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Traffic and Transport

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12. Traffic and Transport

12.1 Introduction

- 12.1.1 This Environmental Statement (ES) chapter details the likely significance of effects of the project on traffic and transport. This chapter should be read alongside the Transport Assessment (TA) (**application document 5.7**), which contains further evidence as to why certain aspects are scoped out of the ES.
- 12.1.2 Construction of the project would result in an increase in construction vehicles on roads, including construction workers commuting to and from the site and the delivery and removal of materials to and from the site. The project would result in temporary closures and diversions of public rights of way (PRoW) which could affect users such as walkers, cyclists, and horse riders (WCH). Construction of the project would also require temporary closure of a short navigable section of the River Stour.
- 12.1.3 There would be limited operational impacts on traffic and transport associated with the project, including monthly inspections and yearly maintenance. This has been scoped out of the assessment (see Section 12.3 for further details).
- 12.1.4 This chapter has links with other topic chapters, including ES Chapter 13: Air Quality (**application document 6.2.13**), which assesses the effects of construction traffic on air quality and ES Chapter 14: Noise and Vibration (**application document 6.2.14**), which assesses the effects of construction traffic on noise sensitive receptors. This chapter also has links with ES Chapter 8: Historic Environment (**application document 6.2.8**) which considers the effects on Protected Lanes.
- 12.1.5 Cumulative effects of traffic between the project and other proposed developments as well as receptors affected by more than one source of direct environmental impact resulting from the same development are considered in ES Chapter 15: Cumulative Effects Assessment (**application document 6.2.15**).
- 12.1.6 This chapter is supported by ES Appendix 12.1: Traffic and Transport Significance of Effects Tables (**application document 6.3.12.1**), which contains the assessment tables including sensitivity of receptors, magnitude of impacts and significance of effects.
- 12.1.7 This chapter is also supported by the following figures, which can be found in ES Volume 6.4: Figures (**application document 6.4**):
- Figure 12.1: Traffic and Transport Study Area;
 - Figure 12.2: Active Travel Network;
 - Figure 12.3: Traffic Survey Locations; and
 - Figure 12.4: Traffic Flow Diagram.
- 12.1.8 This chapter makes reference to the following plans which have been submitted as part of the application for development consent:
- Traffic Regulation Order Plans (**application document 2.6**); and
 - Access, Rights of Way and Public Rights of Navigation Plans (**application document 2.7**).

12.2 Regulatory and Planning Policy Context

National Policy Statement

- 12.2.1 ES Chapter 2: Regulatory and Planning Policy Context (**application document 6.2.2**) sets out the overarching policy relevant to the project including the Overarching National Policy Statement (NPS) for Energy (EN-1) (Department of Energy and Climate Change (DECC), 2011a). This is supported by the NPS for Electricity Networks (EN-5) (DECC, 2011b).
- 12.2.2 EN-1 discusses generic impacts associated with the transport of materials, goods and personnel to and from a development during all project phases. If a project is likely to have significant transport impacts the applicant is required to produce a TA. The likely impact from substantial heavy goods vehicle (HGV) traffic should be identified. Appropriate mitigation measures should be proposed such as a traffic management plan and provision of adequate parking arrangements for HGV. More precisely, Paragraph 5.13.6 of EN-1 states *'a new energy NSIP may give rise to substantial impacts on the surrounding transport infrastructure and the [Infrastructure Planning Commission] IPC should therefore ensure that the applicant has sought to mitigate these impacts, including during the construction phase of the development'*.
- 12.2.3 The consultation draft EN-1 (Department for Business, Energy and Industrial Strategy (BEIS), 2021a) reconfirms the 2011 transport policy. Paragraph 5.14.3 sets out a requirement to develop a TA where there are transport implications. A TA has been included within the application for development consent (**application document 5.7**).
- 12.2.4 EN-5 (DECC, 2011b) and the consultation draft of EN-5 (BEIS, 2021b) make no specific reference to traffic and transport.
- 12.2.5 Full consideration of the NPS can be found in the Planning Statement (**application document 7.1**).

Other Relevant Policy and Guidance

- 12.2.6 ES Appendix 2.1: Legislation, Policy and Guidance (**application document 6.3.2.1**) includes relevant legislation and national policy relevant to traffic and transport. It also outlines key guidance documents that have been referenced when writing this chapter. These include the Design Manual for Roads and Bridges (DMRB) LA 104 Environmental Assessment and Monitoring (Highways England *et al*, 2020b); DMRB LA 112 Population and Human Health (Highways England *et al*, 2020f); and Guidelines for the Environmental Assessment of Road Traffic (GEART) (Institute for Environmental Assessment (IEA), 1993). These documents provide a framework for assessing, mitigating and reporting the effects of projects impacting the transport network.
- 12.2.7 ES Appendix 2.2: Local Planning Policy (**application document 6.3.2.2**) lists the local policy potentially relevant to traffic and transport. Braintree District Council has also identified a number of Protected Lanes, which are given protection through local planning policy, namely LPP 68 in the Local Plan (Braintree District Council, 2022), which states that material increases in traffic using a Protected Lane due to development proposals will not be permitted.

