented in Table A16.4.2 in Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4).

16.7.18 The receptor sensitivity and magnitude of impact varies between PARs which results in a range of significance of effects for road links where bus routes are present from short-term **neutral to large adverse** effects. The majority of links are expected to have a magnitude of impact of short-term **minor adverse**, resulting in a significance of effects of **slight adverse** and **not significant**. Where receptor sensitivity is high to medium and the magnitude of impact is short-term **moderate or large adverse**, this results in a significance of effects of short-term **large or moderate adverse** effects and deemed **significant**, as noted for the following link PARs:

- Link PAR 23 – A1071
- Link PAR 35 - A1341 Via Urbis Romanae
- Link PAR 36 - A134 Northern Approach Road/A134 Wildeve Avenue/A134 Nayland Rd/A134 The Causeway
- Link PAR 37 - A1124 Halsted Road
- Link PAR 49 - A414 Three Mile Hill/A1114 London Road
- Link PAR 50 - A1016 Waterhouse Lane/A1016 Rainsford Lane
- Link PAR 51 - A1060 Rainsford Road/A1060 Roxwell Road
- Link PAR 59 - A129 Sun Street/A129 London Road/A129 Rayleigh Road
- Link PAR 64 - A1013 Stanford Road (east of Orsett Cock Roundabout)
- Link PAR 65 - Buckingham Hill Road
- Link PAR 66 - Brentwood Road
- Link PAR 67 - A1013 Stanford Road (west of Orsett Cock Roundabout).

16.7.19 The impact of the construction traffic flows during the AM and PM peak hours on the roads with a larger number of bus routes is summarised in the TA (document reference 7.11). The modelling of the junctions in the road links listed above identified additional mitigation required in some of the junctions. Further details are provided in the Transport Assessment (document reference 7.11).

16.7.20 There are no expected changes to bus services, bus stops or taxi facilities for over four weeks in any 12-month period during the construction period 2027 to 2031 as a result of the construction activities. Although Wymondham Road (Link PAR 5) would be closed long term for the duration of construction works, this would not impact bus services.

16.7.21 Short-term road closures associated with overhead line stringing, construction of highway mitigation works, construction of bellmouth junctions and the open-cut cable swathe are expected on some of the roads. Full road closures are expected to be for no more than four weeks and will require a diversion. Other roads are expected to be managed through: Managed/ Road Open/Single Lane Running/Single Lane Running with widening avoiding the need to close the road. The duration of these would be between six to eight weeks and would maintain access for vehicles on the affected roads. Minimal delay to bus services is therefore expected. Proposed road closures are shown on the Access, Public Rights of Way and Public Rights of Navigation Plans

(document reference 2.5) and the Traffic Regulation Order plans (document reference 2.4). Further details can be found within the relevant schedules of the Draft DCO (document reference 3.1).

16.7.22 If a bus stop is located on those roads, a temporary stop will be provided in a suitable location, following agreement with the relevant Local Highway Authority and the bus operators

16.7.23 Therefore, **no significant effects** associated with changes to the bus network or infrastructure are expected.

Pedestrian, Cyclist and Horse-Rider Delay

16.7.24 An assessment has been undertaken to identify where PRoWs interact with the Project and construction activities, e.g. proposed overhead line and undergrounding cabling construction swathe and haul roads and the construction effects on delay/increased journey time.

16.7.25 Disruption and delay to PRoW users has been minimised as much as reasonably practicable, with options to keep PRoW open, or to manage the access (as far as practicable). Where this is not practicable, the existing PRoW will be stopped up and a temporary diversion provided via the shortest, or most feasible alternative route. Temporary diversions will be clearly marked at both ends with signage explaining the diversion, the duration of the diversion and a contact number for any concerns. Details of the strategy for PRoW and the management regimes can be found within the Outline PRoW Management Plan (document reference 7.6).

16.7.26 Table 16.12 provides a summary of the temporary closures and diversions of PRoW and the net change in distance travelled as a result of the proposed alternative routeing where an increase of the diversion length exceeds 500 m. This is equivalent to approximately six minutes of increase in journey time, considering a walking speed of 5 km/h. All the temporary diversions are illustrated within the Access, Rights of Way and Public Rights of Navigation Plans (document reference 2.5) and the extent of the diversion outlined in Schedule 8 of the Draft DCO (document reference 3.1).

Table 16.12 PRoW temporary closures and diversions (exceeding 500 m)

Project Section	Type of PRoW	Region	Local Planning Authority Designation	Net Change in Distance (m)	Duration
B	Footpath	Suffolk	W-121/006/0 and W-129/025/0	1,300	2 months
D	Footpath	Essex	Great Horkesley 30	784	2 months
D	Footpath	Essex	Great Tey 38	768	2 months
F	Footpath	Essex	Margaretting 13	556	2 months
G	Footpath	Essex	West Horndon 69	636	15 weeks

16.7.27 The likely changes in pedestrian, cyclist and horse-rider journey length due to temporary closures of PRoW during construction, presented in Table 16.12, have been assessed. Using professional judgement, this assessment excluded PRoW if the closure is expected to be for four weeks or less, as this would be temporary and the magnitude of impact would result in short-term **negligible** impact, and therefore the significance of effect would be classified as **slight adverse** and **not significant**. This assessment uses the criteria presented to Local Highways Authorities as shown in Table 16.5 Assessment of environmental effects and magnitude of impact.

16.7.28 The assessment is set out in Table A16.4.3: Significance of Effect Pedestrian, Cyclist and Horse-rider journey Delay in Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4). In general, the receptor sensitivity is medium to high along PRoW routes, with a magnitude of impact of temporary short to medium-term **minor to negligible adverse** effects. This results in a significance of effects of **neutral** to **slight adverse** and deemed **not significant**, subject to the mitigation outlined within the Outline PRoW Management Plan (document reference 7.6).

16.7.29 For those PRoW where the significance of effects would be **moderate or large adverse**, and deemed **significant**, there are some where a notable increase in journey distance is expected, with a net change in distance of over 500 m. These PRoW are presented in Table 16.12. Where temporary closures and diversions occur for more than four weeks in any 12-month period, the magnitude of impact would be medium-term **major adverse**. However, an increase in walking distance may not always be considered as having an adverse effects given the PRoW are considered leisure routes.

16.7.30 There are no expected long-term closures or diversions of footways or the cycle network as a result of the construction activities of the Project. However, several cycle routes that are located on the PARs would experience a temporary increase in traffic during construction but over a short duration of time. The PARs affected are as follows:

- Link PAR 1 - A140 Ipswich Road
- Link PAR 8 – A1066/A1066 Victoria Road/A1066 Park Road/A1066 High Road
- Link PAR 10 - A143 Old Bury Road
- Link PAR 17 - A1120 south of A14 J50
- Link PAR 19 - B1113 Needham Road/B1113 Stowmarket Road
- Link PAR 23 - A1071
- Link PAR 26 - Ipswich Road
- Link PAR 28 - Wick Road/Grove Hill
- Link PAR 33 - Old Ipswich Road
- Link PAR 35 - A1341 Via Urbis Romanae
- Link PAR 38 - Mill Road
- Link PAR 41 - B1018 Braintree Road/B1018 Witham Road
- Link PAR 42 - B1389 Hatfield Road

- Link PAR 43 - Spinks Lane/Highfields Road/Spa Road/Flora Road/Faulkbourne Road/Church Hill
- Link PAR 44 - A131 Great Notley Bypass/A131 Great Leighs Bypass/A131 Braintree Road
- Link PAR 50 - A1016 Waterhouse Lane/A1016 Rainsford Lane
- Link PAR 58 - A176 Noak Hill Road/A176 Laindon Road/A129 Southend Road
- Link PAR 59 - A129 Sun Street/A129 London Road/A129 Rayleigh Road
- Link PAR 63 - A128 Brentwood Road.

16.7.31 The impact to cyclists' journey times on these PARs therefore relates to an increase in traffic, and the magnitude of effects follows that of the assessment for driver delay, with the significance of effects presented in Table A16.4.2: Significance of Effect Driver and Passenger Delay in Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4).

16.7.32 For the majority of road links, the residual construction effects of cyclist delay would be temporary, and the magnitude of impact ranges from short-term **major to negligible adverse**, with a significance of effects of predominately **slight adverse**, therefore **not significant**. For the following road links the magnitude of impact would be **major or moderate adverse**, resulting in a significance of effects of short-term **large or moderate adverse** which would be **significant**:

- Link PAR 35 - A1341 Via Urbis Romanae
- Link PAR 50 - A1016 Waterhouse Lane/A1016 Rainsford Lane
- Link PAR 58 - A176 Noak Hill Road/A176 Laindon Road/A129 Southend Road
- Link PAR 59 - A129 Sun Street/A129 London Road/A129 Rayleigh Road.

Pedestrian, Cyclist and Horse-Rider Severance

16.7.33 The assessment of pedestrian, cyclist and horse-rider severance effects arising as a result of changes in traffic through the construction phase is presented on Table A16.4.4: Significance of Effect Pedestrian, Cyclist and Horse-rider Severance in Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4).

16.7.34 There are instances where the future baseline traffic flows are notably low on the road links, meaning that even low numbers of construction vehicles would be calculated as a large percentage change. Where this occurs, it is considered unlikely that significant effects to severance would be realised given the low number of construction vehicles expected. Rather than automatically downgrading the magnitude of impact to negligible, professional judgement has been applied to understand significance of effects on a site-by-site basis. This is in line with the IEMA guidance that suggests that *'very low baseline flows are unlikely to experience severance impacts even with high percentage changes in traffic'.*

16.7.35 The significance of effect for all the road links for pedestrian, cyclist and horse-rider severance is classified as temporary, short-term and **slight or neutral adverse** and therefore **not significant**.

Pedestrian, Cyclist and Horse-Rider Amenity

16.7.36 The assessment of effects on pedestrian, cyclist and horse-rider amenity arising as a result of changes in traffic through the construction phase is presented on Table A16.4.5: Significance of Effect pedestrian, cyclist and horse-rider Amenity in Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4).