12.3 Scope of the Assessment

- 12.3.1 ES Appendix 5.1: Scope of the Assessment (**application document 6.3.5.1**) outlines the scope of the assessment for traffic and transport. This has been informed by the Scoping Opinion provided by the Planning Inspectorate (**application document 6.6**) on behalf of the Secretary of State, following the submission of the Scoping Report (**application document 6.5.1**).
- 12.3.2 The scope has also been informed through engagement with relevant consultees as summarised in ES Appendix 5.2: Response to Consultation Feedback (**application document 6.3.5.2**).
- 12.3.3 The Scoping Report (**application document 6.5.1**) proposed to scope out impacts on the Strategic Road Network (SRN). The Planning Inspectorate noted that given the nature of the project, it was not likely that the increase in traffic flows comparative to the existing baseline would result in significant effects. However, only historic 2012 baseline traffic flows had been presented to evidence this decision, which would not represent the baseline network as it stands. The TA (**application document 5.7**) presents the anticipated changes to flows on the SRN and confirms that the percentage increases on the SRN would be less than 2% for total traffic (and 4% for HGV) for the daily, AM and PM peak periods, which would be not significant. Therefore, impacts on the SRN have been scoped out of the assessment.
- 12.3.4 The Scoping Report (**application document 6.5.1**) proposed to scope out impacts on the PRow network. However, the Planning Inspectorate requested further evidence be presented on this in relation to the potential closures and diversions as set out in ID 4.7.2 in the Scoping Opinion (**application document 6.6**), therefore these matters have been scoped into the assessment. The impact on PRow is presented in Section 12.6.
- 12.3.5 The Scoping Opinion (**application document 6.6**) confirmed that operational effects in relation to traffic and transport matters could be scoped out of the assessment based on the low numbers of staff required to maintain the project, as described in ES Chapter 4: Project Description (**application document 6.2.4**). This states that there would typically be annual inspections of the project components similar to what is already undertaken for the existing 400kV overhead line. These inspections would be undertaken either from the ground (using a small van) or from the air by helicopter and drones to check for visible faults or signs of wear (as is already undertaken on the existing 400kV overhead line). On this basis, operational effects have been scoped out of the assessment.
- 12.3.6 Since the publication of the Scoping Report (**application document 6.5.1**), further work has been undertaken in relation to the design which involves removing the 132kV overhead line from over the Sudbury Branch Railway Line and using a trenchless crossing method for installing the underground cables beneath the line. There is the potential that the Sudbury Branch Railway Line would need to be closed for up to one day during the removal of the 132kV overhead line. Subject to discussions with National Rail, the closure would be carried out during an off-peak period, either over night or at a weekend to reduce impacts on passengers. National Grid would liaise with Network Rail to agree any additional measures that may be required as part of the works. Therefore, due to the limited impacts, railway services and journey times have been scoped out of the assessment.

- 12.3.7 The Scoping Report (**application document 6.5.1**) set out an intention to undertake an assessment of project impacts on Road Network Performance and Safety. This preceded the requirement to produce a standalone TA for the project, which was subsequently agreed with consultees. The aspect of Road Network Performance and Safety has been included within the scope of the TA and includes the use of more onerous impact thresholds than those set out in the ES Scoping Report (for example considering changes in traffic flow above 10% as potentially requiring mitigation). The results of the assessment are set out in the TA (**application document 5.7**), which conclude that the project would not result in any significant effects on Road Network Performance and Safety, including consideration of impacts on bus passengers. Therefore, these aspects have been scoped out of the assessment.
- 12.3.8 Since the publication of the Scoping Report (**application document 6.5.1**), National Grid has identified the need to temporarily close the right to public navigation on the section of the River Stour within the Order Limits. There would be short term disruption to navigation along the River Stour for safety reasons during lowering of the 132kV conductors and during installation and removal of the temporary bridge. These disruptions are anticipated to be short term in duration (i.e. up to a week). There are not anticipated to be any other impacts on navigation and therefore, impacts on river users have been scoped out of the assessment.
- 12.3.9 Therefore, the only aspect scoped into the traffic and transport assessment is:
- Walkers, cyclists and horse riders:
 - Construction effects on WCH journey length due to temporary closures and diversions of PRow;
 - Construction effects on WCH severance due to changes in traffic flow on the road network; and
 - Construction effects on WCH amenity, fear and intimidation due to changes in traffic flow on the road network. For example, the reduction in amenity of a journey or increased fear and intimidation due to large volumes of fast-moving traffic and HGV on roads used by WCH.

Project Engagement

- 12.3.10 National Grid has held a number of traffic and transport thematic meetings with relevant organisations including the relevant highway authorities at Suffolk County Council and Essex County Council, and National Highways. These discussions have covered the proposed scope and methodologies used in the assessments, including a discussion regarding the application of GEART and DMRB with Suffolk County Council in May 2022. There have also been discussions about survey methodology and agreement on proposed traffic count locations, which was set out within the TA Scoping Report (National Grid, 2022h) that was issued to the relevant highway authorities and National Highways in June 2022.
- 12.3.11 A meeting took place with Essex and Suffolk County Councils in January 2023 to discuss the Traffic Regulation Order Plans and Access, Rights of Way and Public Rights of Navigation Plans; following the meeting the plans were issued to the relevant planning authorities for review but no comments had been received at the point of finalising the application for development consent.

- 12.3.12 Further details on how consultation responses have informed the assessment can be found in ES Appendix 5.2: Response to Consultation Feedback (**application document 6.3.5.2**).

12.4 Approach and Method

- 12.4.1 This section describes the methodology used to define an appropriate study area, establish the traffic and transport baseline environment and the adopted approach to assessing the significance of potential effects of the project on traffic and transport receptors. A desk study has been undertaken to inform the assessment of significant effects. This has been supported by undertaking traffic counts to understand baseline traffic flows on the Local Road Network (LRN) and PRow surveys to inform usage.

Data Sources

- 12.4.2 The assessment has been informed by a desk study which has drawn on the following key information sources, which have helped to define the existing baseline transport conditions of the project:
- Department for Transport (DfT) Road traffic statistics, 2022;
 - DfT's Trip End Model Presentation Program (TEMPro), 2023;
 - National Cycle Network (NCN) routes, Sustrans, 2022; and
 - Protected Lanes, Braintree Council, 2013.
- 12.4.3 All of the information collated has been incorporated into the baseline environment description presented in Section 12.5.

Study Area

- 12.4.4 This section describes the study area used for the traffic and transport assessment. The study area includes all roads that have been identified as proposed construction routes for the project between the SRN which are illustrated in ES Figure 12.1: Traffic and Transport Study Area (**application document 6.4**). This also includes the routes used by construction workers travelling between their accommodation and the access points. The construction routes were also used as the study area for assessing severance and intimidation of WCH using the LRN.
- 12.4.5 All PRow that lie within or connect to PRow that lie within the Order Limits have been included within the study area. The relevant PRow are shown on ES Figure 12.2: Active Travel Network (**application document 6.4**).
- 12.4.6 The study areas outlined above are considered appropriate based on technical knowledge of similar projects and has been set following consideration of the distance over which likely significant effects can reasonably be expected to occur.