16.7.37 The assessment identified the following PARs where the potential effects for pedestrian, cyclist and horse-rider amenity would be temporary, and the magnitude of impact would in general be short-term **moderate adverse**, with a significance of effects of **large or moderate adverse**, which would be deemed **significant**:

- Link PAR 28 - Wick Road/Grove Hill
- Link PAR 36 - A134 Northern Approach Road/A134 Wildeve Avenue/A134 Nayland Road/A134 The Causeway
- Link PAR 37 - A1124 Halsted Road
- Link PAR 43 - Spinks Lane/Highfields Road/Spa Road/Flora Road/Faulkbourne Road/Church Hill
- Link PAR 49 - A414 Three Mile Hill/A1114 London Road
- Link PAR 51 - A1060 Rainsford Road/A1060 Roxwell Road
- Link PAR 65 - Buckingham Hill Road
- Link PAR 66 - Brentwood Road.

16.7.38 Monitoring of the effects on pedestrian, cyclist and Horse-rider amenity along the above PARs will be undertaken by the appointed Transport Coordinator, as secured through the Outline CTMP (document reference 7.3).

Pedestrian, Cyclist and Horse-rider Fear and Intimidation

16.7.39 The assessment of pedestrian, cyclist and horse-rider fear and intimidation effects arising through the construction phase is presented in Table A16.4.6: Significance of Effect Pedestrian, Cyclist and Horse-rider Fear and Intimidation in Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4). The assessment shows that the magnitude of impact on links will be temporary and in general would be short-term **negligible.** The significance of effect on pedestrian, cyclist and horse-rider fear and intimidation for all PARs would be **slight or neutral adverse**, which would is **not significant**.

Road Safety

16.7.40 The likely significant effects on road safety as a result of the Project due to temporary increases in traffic flow on roads during Project peak year construction for each PAR have been assessed using baseline personal injury collision data (2021-2023). The safety of road users has been assessed along all road links and junctions, and at temporary and permanent SAPs.

16.7.41 Based on the assessment criteria outlined in Table 16.8, it was found that, in general, collisions along the road links appear to be spread throughout the Study Area, rather than in a specific location on any one road link. However, a number of collision clusters were identified along road links and at junctions as described within Section 16.15. A review of the collisions at these locations identified that several junctions that

meet the criteria of collision cluster, when reviewed, showed no evident collision patterns, as collisions occur throughout the junction. Conversely, on the junctions where there are notable collision patterns, these tend to occur at a bend, predominantly on the approach to the junction.

16.7.42 It is anticipated that within the Driver Information Pack locations of collisions clusters would be identified along the PARs to raise driver's awareness of potential road safety concerns, particularly noting where collisions involving pedestrians or cyclists have been identified.

16.7.43 A comparison between the collisions recorded along the PARs against the national collision rate per billion vehicle kilometres found that most road links forming PARs have a collision rate below or similar to the national averages.

16.7.44 Whilst the addition of any amount of traffic can increase the risk of collisions, it is considered that for the majority of road links the temporary increase in construction traffic associated with the Project is unlikely to materially affect safety. This is subject to the provision of the embedded and additional mitigation identified on road links for pedestrian, cyclist and horse-rider severance, amenity, and fear and intimidation, referenced within the Outline CTMP (document reference 7.3) and the Transport Assessment (document reference 7.11). The overall residual effects on road user safety from the construction phase would be temporary, short-term, and the level of effect **slight adverse** and therefore **not significant**.

16.7.45 Preliminary designs have been prepared for all temporary and permanent SAPs for haul roads, temporary construction compounds, the East Anglia Connection Node (EACN) Substation and the Tilbury North Substation. Details of the SAPs can be found within Chapter 4: Project Description (document reference 6.4)

16.7.46 Stage 1 Road Safety Audits have been undertaken on all temporary and permanent SAPs and can be found within Appendix A of the TA (document reference 7.11). The objective of the road safety audit process is to provide an effective, independent review of the road safety at the SAPs. This helps to ensure construction vehicles can safely access/egress the site from the LHN and reduce the risk of collisions related to the Project at these locations. A Stage 2 Road Safety Audit would be undertaken at the detailed Design Stage following the DCO process.

Parking and Loading

16.7.47 Temporary parking suspensions are proposed at informal kerb side parking and at signed parking bays where there are carriageway width restrictions. This will ensure the safe two-way movement of HGVs and AILs is maintained along the PAR. Further details on temporary parking suspensions can be found in the Traffic Regulation Order Plans and Schedule included within the DCO (document references 2.4 and 3.1 respectively).

16.7.48 Construction workers and vehicles will have sufficient parking provision within the designated temporary construction compounds. As a result, there would be no additional demand for parking spaces along the LRN. No additional mitigation is required and there would be **no significant effects**.