Site Survey

2013 PRoW Surveys

- 12.4.7 National Grid undertook survey counts at 10 locations across the wider study area to ascertain an indication of typical off-peak and peak usage of the PRoW network during 2013. The surveys were undertaken during June and August 2013, and each location was surveyed constantly on one day between 08:00 and 18:00 hrs. The location of user surveys was agreed with the relevant planning authorities at a meeting on 24 April 2013. The survey locations were at Burstall, Ram's Farm (Hintlesham), Upper Layham, Hadleigh Railway Walk, Sprotts Farm, River Box, Assington, Stour Valley Path, Henny Back Road and Butler's Hall Farm.

2021 PRoW Surveys

- 12.4.8 Updated PRoW baseline usage data was collected in September and October 2021 for a sample of the PRoW to provide an indication of the current usage of footpaths within the study area. Five PRoW were surveyed for a ten-hour period on a weekday and a weekend day to determine the volume of WCH using each PRoW.
- 12.4.9 The surveys focused on PRoW in the underground cable sections of the project where there was anticipated to be a longer duration of impact from construction works compared to the overhead lines. It was considered disproportionate to undertake surveys on all PRoW in the Order Limits given the relatively short duration of effect (less than four weeks) that would typically be experienced.
- 12.4.10 PRoW surveys were undertaken at the following locations:
- Byway through Millfield Wood located between Millwood Road and Heath Road in Polstead Heath, (Suffolk) (W-432/033/0);
 - Footpath that runs adjacent to the River Box and is located next to Bushy Park Wood in Polstead, (Suffolk) (W-432/020/0);
 - Footpath in Stour Valley East which runs from Upper Road to the B1508 St Edmund's Hill, connecting Little Cornard to Bures (Suffolk) (W-171/001/0);
 - Footpath between Moat Lane and Henny Road in Bures (Essex) (PROW 93_8 and PROW 93_7); and
 - Crossroad of footpaths south of Anells Farm and Henny Back Road in Alphamstone in Bures (Essex) (PROW 58_11 and PROW 58_30).

2022 Traffic Count Surveys

- 12.4.11 Traffic count surveys were undertaken on the LRN to inform the baseline traffic flows on the proposed construction routes. The scope of the surveys, including the proposed locations was set out in the TA Scoping Report (National Grid, 2022h), which was issued to the relevant planning authority for comment. No comments were received.

- 12.4.12 The traffic count surveys were undertaken in 2022 during school term-time, avoiding weeks with public and/or school holidays (9 and 22 May, 23 November and 6 December). In some instances, survey periods were extended to include additional days due to unforeseen issues such as automatic traffic counters being broken. The traffic survey programme included 184 link count surveys and the locations are shown on ES Figure 12.3: Traffic Survey Locations (**application document 6.4**). Further details on the traffic surveys can be found in the TA (**application document 5.7**).

Assessment Methodology

- 12.4.13 This section sets out the methodology used for assessing the effects in relation to traffic and transport for those aspects scoped into the assessment, as set out in Section 12.3 of this chapter. The assessment has been undertaken based on available project design information and estimated vehicle numbers. It has also been informed by the TA (**application document 5.7**).

Existing Baseline

- 12.4.14 Data from the traffic surveys was disaggregated by hour, direction and vehicle category, and was collected for a 24-hour period, which has been used as the basis for 24-hour Annual Average Daily Traffic (AADT) and 18-hour Annual Average Weekday Traffic (AAWT) calculations. This data indicated road network peak hours as follows: AM peak (0800-0900) and PM peak (1600-1700). Further details of the methodology used to calculate baseline traffic flows is set out in the TA (**application document 5.7**).
- 12.4.15 Traffic survey data was also used to segment the road network in the study area to provide a baseline for assessing the aspects of WCH severance and WCH amenity, fear and intimidation – this segmentation is shown on ES Figure 12.1: Traffic and Transport Study Area (**application document 6.4**). It was initially undertaken based on road network characteristics (for example identifying road segments between major junctions) and then refined by splitting segments if they covered multiple traffic count sites with significant differences in traffic flow.
- 12.4.16 In addition to this, the existing baseline for the WCH network was defined based on reviews of PRow interacting with the project; the characteristics of the road network in the study area (including for example existing provision of pedestrian crossings); and the land-uses surrounding the road network (noting particularly the location of facilities such as schools that would generate WCH trips by vulnerable groups, such as school children). The WCH baseline was supplemented with data from the PRow surveys. The PRow are shown on ES Figure 12.2: Active Travel Network (**application document 6.4**).

Future Baseline

- 12.4.17 Committed developments were reviewed as the first step in defining the future baseline. This used the information presented in ES Appendix 15.3: Long List of Other Developments (**application document 6.3.15.3**) to identify proposed developments that could generate traffic. This review indicated that it is likely that there would be some limited increases in baseline traffic flows due to new development in certain areas, but the general character of the LRN and SRN is not expected to change. As there are no other large-scale developments in the area that would affect the LRN or SRN during the project construction programme where information was available, growth was forecast using TEMPro. Further details can be found in the TA (**application document 5.7**).

12.4.18 It also indicated that there was unlikely to be changes to the baseline WCH and bus networks in the future baseline.

Identification of Project-Related Construction Traffic

12.4.19 The following section sets out the assumptions that have been made in relation to the project around construction working hours, construction routing and the estimated vehicle numbers that are anticipated during construction. This has been used to understand the change in traffic flows anticipated on the LRN that could affect WCH using these routes.

Construction Programme and Working Hours

12.4.20 The traffic and transport assessment presented in this chapter is based on the alternative scenario presented in ES Appendix 4.2: Construction Schedule (**application document 6.3.4.2**). Under the alternative scenario, the grid supply point (GSP) substation would be constructed in autumn 2024, subject to development consent. This is considered to be a reasonable worst case construction programme for the purposes of the traffic and transport assessment, as it requires a greater number of activities to be undertaken concurrently than the baseline construction schedule. August 2025 was identified as the peak construction month, where total construction traffic (including staff) would be highest.

12.4.21 Core working hours for construction are set out in Requirement 7 of the draft DCO (**application document 3.1**) and for the purposes of the assessment are:

- 0700 – 1900 Mondays to Fridays; and
- 0800 – 1700 on Saturdays, Sundays and Bank Holidays.

12.4.22 The core working hours exclude start up and close down activities up to one hour either side of the core working hours.