16.7.49 Effects on parking and loading have been analysed on those road links forming the PARs where any formal or informal parking suspension has been identified. The assessment of parking and loading effects arising through the construction phase is

presented in Table A16.4.7: Significance of Effect Parking and Loading in Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4).

16.7.50 The PARs affected by temporary loss of parking provision as a result of the Project are as follows:

- B1113 Bramford Road/B1113 Loraine Way (Link PAR 20) - Parking/waiting restriction is required along B1113 Loraine Way. There are no high sensitivity receptors in the B1113 and the residential properties have driveways available. The magnitude of impact has been classified as short-term minor, and the significance of effect is **slight** given the low sensitivity of receptors, and therefore **not significant**
- Old Ipswich Road (Link PAR 33) - Temporary suspension of the parking bay on the eastern side of Old Ipswich Road opposite the Dragonfly Hotel and informal kerbside parking spaces along the section of Old Ipswich Road located under the A12. The suspension is expected only during arrival/departure of AIL vehicles. The duration of the impact would therefore be limited to periods of less than four weeks. Alternative parking nearby is available, albeit with a charge at the Dragonfly Hotel. Therefore, the magnitude of impact has been classified as sort-term **minor**, and the significance of effect is slight given the low sensitivity of receptors, and therefore **not significant**
- A120 Colchester Road (Link PAR 40) – The existing layby parking area on the southern side of the A120 Colchester Road located in the access of footpath Coggeshall FP 32 will be suspended during the duration of the main works. The duration of the impact would be for more than four weeks and therefore the magnitude of impact has been classified as short-term moderate, and the significance of effect is **slight** given low sensitivity of receptors, and therefore **not significant**
- Spinks Lane (Link PAR 43) - Temporary suspension of informal kerbside parking during arrival/departure of AIL vehicles. The duration of the impact would therefore be limited to periods of less than four weeks. School keep clear carriageway entrance markings are already provided, with no-stopping Monday to Friday 8:00 to 9:30 and 14:30 to 16:00 restrictions in place outside the school. Alternative parking locations are available on nearby roads. Therefore, the magnitude of impact has been classified as short-term minor, and the significance of effect is **slight** given high sensitivity of receptors and therefore **not significant**
- Highfields Road (Link PAR 43) - Temporary suspension of informal kerbside parking during arrival/departure of AIL vehicles. The duration of the impact would therefore be limited to periods of less than four weeks. Alternative parking locations are available on nearby roads. Therefore, the magnitude of impact has been classified as short-term **minor**, and the significance of effect is slight given the high sensitivity of receptors, and therefore **not significant**
- A128 Brentwood Road (Link PAR 63) - The existing layby parking area located where the SAP is proposed on the eastern side of the A128 Brentwood Road would be suspended during the duration of the main works. The duration of the impact would be for more than four weeks and therefore the magnitude of impact has been classified as short-term **moderate**, and the significance of effect is slight given low sensitivity of receptors, and therefore **not significant**.

16.7.51 In relation to parking and loading on the above PARs, there would be temporary, short-term and **slight** adverse effects, which are deemed **not significant**.

Operation (and Maintenance)

16.7.52 The effects of the Project for Traffic and Transport during operation (and maintenance) have been scoped out of the assessment in accordance with the EIA Scoping Opinion (document reference 6.20).

16.8 Monitoring

16.8.1 A Transport Coordinator or a suitably qualified person will be in charge of updating, monitoring and implementing the final CTMP upon the appointment of the Main Works Contractor(s). This includes ensuring all construction HGVs adhere to the designated construction traffic routes to and from the Project. An appropriate control system will be implemented for the arrival and dispatch of all vehicles, to monitor adherence to designated routes and to prevent congestion around the worksite and its access routes.

16.8.2 The number of HGV movements would be re-examined when the appointed Main Works Contractor(s) has sufficiently progressed its construction method and detailed programming of the works. This would enable a more accurate assessment of vehicle movements each week during construction. The exceedance of target daily vehicle numbers is defined as a non-compliance that would need to be investigated to understand if corrective measures would be required. Enforcement and the non-compliance procedure is set out in the Outline CTMP (document reference 7.3).

16.8.3 Taking the above into consideration, the identified effects on Traffic and Transport in Sections 16.7 would be monitored throughout the stages of the design and construction to avoid and minimise any additional new effects by the Main Works Contractor(s).

16.8.4 It is considered appropriate to undertake ongoing monitoring of those PARs where likely significant effects have been identified for potential delay and amenity to establish the actual environmental effects that may occur in the future. Additional mitigation where practicable may be provided through engagement with the relevant highway authority. This includes monitoring of delay/congestion at junctions.

16.9 Sensitivity Testing

16.9.1 Sensitivity testing has been undertaken as described in Chapter 5: EIA Approach and Method (document reference 6.5) to determine if delays or an extension to the construction programme, changes to the design within the Limits of Deviation (LoD) or if any of the design scenarios presented in Table 4.4 in Chapter 4: Project Description (document reference 6.4) would affect the assessment.