Construction Access Points and Routes

12.4.23 Due to the nature of the project, there are multiple access points where construction vehicles would leave the LRN and join the working area. These are shown on the Access, Rights of Way and Public Rights of Navigation Plans (**application document 2.7**) and would use existing access points where available and practicable. New temporary accesses would be constructed in other locations to provide a more direct access to a specific working area.

12.4.24 Construction routes have been identified using basic principles, for example assuming trips would be as direct as reasonably practicable between identified access points and the nearest junction on the SRN. This has been informed by feedback from the relevant highway authorities (Essex and Suffolk County Councils) and National Highways on routes that may not be suitable for construction vehicles based on existing site constraints, for example height or weight restrictions. The construction routes are shown on Figure 12.1: Traffic and Transport Study Area (**application document 6.4**).

Construction Traffic Generation

- 12.4.25 National Grid has estimated the construction vehicles that would be anticipated on the project based on the current design and knowledge of similar projects. The daily project construction vehicle forecasts used in this chapter were derived from activity expected to occur in an identified peak month (August 2025), with contingency included to account for potential programme slippage. Further details of the assessment methodology and the key assumptions behind these numbers can be found in the TA (**application document 5.7**).

Staff Traffic Generation

- 12.4.26 A forecast of peak daily construction worker traffic volumes to and from each construction access point has been generated from staff resourcing profiles based on proposed construction activities and knowledge of similar projects. This assumes that there would be 350 staff on site per day during peak periods and an average of around 180 workers on site at other times, as shown on Illustration 4.1 in ES Chapter 4: Project Description (**application document 6.2.4**). Further details of the assessment methodology and the key assumptions can be found in the TA (**application document 5.7**).

Annual Average Daily Traffic and Annual Average Weekday Traffic Conversion

- 12.4.27 Estimates of the 24-hour AADT and 18-hour AAWT have been produced for the project to inform the scope of the air quality and noise and vibration assessments. These estimates are based on anticipated project traffic generation over a 12-month period (i.e. annual forecasts) in line with guidance. They are consequently different from the daily project traffic forecasts used in this chapter, which are derived from the identified peak month (August 2025).
- 12.4.28 AADT was estimated by dividing total project traffic generation in the identified peak year (2025) by 365. AAWT was estimated by dividing total project traffic generation in the peak year by 253 to exclude weekends and public holidays, assuming that all construction traffic generated by the project would occur within an 18-hour day.

Value/Sensitivity

- 12.4.29 ES Appendix 5.4: Assessment Criteria (**application document 6.3.5.4**) sets out the criteria that has been used for assessing the value and sensitivity of receptors in the traffic and transport assessment. The sensitivity of receptors for this assessment has been identified with reference to DMRB LA 112 (Highways England *et al*, 2020f).
- 12.4.30 Sensitivity values have been assigned to road segments and PRoW within the study area based on network characteristics and an assessment of the likelihood of their usage by WCH, particularly vulnerable users such as school children and the elderly. Land use within 500m of each road segment and PRoW was reviewed as part of this assessment.

Impact Magnitude

WCH Journey Length

- 12.4.31 The criteria used to assess impact magnitude on WCH journey length are defined in ES Appendix 5.4: Assessment Criteria (**application document 6.3.5.4**) and are based on DMRB LA 112. These criteria consider the additional length added to journeys made by WCH as a result of the project during construction (e.g. due to PRow closures), and the expected duration of the impact.

WCH Severance

- 12.4.32 Severance is defined as the separation of people from facilities and services they use within their community. The criteria used to assess impact magnitude on severance are defined in ES Appendix 5.4: Assessment Criteria (**application document 6.3.5.4**). Project impacts have been assessed related to temporary changes in traffic flow on roads during construction, which could hinder WCH when crossing the road. Severance impacts on PRow are effectively covered in the WCH Journey Length assessment.
- 12.4.33 DMRB LA 112 (Highways England *et al*, 2020f) does not provide any quantifiable thresholds for defining impact magnitude on severance caused by traffic flow changes. Consequently, the assessment was undertaken with reference to withdrawn DMRB guidance, Volume 11, Section 3, Part 8 on 'relief from existing severance' (Highways Agency, 1994), which does provide quantifiable thresholds based on percentage changes in traffic flow. On some road segments, very low baseline traffic flows resulted in very large forecast 'with project' percentage changes. In these cases, magnitude of impact was defined with reference to absolute changes in daily vehicles.
- 12.4.34 The DMRB Volume 11, Section 3, Part 8 'relief from existing severance' section (Highways Agency, 1994) also indicates that *'given that relief of severance is not significant where traffic flows are already relatively low, the guidelines do not apply to roads with an existing AADT flow of less than 8,000 vehicles. Where particularly vulnerable groups are relieved from severance, the description may need to be amended to reflect this change'*.
- 12.4.35 This logic has been used when undertaking the assessment in this chapter, including roads where 'with project' daily traffic is forecast to increase to 8,000 vehicles or less. However, it is acknowledged that any increase in traffic flow can theoretically increase severance to a degree, so the 8,000 vehicle threshold has only been applied to downgrade magnitude of impact if appropriate, rather than automatically determining it as 'negligible'.

WCH Amenity, Fear and Intimidation

- 12.4.36 Amenity is defined as the relative pleasantness of a journey. It is affected by traffic flow, speed and composition, as well as WCH network characteristics including footway width, lighting and separation/protection from traffic. It encompasses the overall relationship between WCH and traffic, including fear and intimidation linked to large volumes of fast-moving traffic and heavy vehicles on roads with limited protection for WCH.
- 12.4.37 The criteria used to assess impact magnitude on amenity, fear and intimidation are defined in ES Appendix 5.4: Assessment Criteria (**application document 6.3.5.4**). Project impacts have been assessed related to temporary changes in traffic flow on roads during construction, which could impact on the pleasantness of WCH journeys.

- 12.4.38 The assessment methodology is based on GEART (IEA, 1993), which includes suggested quantifiable thresholds based on forecast percentage changes in total traffic flow and HGV flow. GEART was used as the basis for the methodology following engagement with consultees, as DMRB LA 112 does not include amenity, fear and intimidation as requiring assessment.
- 12.4.39 On some road segments, very low baseline traffic flows resulted in very large forecast 'with project' percentage changes. In these cases, magnitude of impact was defined with reference to absolute changes in daily vehicles.

Significance of Effects

- 12.4.40 Significance has been derived using the matrix set out in Illustration 5.1 in ES Chapter 5: Environmental Impact Assessment (EIA) Approach and Method (**application document 6.2.5**). This has been supplemented by professional judgement, which where applicable, has been explained to give the rationale behind the values assigned. Likely significant effects, in the context of the Infrastructure Planning (EIA) 2017, are effects of moderate or greater significance.

Limitations of Assessment

- 12.4.41 The following limitations are applicable to the assessment reported in this chapter:
- 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;
 - Project construction traffic has been estimated based on the alternative scenario in ES Appendix 4.2: Construction Schedule (**application document 6.3.4.2**) with contingency built into the assessment. Further details are set out in the TA (**application document 5.7**);
 - Magnitude of impact for WCH severance and WCH amenity, fear and intimidation has been defined by adding project construction traffic estimates to future baseline traffic flows on road segments. No traffic modelling has been undertaken to support the assessment as there are limited significant effects as a result of the project and therefore modelling would be disproportionate; and
 - Receptor sensitivity values applied to road segments and PRow have been based on a desk study of network characteristics and land-use within a 500m catchment of each location. WCH activity has not been quantified with the exception of PRow surveys described above.

Key Parameters for Assessment and Assumptions

- 12.4.42 This section describes the key parameters and assumptions that have been used when undertaking the assessment presented within this ES Chapter. The assumptions are based on information presented within ES Chapter 4: Project Description (**application document 6.2.4**). Further details are provided in the TA (**application document 5.7**).
- 12.4.43 The following assumptions have been made to estimate construction vehicle forecasts used in this chapter and to assess associated impacts:
- There is no change in the number of daily working hours during summer/winter;

- Inbound construction vehicles making deliveries to site would generate an empty outbound vehicle trip along the same route in the same hour;
- Outbound construction vehicles removing materials from site would generate an empty inbound vehicle trip along the same route in the same hour;
- Analysis of construction traffic generation in the three months before and after the peak construction month (August 2025) has been undertaken, and the highest monthly forecast at each access point in this seven month period has been used in the assessment to capture the potential impact of any programme change; and
- An uplift of 12.5% has been applied when converting monthly construction traffic estimates to daily estimates, to allow for some variation in the timing of deliveries and removals from construction sites.

12.4.44 The following assumptions have been made to estimate the construction staff vehicle forecasts used in this chapter and to assess associated impacts:

- There is no change in the number of daily working hours during summer/winter;
- It is assumed that construction staff vehicles would be parked within site compounds and not on the public highway;
- Analysis of the daily peak staff requirement in the three months before and after the peak construction month (August 2025) has been undertaken, and the highest forecast at each construction site in this seven month period has been used in the assessment to capture the potential impact of any programme change;
- It is assumed that 70% of staff would travel between their overnight accommodation and the construction sites by crew minibuses. It is assumed that a crew minibus would have an average occupancy of four members of staff for each trip; and
- It is assumed that 30% of staff would travel between their overnight accommodation and the construction sites in cars. It is assumed that each car would have an average occupancy of one member of staff for each trip.

Embedded and Good Practice Measures

12.4.45 This section outlines the relevant embedded and good practice measures that have been embedded into the design of the project and therefore the assessment has been undertaken on the assumption that these measures would be carried out. All assessment work has applied a precautionary principle, in that where limited information is available (prior to appointment of a main works construction contractor and detailed project design), a realistic worst-case scenario is assessed.

Relevant Embedded Measures

12.4.46 Embedded measures relevant to traffic and transport include the use of scaffolding and netting on the Hadleigh Railway Walk to keep the route open to users (EM-C01 in the Register of Environmental Actions and Commitments (REAC), which forms Appendix B to the Construction Environmental Management Plan (CEMP) (**application document 7.5.2**)).

Good Practice Measures

- 12.4.47 The Code of Construction Practice (CoCP) (**application document 7.5.1**) contains a list of relevant good practice measures relating to traffic and transport. These include:
- TT01: The Construction Traffic Management Plan (CTMP) (**application document 7.6**) would set out measures to reduce route and journey mileage to and from and around site, and prevent nuisance to the residents, businesses and the wider community caused by parking, vehicle movements and access restrictions. It would also provide suitable control for the means of access and egress to the public highway. The plan would also identify access for emergency vehicles. It would also set out measures to reduce safety risks through construction vehicle and driver quality standards and measures to manage abnormal loads;
 - TT02: The Main Works Contractor would implement a monitoring and reporting system to check compliance with the measures set out within the CTMP. This would include the need for a GPS tracking system to be fitted to Heavy Goods Vehicles owned and operated by the Main Works Contractor to check for compliance with authorised construction routes. The contractor(s) would also be expected to monitor the number of construction vehicles between the site and the strategic road network. Deviations from the authorised routes or changes to traffic levels that are higher than the CTMP assumptions would require discussion of the need for additional mitigation measures with highways authorities; and
 - TT03: All designated PRoW crossing the working area would be managed with access only closed for short periods while construction activities occur. Any required temporary diversions would be clearly marked at both ends with signage explaining the diversion, the duration of the diversion and a contact number for any concerns.

12.5 Baseline Environment

Existing Baseline

Road Network

- 12.5.1 The study area shown in ES Figure 12.1: Traffic and Transport Study Area (**application document 6.4**) comprises the affected road network, including the LRN maintained by Suffolk and Essex County Councils and the SRN managed by National Highways.
- 12.5.2 The SRN provides strategic connections between the study area and the rest of the east of England and beyond. SRN junctions within the study area include:
- A12/A14 Copdock junction;
 - A14 Claydon interchange;
 - A12 junction 31;
 - A12 junction 28;
 - A12 junction 26; and
 - A131/A120 Marks Farm roundabout.
- 12.5.3 Some quiet lanes in Suffolk have been identified in the vicinity of the project (Suffolk County Council, 2023). No quiet lanes are proposed as construction routes.

- 12.5.4 Some Protected Lanes in Essex are within the study area, these are shown in ES Figure 12.2: Active Travel Network (**application document 6.4**) and include:
- Old Road (BTELANE84);
 - Lorkins Lane (BTELANE85);
 - Moat Lane (BTELANE87);
 - Henny Back Road (BTELANE79); and
 - Great Henny (BTELANE79).