Flexibility in the Construction Programme

16.9.2 This chapter assumes the baseline construction schedule described in Chapter 4: Project Description (document reference 6.4) for the purposes of the assessment. Qualitative sensitivity testing considering alternative Project phasing, such as a later construction start date, has shown that there would be no additional construction traffic movements generated, and the same SAPs and PARs would be utilised. It is possible that the Main Works Contractor(s) may identify alternative construction methods that in turn result in different vehicle forecasts. However, this is unlikely to significantly affect the traffic forecasts presented within this ES because a reasonable worst case has

been assessed. Furthermore, as the proposed mitigation outlined within the Outline CoCP (document reference 7.2), Outline CTMP (document reference 7.3), and Outline PRoW Management Plan (document reference 7.6) would still be provided, there would be no new or different likely significant effects anticipated to those identified in the baseline scenario assessed in Section 16.5.

16.9.3 Any new overlap with new committed developments as a result of a later construction start date would require their planning application to take into consideration the Project construction traffic flows. No further assessment of the baseline construction schedule is therefore required.

Flexibility in Design

Flexibility within the Limits of Deviation

16.9.4 This chapter has assumed the pylon locations and underground cable route is as shown on Figure 4.1: Proposed Project Design (document reference 6.4.F1) and Figure 4.2: Proposed Project Design – Permanent Features (document reference 6.4.F2). Qualitative sensitivity testing considering alternative pylon and underground cable route locations, within the proposed Limits of Deviation (LoD), has shown that there would be no new or different likely significant effects because of the infrastructure being placed in a different location within the LoD. This is because there would be no additional receptors or significant changes to construction traffic movements associated with the scenarios. Access to the Project would likely use the proposed SAPs and PARs currently assessed within the ES (Volume 6 of the DCO application), or may require haul road adjustments and SAP relocations. However, this would not result in any change to predicted significant effects.

Flexibility within the Order Limits

16.9.5 There are 16 locations where alternative designs have been identified within Chapter 4: Project Description (document reference 6.4). The effect of these design scenarios on Traffic and Transport, in comparison with the Project, is set out below.

Norwich Main Substation (Section A)

16.9.6 The design scenario allows for the overhead line alignment to be accommodated further east, should planning consent not be granted for a battery storage facility to the south of Norwich Main Substation. There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

Anglian Water Sewage Works south of Tabernacle Lane (Section A)

16.9.7 The design scenario allows for an alternative haul road that avoids crossing through an Anglian Water sewage works north should reed planting prevent the use of the parallel haul road. There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

Silica sands mineral site east of the proposed new EACN Substation (Section C)

16.9.8 The design scenario allows for the overhead line alignment and underground cable alignment between TB1 and TB8 to be swapped (i.e. part of the overhead line would move to the north of Little Bromley Road and part of the underground cable would move to the south). There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

Flying Trade Group and Crown Quarry east and west of the A12 (Sections C and D)

16.9.9 The design scenario allows for an alternative alignment of the overhead line within the Order Limits, between TB18 and TB22, to accommodate a number of planning applications adjacent to the A12. There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

Mineral extraction site north-west of Kelvedon (Section E)

16.9.10 The design scenario allows for an alternative alignment of the overhead line within the Order Limits, between TB84 and TB87, to reduce effects on a potential mineral extraction site should it be identified as an allocation in a future mineral plan. There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

Lions Hall Minerals Site east of the A131 and to the west of Lyonshall Wood Ancient Woodland (Section F)

16.9.11 The design scenario allows for an alternative alignment of the overhead line within the Order Limits, between TB128 and TB133, to reduce effects on the Lions Hall Minerals Site should it be progressed. There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

Chelmsford Bypass east of the A131 and to the west of Lyonshall Wood Ancient Woodland (Section F)

16.9.12 The design scenario allows for a widened LoD and Order Limits should an alternative haul road be required. There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

The Walthams and Standard Heights to the south of the River Chelmer (Section F)

16.9.13 The design scenario allows for use of alternative pylons and potential removal of one pylon. There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

Crest Nicholson housing development south of the A127 (Section G)

16.9.14 The design scenario allows for an alternative haul road to the south should the Crest Nicholson housing development, or other form of development, be progressed. There

would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

British Pipeline Agency (BPA) pipeline crossing west of Langdon Hills Golf and Country Club (Section H)

16.9.15 The design scenario allows for an alternative alignment to the east between TB238 and TB240 to facilitate a more perpendicular crossing at the BPA pipeline, should this be required. There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

Southfields development south of the A1013 (Section H)

16.9.16 The design scenario allows for an alternative alignment to the west of TB255 and TB259, to allow flexibility if the Southfields housing development does not go ahead. There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

Lower Thames Crossing south of the proposed new Tilbury North Substation (Section H)

16.9.17 The design scenario allows for alternative alignments of the existing YYJ and ZB overhead lines within widened Order Limits, and an amended Environmental Area, should the LTC project not be progressed or ongoing coordination identifies a change is required. There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

River Stour crossing west of Stratford St Mary (Section C)

16.9.18 The design scenario provides for a single underground crossing at either the western or eastern crossings of the River Stour, within Dedham Vale National Landscape (an Area of Outstanding Natural Beauty (AONB)). Both crossings have been assessed as part of the Project. There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

Black Brook north of Langham (Section C)

16.9.19 The design scenario allows for flexibility of routeing the underground cable within widened Order Limits to the west of the A12 and south of Black Brook, in the vicinity of existing UKPN underground cables. The widened Order Limits are within an area which forms part of the setting of Dedham Vale National Landscape. There would be no change to the significance of effects predicted in this chapter.