Public Rights of Way

- 12.5.5 The PRow network includes three long distance/promoted walks, which are shown on ES Figure 12.2: Active Travel Network (**application document 6.4**):
- The Suffolk Way: a 182km walking route between Flatford and Lowestoft. This crosses the Order Limits to the south of Boxford;
 - The Stour Valley Path: a 96km walking route which crosses the Order Limits to the north of Lamarsh; and
 - St Edmunds Way: a 126km walking route between Manningtree and Brandon via Bury St Edmunds. This follows the Stour Valley Path through the Order Limits.
- 12.5.6 The Hadleigh Railway Walk (which is not a PRow) is a two-mile local heritage walk along a disused railway line which crosses the Order Limits to the south of Hadleigh.
- 12.5.7 National Grid undertook survey counts at 10 locations across the wider study area in 2013 to ascertain an indication of typical off-peak and peak usage of the PRow. The results are summarised in Table 12.1. In total, 155 users were counted across all locations in June and 233 were counted across all locations in August 2013. In June, there were 115 pedestrians (including five children), 31 cyclists (including one child) and nine equestrians (all adult). In August, there were 198 pedestrians (including 25 children), 29 cyclists (including four children) and six equestrians (all adult).
- 12.5.8 Of the 10 locations surveyed, the greatest number of users was observed on the Hadleigh Railway Walk. Fifty seven percent of all users counted across all sites were counted at this location (65% of off peak users and 52% of peak users). Sprotts Farm and Assington were next most popular walking locations. Two of the sites, Henny Back Road and Butlers Hall Farm, had no count returns during either survey in June or August 2013.
- 12.5.9 The overall use of the monitored PRow network surveyed was low, with the exception of the Hadleigh Railway Walk, which was the most popular route in the area. However, even this route with an average of 10 users an hour was low (peak two-way count was 19 users between the hours of 10:00 and 11:00am during the August weekend count).

Table 12.1 – PRow Survey Results, 2013

PRow	Off Peak PRow User Count Survey (June 2013)			Peak PRow User Count Survey (August 2013)		
	Walkers	Cyclists	Horse-riders	Walkers	Cyclists	Horse-riders
Burstall	1	0	0	9	0	0

Ram's Farm, Hintlesham	4	0	0	5	0	0
Upper Layham	4	0	0	11	0	0
Hadleigh Railway Walk	69	31	4	81	23	4
Sprotts Farm	14	0	0	30	2	0
River Box	11	0	0	19	0	0
Assington	13	0	5	15	0	2
Stour Valley Path	3	0	0	3	0	0
Henny Back Road	0	0	0	0	0	0
Butlers Hall Farm	0	0	0	0	0	0
Total	115	31	9	198	29	6

12.5.10 Further baseline usage data was collected in September and October 2021. Five PRow were surveyed for a ten-hour period on a weekday and a weekend day to determine the volume of WCH using each PRow. Table 12.2 summarises the volume of WCH users that were observed using the PRow for the surveyed weekday and weekend periods. The data in the table includes users travelling in both directions on each PRow.

Table 12.2 – PRow Survey Results, 2021

PRow	Weekday Volume			Weekend Volume		
	Walkers	Cyclists	Horse-riders	Walkers	Cyclists	Horse-riders
Millfield Wood (W-432/033/0)	7	0	0	18	2	0
River Box (W-432/020/0)	1	0	0	4	0	0
Stour Valley East (W-171/001/0)	3	0	0	1	0	0
Moat Lane (PROW 93_8 and PROW 93_7)	9	0	0	16	0	0
Crossroads (PROW 58_11 and PROW 58_30)	18	0	0	8	0	0
Total	38	0	0	47	2	0

12.5.11 Under ten walkers per day were observed using two of the PRow (River Box and Stour Valley East) during both the weekday and the weekend surveys, which equates to less than one user per hour over the observation period. Less than 20 walkers per day were recorded along the other three PRow on both days, an average of less than two per hour.

National and Regional Cycle Network

12.5.12 The study area includes National Cycle Network (NCN) Route 1 and NCN Route 13, and Regional Cycle Network (RCN) Route 48. These are shown on ES Figure 12.2: Active Travel Network (**application document 6.4**) and comprise:

- NCN Route 1 is 1,264 miles in length and is the longest cycle route in the UK. It passes through the study area on east-west and north-south orientations using local unclassified roads between Ipswich, Hadleigh, and the A12. The route enters the study area on Church Lane in Ipswich and travels east to Chattisham and Hadleigh. Between Chattisham and Hadleigh, NCN Route 1 travels along the Hadleigh Railway Walk between Woodlands Road and Station Road. From Hadleigh, NCN Route 1 travels south through Layham, Shelley, Lower Raydon, Higham, Langham, Langham Moor, and continues south to the A12 between Junction 28 and 29. The route leaves the study area on Severalls Lane;
- NCN Route 13 is 136 miles in length and runs between Dereham in Norfolk and Tower Bridge in London. It passes through the study area in a north-south direction and except for a small section of the route on the B1508 Colchester Road, it uses local and unclassified roads between Sudbury in the north and the A12 in the south. The route enters the study area via a traffic-free path near the A131 in Sudbury and travels south through Middleton, Henry Street, Lamarsh, Bures Hamlet, Mount Bures, Fordstreet, Fordham, and Eight Ash Green. It leaves the study area on Halstead Road; and
- RCN Route 48 is 2.7 miles long and is a road cycle route which begins on the B1070 The Street in Raydon, Ipswich and terminates at the Higham Road/School Lane junction in Colchester where the route becomes NCN Route 1. The route travels along minor roads and provides local cycle connectivity to the wider national network.

12.5.13 The Painters Trail also falls within the study area. This is a 111km long distance circular cycle route through Dedham Vale and Stour Valley. A section through Holton St Mary's and Assington is on the proposed construction routes.