Great Horkesley south of School Lane (west of Great Horkesley) (Section D)

16.9.20 The design scenario allows for widened LoD and Order Limits to the south of School Lane (west of Great Horkesley) to allow for a wider temporary construction area if required as the underground cable alignment to the west is heavily constrained. There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

Tilbury North Access at the proposed new Tilbury North Substation (Section H)

16.9.21 The design scenario allows for temporary access to Tilbury North Substation via Brentwood Road and permanent access running east to west between Brook Farm and Orsett Golf Club.

16.9.22 The temporary access on Brentwood Road has been analysed as detailed in Appendix 16.4: Traffic and Transport Construction Effects (document reference 6.16.A4). The construction traffic flows used within this assessment are based on the worst-case scenario assuming the highest 12-hour construction traffic that would occur on Brentwood Road (PAR 66) during peak activity.

16.9.23 Based on the IEMA Guidelines: EATM (2023) the significance of effect from the different traffic impacts has been assessed for the Brentwood Road temporary access and compared with the access route via the A1013 Stanford Road (east of Orsett Cock Roundabout) and Buckingham Hill Road. Considering the levels of traffic increases on both roads, the change has been classified as negligible, and the overall significance of effect as either neutral or slight across all the assessment criteria. Therefore, there would be no change to the significance of effects predicted in this chapter.

Thurrock Airfield and Low Heights west of Langdon Hills Golf and Country Club (Section H)

16.9.24 The Thurrock Airfield design scenario would increase the height of pylons between TB238 and TB243 to the standard lattice pylon height instead of low height pylons, should Thurrock Airfield no longer be in use. There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

Temporary construction compounds (Section H)

16.9.25 The design scenario allows for relocation of a temporary construction compound to the immediate west of Lower Dunton Road, east of TB233. There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

South of the proposed new Tilbury North Substation (Section H)

16.9.26 The design scenario allows for a widened LoD around the underground cable, existing and proposed new locations of YYJ and ZB pylons and the two Cable Sealing End (CSE) compounds to allow for potential design refinements due to uncertainties regarding other projects (including Lower Thames Crossing, housing developments and aggregate facilities). There would be no change to the significance of effects predicted in this chapter as the number of construction vehicles and access arrangements are unlikely to change.

Abbreviations

Abbreviation	Full Reference
AADT	Annual Average Daily Traffic
AIL	Abnormal indivisible load
AONB	Area of Outstanding Natural Beauty
ATC	Automatic Traffic Count
BPA	British Pipeline Agency
CoCP	Code of Construction Practice
CSE	Cable Sealing End
CTMP	Construction Traffic Management Plan
CWTP	Construction Worker Travel Plan
DCO	Development Consent Order
DESNZ	Department for Energy, Security and Net Zero
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
EACN	East Anglia Connection Node
EATM	Environmental Assessment of Traffic Movements
EIA	Environmental Impact Assessment
ES	Environmental Statement
GPS	Global Positioning System
HGV	Heavy Goods Vehicle
IEMA	Institute of Environmental Management and Assessment
km	Kilometre
LHA	Local Highway Authority
LoD	Limits of Deviation
LRN	Local Road Network
LTC	Lower Thames Crossing
m	Metre
mph	Miles per hour
MRN	Major Road Network

Abbreviation	Full Reference
NCN	National Cycle Network
NMU	Non-Motorised Users
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Projects
PAR	Primary Access Routes
PRoW	Public Rights of Way
SAP	Site access point
SRN	Strategic Road Network
TA	Transport Assessment

Glossary

Term	Definition
Abnormal indivisible load	A large load which cannot 'without undue expense or risk of damage' be divided into two or more smaller loads for the purposes of being transported by road, and which exceeds limits set out in terms of weight (>44 tonnes), length (>18.65 m), and width (>2.9 m).
Additional mitigation measures	Comprises measures over and above embedded and standard mitigation measures to reduce environmental effects. This would include, but not be limited to, mitigation required for protected species.
Aggregate	Granular material (e.g. sand and gravel or crushed rock) that can be used for building and/or civil engineering purposes (e.g. for concrete production).
Alignment	The proposed overhead line and underground cable route.
Amenity	A term used to describe the character or attractiveness of an area. The assessment of amenity considers landscape and visual, noise and vibration, and traffic and transport effects.
Annual Average Daily Traffic flow	24-hour traffic count data averaged for all the days in the year, i.e. the total traffic flow on a road for a year divided 365.
Annual Average Weekday Traffic flow	24-hour traffic count data averaged for just the weekdays (Monday to Friday).
Automatic traffic counter	An automatic counter which records the total number of vehicles passing along a designated road or highway, calculating a vehicle's speed and category.
Bellmouth	A flared vehicular access point connecting a construction site to the public highway, designed to accommodate turning movements by large vehicles.
Cable	An insulated conductor designed for underground installation.
Cable circuit	A set of wires along which current flows and returns. It is necessary to have a complete circuit for current to flow. The National Grid standard for overhead lines operating at 400 kV is for pylons to carry two circuits, each consisting of three phases, i.e. a double circuit configuration.
Cable Sealing End	Structures used to transfer transmission circuits between underground cables and overhead lines.
Cable Sealing End compound	Electrical infrastructure used as the transition point between overhead lines and underground cables. A compound on the ground acts as the principal transition point.