Local Cycle Routes

12.5.14 In addition to the NCN and RCN routes, various local cycle routes also provide connectivity in and around the study area. In summary, these include the following:

- Traffic free cycle lanes on the northern side of the A1214 carriageway south-west of Ipswich, which is a construction traffic route for the project;
- The South Suffolk Cycle Route (SSCR) runs through Hadleigh on the High Street and connects to the Hadleigh Railway Walk off-road cycle route. Section A2 of the SSCR runs from Sudbury to Raydon within the study area, mostly on local unclassified roads;
- Bridleways and byways which straddle the A131 Broad Road in Braintree;
- Off-road cycle route in Braintree on the B1018 Millennium Way which crosses the A120 and runs parallel to the A120 and A131 in Braintree; and
- Off-road cycle routes around Great Notley County Park in Braintree, which cross the A120.

Future Baseline

12.5.15 As set out in Section 12.4, the general character of the study area and the transport network that serves it is not expected to change notably from the existing baseline.

- 12.5.16 Background traffic growth was estimated using growth factors applied to baseline traffic survey data, which were derived from TEMPro. Details of the calculations are set out in the TA (**application document 5.7**).
- 12.5.17 It has also been assumed that there are no changes to the baseline WCH network in the future baseline for the purpose of the assessment.

12.6 Likely Significant Effects During Construction (Without Mitigation)

Introduction

- 12.6.1 This section sets out the likely significant effects due to the project on PRoW during construction. The assessment assumes that the relevant embedded measures and the good practice measures in the CoCP (**application document 7.5.1**) are in place, and the results of the assessment then inform the need for any additional mitigation requirements during construction (see Section 12.8).
- 12.6.2 As described in ES Chapter 4: Project Description (**application document 6.2.4**), the main project comprises reinforcement of an existing transmission network with a combination of underground cables and overhead lines, and this in some chapters is assessed separately to the provision of a GSP substation. The traffic and transport assessment considers the project as a whole (main works and GSP substation together) to allow for a full consideration of the effects on receptors. In addition, the construction routes used would apply for the whole project. Therefore, the main project and GSP substation are both assessed together.

Forecast Daily Construction Traffic

- 12.6.3 ES Figure 12.4: Traffic Flow Diagram (**application document 6.4**) illustrates the peak daily construction traffic volumes expected to be generated by the project on the highway network. Table 12.3 summarises the routes where daily construction traffic is forecast above 24 vehicles per day and is greater than 5% of future baseline traffic levels. During the assessment, negligible impacts were assumed on roads where peak construction traffic is forecast at 24 vehicles per day or less. Baseline traffic data was not collected on these routes as it was not considered proportional to do so given the very low project forecast. Further details can be found in the TA (**application document 5.7**).

Table 12.3 – Project Construction Traffic Generation on Key Routes (Two Directional)

Road	Future Baseline Total Daily (24 Hours) Traffic Flow (2025)	Future Baseline Daily HGVS Flow (2025)	Construction Traffic Total Daily Traffic Flow	HGV Total Daily Traffic Flow	Total Traffic Flow % Change from Future Baseline
Rands Road	211	23	143	58	68%
Stackwood Road	515	61	30	0	6%
The Street, Assington	1425	169	178	34	12%
Cuckoo Hill	1067	136	96	0	9%

Road	Future Baseline Total Daily (24 Hours) Traffic Flow (2025)	Future Baseline Daily HGV Flow (2025)	Construction Traffic Total Daily Traffic Flow	HGV Total Daily Traffic Flow	Total Traffic Flow % Change from Future Baseline
Lamarsh Hill	845	98	111	0	13%
Springett's Hill	948	116	111	0	12%
Bell Hill	948	116	111	0	12%
Henny Road	684	125	111	0	16%
Henny Street	580	111	96	0	17%
Church Road, Twinstead - Eastern Segment	90	10	96	0	107%
Church Road, Twinstead - Western Segment	434	62	96	0	22%

12.6.4 Church Road, Twinstead – Eastern Segment would experience the highest percentage increase due to construction traffic with a 107% increase over daily future baseline traffic. However, this is a result of the very low baseline traffic on the road – in total the project would generate a peak of 96 construction staff vehicle trips per day on this road, 48 inbound in the morning peak and the same number outbound in the evening peak. The same issue also results in a high percentage increase on Rands Road.

Walkers, Cyclists and Horse Riders

Change in WCH Journey Length

12.6.5 Likely changes in WCH journey length due to temporary closures of PRow during construction have been assessed. This assessment excluded PRow if the closure is expected to be for two weeks or less, as this duration has been assumed to result in negligible impacts. Table 2.1 in ES Appendix 12.1: Traffic and Transport Significance of Effects Tables (**application document 6.3.12.1**) sets out the results of the assessment for all PRow where closures are expected to exceed two weeks in duration, based on the Proposed Alignment shown on ES Figure 4.1: The Project (**application document 6.4**).

12.6.6 A short term **neutral** or **minor** adverse effect is expected on all PRow, as set out in ES Appendix 12.1: Traffic and Transport Significance of Effects Tables (**application document 6.3.12.1**). Overall, the effects on these routes are therefore expected to be **not significant**.

Change in WCH Severance

12.6.7 Likely changes in severance due to temporary increases in traffic flow on roads during project construction have been assessed. This assessment included all road segments within the study area set out in Figure 12.1: Traffic and Transport Study Area (**application document 6.4**). Table 3.1 in ES Appendix 12.1: Traffic and Transport Significance of Effects Tables (**application document 6.3.12.1**) sets out the results of the severance assessment on each road segment.

12.6.8 Short term **minor** adverse effects on severance are anticipated on 21 road segments in the study area. This includes Church Road, Twinstead - Eastern Segment where the percentage change in traffic flow is above 100%. However, the assessment has accounted for a low absolute change in peak daily vehicle trips on this road (96 per day in both directions combined) and the fact that daily future baseline + construction traffic flow is expected to be well below the 8,000 daily vehicle threshold for severance referenced in guidance. Short term **neutral** effects on severance are expected on all other road segments in the study area. The effect of the project on WCH severance is **not significant**.

Pedestrian Amenity, Fear and Intimidation

12.6.9 Likely changes in pedestrian amenity, fear and intimidation due to temporary increases in traffic flow on roads during project construction have been assessed. This assessment included all road segments within the study area set out in ES Figure 12.1: Traffic and Transport Study Area (**application document 6.4**).

12.6.10 Magnitude of impact has been assessed for each road segment based on changes in both total traffic flow and HGV flow, with a reasonable worst-case change used to inform the assessment of significance of effects.

12.6.11 Table 4.1 in ES Appendix 12.1: Traffic and Transport Significance of Effects Tables (**application document 6.3.12.1**) sets out the full results of the pedestrian amenity, fear and intimidation assessment. The results of the assessment show that the project is expected to have a medium magnitude of impact (resulting from the forecast increase in total traffic flow), on Church Road, Twinstead, a medium sensitivity receptor (due to the location of residential properties, a village hall and a church along this road). These combined would lead to a short term **moderate** adverse effect on this road, which would be **significant**. A short term **neutral** effect or **minor** adverse effect is expected on all other roads in the study area and the effects are therefore expected to be **not significant**.

Summary of Construction Effects

12.6.12 An assessment of change in WCH journey length, severance and pedestrian amenity, fear and intimidation has been undertaken for all road segments and PRow within the study area. This has concluded that the project would result in **no significant** effects on all traffic and transport aspects except for the following:

- WCH amenity, fear and intimidation: a short term **moderate (significant)** adverse effect on the users of Church Road, Twinstead due to an increase in traffic resulting from construction staff vehicle movements.

12.7 Likely Significant Effects During Operation (Without Mitigation)

12.7.1 Operational effects in relation to traffic and transport have been scoped out of the assessment as set out in Section 12.3.

12.8 Proposed Mitigation During Construction

Introduction

- 12.8.1 This section sets out the proposed additional mitigation for the likely significant effects during construction outlined in Section 12.6. The additional mitigation measures are listed in the REAC, which forms Appendix B to the CEMP (**application document 7.5.2**). The CEMP is secured through Requirement 4 of the draft DCO (**application document 3.1**).

WCH Amenity, Fear and Intimidation

- 12.8.2 Additional mitigation (EIA_TT01) is proposed on Church Road, Twinstead in response to the significant effect reported from the WCH amenity, fear and intimidation assessment. Baseline traffic on this route is fairly low, and while the route passes a church and a village hall, it has no dedicated footpaths. National Grid is proposing the installation of temporary warning signage to inform users of the use of the road by construction traffic.

12.9 Proposed Mitigation During Operation

- 12.9.1 Operational effects in relation to traffic and transport have been scoped out of the assessment as described in Section 12.3. Therefore, no mitigation is required.

12.10 Residual Significant Effects (With Mitigation)

- 12.10.1 Table 12.4 summarises the likely significant effects, proposed mitigation and residual effects for Traffic and Transport during construction. The references to duration are based on the criteria in Section 5.3 of ES Chapter 5: EIA Approach and Method (**application document 6.2.5**). No significant effects have been identified during operation.

Table 12.4 – Summary of Likely Significant Effects

Aspect/Proposed Matter	Likely Significant Effect (Without Additional Mitigation)	Proposed Additional Mitigation	Residual Significant Effect (With Additional Mitigation)
Construction			
WCH amenity, fear and intimidation on Church Road, Twinstead.	Short term moderate adverse	(EIA_TT01) Install warning signage prior to construction at Church Road, Twinstead to inform users of the road that construction traffic would be using it.	Short term minor adverse

- 12.10.2 The measure proposed on Church Road, Twinstead, or those of an equivalent effect, are expected to reduce the significance of effect on this road segment from a short term moderate adverse to a short term minor adverse (during construction only).

12.11 Sensitivity Testing

Introduction

- 12.11.1 This section outlines alternative approaches to the baseline assessment presented in Sections 12.6 to 12.10. It considers the baseline construction schedule, which is described in ES Appendix 4.2: Construction Schedule (**application document 6.3.4.2**) and also flexibility between the baseline design and method set out within ES Chapter 4: Project Description (**application document 6.2.4**) and the Proposed Alignment shown on ES Figure 4.1: The Project (**application document 6.4**). Further details on the flexibility assumptions are outlined in Section 4.2 of ES Chapter 4: Project Description (**application document 6.2.4**).

Assessment of Baseline Construction Schedule

- 12.11.2 This chapter assumes the alternative scenario described in ES Appendix 4.2: Construction Schedule (**application document 6.3.4.2**), as this provides a reasonable worst case for the traffic and transport assessment in relation to the main project and the GSP substation overlap. If the project was to be constructed under the baseline construction schedule this would result in the traffic movements associated with the GSP substation being removed from the core scenario and would therefore result in lower traffic movements associated with construction pursuant to the DCO. As the traffic numbers analysed within Section 12.6 would be higher than under the baseline construction schedule, no further assessment of the baseline construction schedule is required as a reasonable worst case has already been assessed for traffic and transport in this chapter.

Flexibility in Design and Construction Method

- 12.11.3 The ES assesses the estimated traffic numbers based on the Proposed Alignment (as shown on ES Figure 4.1: The Project (**application document 6.4**)) and design and knowledge of other projects. It is possible that the main works contractor 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, which includes:
- Using the highest traffic figures within a three-month window either side of the peak month;
 - Assuming a shorter working day (11 hours) than permitted in the draft DCO (12 hours) (**application document 3.1**); and
 - Applying a 12.5% uplift to allow some contingency when converting monthly traffic forecasts to daily forecasts.

- 12.11.4 In addition, the traffic forecasts have been developed assuming reasonable worst cases in many instances. For example, imported stone is proposed on many of the temporary access routes when further ground investigations and design may identify this as unnecessary. Also, the traffic forecasts assume that water would be brought in from external sources for the trenchless crossings and compound areas, when it may be possible to use local connections. It has also been assumed that construction vehicles would deliver materials to the site and then make an empty return journey, where it may be possible to remove materials from the site to reduce the number of journeys.

12.12 Conclusion

- 12.12.1 The assessment presented in Sections 12.6 to 12.10 has concluded that there are no likely significant residual effects in relation to traffic and transport receptors during construction.
- 12.12.2 The sensitivity testing described in Section 12.11 has shown that there would be no new or different significant effects through the application of either the baseline construction schedule or through flexibility in the design and construction method.
- 12.12.3 In accordance with paragraph 5.13.3 of NPS EN-1, a TA has been submitted as part of the application for development consent (**application document 5.7**). This has demonstrated that there would be limited temporary adverse impacts upon the transport network during the AM and PM peak hours. As such, the requirements of the NPS EN-1 are expected to be met.

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