Term	Definition
Code of Construction Practice	A code of construction practice sets out the standards and procedures to which a developer (and its contractors) must adhere in order to manage the potential impacts of construction works.
Committed development	A development that has full or outline planning permission, or is allocated in an adopted development plan.
Conservation Area	An area of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance as defined in s69(1)(a) in the Planning (Listed Building and Conservation Areas) Act 1990.
Construction Traffic Management Plan	Plan detailing the procedures, requirements and standards necessary for managing the traffic effects during construction of the Project so that safe, adequate and convenient facilities for local movements by all transport modes are maintained throughout the construction process.
Construction Worker Travel Plan	Plan that sets out the framework and principles proposed for the management of construction worker travel to mitigate potential impacts and encourage more sustainable modes of transport.
Crossover points	Locations where haul roads cross the local road network, but are not generally proposed for construction HGVs to transition to or from the local road network
Cumulative effects	The assessment of the impact on the environment which results from the incremental impact of an action when added to other past, present or reasonably foreseeable actions regardless of what agency or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.
Development Consent Order	A statutory instrument which grants consents and other rights to build a Nationally Significant Infrastructure Project, as defined by the Planning Act 2008.
Embedded design measures	Mitigation measures are those that are intrinsic to and built into the design of the Project.
Environmental Areas	These are locations identified for environmental embedded measures, mitigation and/or Biodiversity Net Gain/environmental enhancement.
Environmental Impact Assessment (EIA)	An assessment of the likely effects of a development project on the environment, which is reported in an Environmental Statement that is publicised and consulted on and taken into account in the decision on whether a project should proceed.
Environmental Statement (ES)	The main output from the EIA process, an ES is the report required to accompany an application for development consent (under the Infrastructure Planning (EIA) Regulations 2017) to inform public and stakeholder consultation and the decision on

Term	Definition
	whether a project should be allowed to proceed. The EIA Regulations set out specific requirements for the contents of an ES for Nationally Significant Infrastructure Projects.
Heavy Goods Vehicle	A motor vehicle with a gross vehicle weight (GVW) of more than 3.5 tonnes, used for transporting goods. This includes lorries, articulated trucks, and other large freight vehicles.
Kilometre	1,000 metres
Light Goods Vehicles	Goods vehicle weighing 3.5 tonnes or less.
Limits of Deviation (LoD)	LoD allow for adjustment to the final positioning of the permanent features, for example to avoid localised constraints or unknown or unforeseeable issues that may arise. This could include previously unidentified poor ground conditions which require a pylon to be moved slightly for geotechnical reasons, such as ground stability. The horizontal LoD define the parameters within which the position on the ground of proposed permanent features may deviate from the position shown on the plans. This applies to both linear (for example overhead lines and underground cables) and non-linear (for example the new EACN Substation and CSE compounds) proposed infrastructure. Vertical LoD limit the maximum vertical height, or the depth below ground, of any new infrastructure.
Listed building	A measure of a building's special architectural and historic interest. There are three categories of listed buildings, Grades I, II* and II, depending on the level of interest.
Local Planning Authority	The public authority whose duty it is to carry out specific planning functions for a particular area.
Magnitude of change	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration.
Main Works Contractor(s)	Contractor(s) appointed by National Grid to construct the Project.
Major Road Network	Middle tier of the country's busiest and most economically important local authority 'A' roads, sitting between the national Strategic Road Network and the rest of the local road network.
Mitigation	The action of reducing the severity and magnitude of change (impact) to the environment. Measures to avoid, reduce, remedy or compensate for significant adverse effects.
National Cycle Network	A series of traffic-free paths and quiet, on-road cycling and walking routes that connect to every major town and city. These routes are promoted for both recreational and active travel purposes.

Term	Definition
National Landscape (an Area of Outstanding Natural Beauty)	Formally designated under the National Parks and Access to the Countryside Act of 1949 to protect areas of the countryside of high scenic quality that cannot be selected for National Park status due to their lack of opportunities for outdoor recreation (an essential objective of National Parks). As of November 2023, all AONBs became 'National Landscapes'. This reflects ambitions for the areas to play a key part in the international '30 by 30' commitment (to protect and conserve a minimum of 30% of land and sea for biodiversity by 2030).
Nationally Significant Infrastructure Project	Typically a large scale development of national importance that requires development consent from the Secretary of State, under the Planning Act 2008.
Order Limits	The maximum extent of land within which the authorised development may take place.
Overhead line	Conductor (wire) carrying electric current, strung from pylon to pylon.
Permanent access	Access required to infrastructure during the operational phase of the Project, for operational and maintenance purposes.
Primary Access Routes	These are the roads on the local road network that would be used by construction vehicles between the strategic road network and the access points within the Order Limits.
Project Section	Geographical 'sections' have been identified that break the Project down into smaller units for ease of description within the documentation. These Project Sections are broken down into eight sections based largely on Local Planning Authority boundaries.
Public Right of Way	A footpath, bridleway or byway accessible to all members of the public.
Pylon	Structures that support the overhead line (conductors).
Scoping	Scoping is the process of determining the content and extent of matters that should be covered in the Environmental Impact Assessment.
Scoping Report	Report determining the content and extent of matters that should be covered in the Environmental Impact Assessment.
Site access points	A location connecting a construction site to the public highway
Standard mitigation measures	Comprise management activities and techniques, which would be implemented throughout construction of the Project to limit effects through adherence to good site practices.
Strategic Road Network	Network of motorways and major A roads managed by National Highways

Term	Definition
Substation	Substations are used to control the flow of power through the electricity system. They are also used to change (or transform) the voltage from a higher to lower voltage to allow it to be transmitted to local homes and businesses.
Temporary construction compounds	Temporary compounds installed during the construction phase of the Project. Each compound may contain storage areas including laydown areas, soils storage and areas for equipment and fuel, drainage, generators, car parking and offices and welfare areas (portacabins).
Transport Assessment	Transport Assessment is a comprehensive and systematic process that sets out transport issues relating to a proposed development. It identifies what measures will be taken to deal with the anticipated transport effects of the Project. It is separate to Chapter 16: Traffic and Transport (document reference 6.16).
Transport Coordinator	The Transport Coordinator will be responsible for the monitoring and management of measures recorded within the CTMP. The transport coordinator would liaise with the Travel Plan Coordinator to help identify initiatives to limit vehicle movements. They would also liaise with the Local Highway Authorities to provide monitoring reports for the Construction Traffic Management Plan.
Underground cable	An insulated conductor carrying electric current designed for underground installation. Underground cables link together two Cable Sealing End compounds.
Visibility splay	Areas of tree/vegetation removal, typically where access points are, to enable a driver to see down the road and know when the road is clear.
Working area	Working area required to construct elements of the Project, such as pylons, underground cables, CSE compounds.

Bibliography

Department for Communities and Local Government (2014) *Travel Plans, Transport Assessments and Statements*

Department for Communities and Local Government (2015) *Transport Evidence Bases in Plan Making and Decision Taking*

Department for Energy Security and Net Zero (2024a) *Overarching National Policy Statement for Energy (EN-1)*

Department for Energy Security and Net Zero (2024b) *National Policy Statement for Electricity Networks Infrastructure (EN-5)*

Department for Transport (2023) *Road traffic statistics - Average annual daily flow East of England*

Department for Transport (2024) *Road traffic statistics - Table TRA0307*

Department for Transport (2025) *Road traffic statistics - Road accidents*

Essex County Council (2011) *Essex Transport Strategy: The Local Transport Plan for Essex*

Essex County Council Planning Portal (2025) *(Online - Available at: www.planning.essex.gov.uk)*

Greater Norwich Development Partnership (2024) *The Greater Norwich Local Plan, 2018-2038*

Institute of Environmental Management and Assessment (IEMA) (1993) *Guidelines for the Environmental Assessment of Road Traffic*

Institute of Environmental Management and Assessment (IEMA) (2023) *IEMA Guidelines: Environmental Assessment of Traffic and Movement* (EATM)

Ministry of Housing, Communities and Local Government (2025) *National Planning Policy Framework*

National Highways (2019) *Water preferred policy: guidelines for the movement of abnormal indivisible loads*

National Highways (2020) *Design Manual for Roads and Bridges (DMRB) LA 104 Environmental Assessment and Monitoring*

Norfolk County Council (2022a) *Local Transport Plan 4 Strategy 2021-2036*

Norfolk County Council (2022b) *Local Transport Plan 4 Implementation Plan*

Norfolk County Council Planning Portal (2025) *(Online - Available at: www.*norfolk.gov.uk/planning*)*

Transport Act 2000. c.38. Available at: www.legislation.gov.uk/ukpga/2000/38/contents.

Highways Act 1980. c.66. Available at: www.legislation.gov.uk/ukpga/1980/66/contents

Suffolk County Council (2024) *Suffolk Local Transport Plan 2025-2040*

Suffolk County Council (2025) *(Online at: www.suffolk.gov.uk/planning-waste-and-environment/planning-applications*

Thurrock Council (2013) *Thurrock Transport Strategy, 2013-2026*

Thurrock Council Planning Portal *(2025) (Online at: www.thurrock.gov.uk/planning-applications)*

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