East Anglia TWO Offshore Windfarm

Chapter 26

Traffic and Transport

Preliminary Environmental Information
Volume 1
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Glossary of Acronyms

AADT	Annual Average Daily Traffic
AILs	Abnormal Indivisible Loads
ATC	Automated Traffic Counts
CCS	Construction Consolidation Site
CIA	Cumulative Impact Assessment
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
DfT	Department for Transport
EIA	Environment Impact Assessment
ES	Environmental Statement
ESDAL	Electronic Service Delivery for Abnormal Loads
ETG	Expert Topic Group
GEART	Guidelines for the Environmental Assessment of Road Traffic
HGV	Heavy Goods Vehicle
LCV	Light Commercial Vehicle
MCTC	Manual Classified Turning Count
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
NPPF	National Planning Policy Framework
P2W	Powered Two Wheelers
PEIR	Preliminary Environmental Information Report
PIC	Personal Injury Collision
PPG	Planning Practice Guidance
SCC	Suffolk County Council
SCDC	Suffolk Coastal District Council
SEGWay	Suffolk's Energy Gateway
SPR	ScottishPower Renewables
TMA	Traffic Management Act

Glossary of Terminology

Applicant	East Anglia TWO Limited.
Construction consolidation sites	Compounds which will contain laydown, storage and work areas for onshore construction works. The HDD construction compound will also be referred to as a construction consolidation site.
Development Area	Area containing all onshore and offshore infrastructure, transmission works, construction consolidation sites, and mitigation areas.
East Anglia TWO project	The proposed project consisting of up to 75 wind turbines, up to four offshore electrical platforms, up to one construction operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive, as defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017 and regulation 18 of the Conservation of Offshore Marine Habitats and Species Regulations 2017. These include candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas.
Evidence Plan Process	A voluntary consultation process with specialist stakeholders to agree the approach to the EIA and the information required to support HRA.
Horizontal directional drilling (HDD)	A method of cable installation where the cable is drilled beneath a feature without the need for trenching.
Jointing Bay	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The area where the offshore export cables would make contact with land, and connect to the onshore cables.
Link boxes	Underground chambers or above ground cabinets next to the cable trench housing electrical earthing links.
Mitigation areas	Areas captured within the Development Area specifically for mitigating expected or anticipated impacts.
National Grid infrastructure	A National Grid substation, connection to the existing electricity pylons and National Grid overhead line realignment works which will be consented as part of the proposed East Anglia TWO project Development Consent Order but will be National Grid owned assets.
National Grid overhead line realignment works	Works required to upgrade the existing electricity pylons and overhead lines to transport electricity from the National Grid substation to the national electricity grid
National Grid overhead line realignment works area	The proposed area for National Grid overhead line realignment works.

National Grid substation	The substation (including all of the electrical equipment within it) necessary to connect the proposed East Anglia TWO project to the national electricity grid which will be owned by National Grid but is being consented as part of the proposed East Anglia TWO project Development Consent Order.
National Grid substation location	The proposed location of the National Grid substation required to connect the proposed East Anglia TWO project to the national electricity grid.
Natura 2000 site	A site forming part of the network of sites made up of Special Areas of Conservation and Special Protection Areas designated respectively under the Habitats Directive and Birds Directive.
Onshore cable corridor	The corridor within which the onshore cable route will be located.
Onshore cable route	This is the construction swathe within the onshore cable corridor which would contain onshore cables as well as temporary ground required for construction which includes cable trenches, haul road and spoil storage areas.
Onshore cables	The cables which would bring electricity from landfall to the onshore substation. The onshore cable is comprised of up to six power cables and two fibre optic cables.
Proposed onshore development area	The area in which the landfall, onshore cable corridor, onshore substation, mitigation areas, temporary construction facilities (such as access roads and construction consolidation sites), and the National Grid Infrastructure will be located.
Onshore infrastructure	The combined name for all infrastructure associated with the proposed East Anglia TWO project from landfall to grid connection.
Onshore substation	The East Anglia TWO substation and all of the electrical equipment within in.
Onshore substation location	The proposed location of the onshore substation for the proposed East Anglia TWO project.
Onshore study area	All onshore areas being considered for the placement of onshore infrastructure or temporary construction consolidation sites. This includes areas being considered for National Grid infrastructure, East Anglia TWO onshore substation, onshore cable corridor and landfall.
Transition bay	Underground structures at the landfall that house the joints between the offshore export cables and the onshore cables.
Two-way movement	A movement is the process of transporting goods from a source location to a predefined destination. A two-way movement represents the inbound (laden trip from source) and the outbound unladen trip (back to source). For example, 20 two-way movements comprise 10 laden trips from source and 10 outbound unladen trips back to source.

26 Traffic and Transport

26.1 Introduction

1. This chapter of the Preliminary Environmental Information Report (PEIR) considers the potential impacts of the proposed East Anglia TWO project on traffic and transport. The chapter provides an overview of the existing baseline where the proposed onshore development area is located, followed by an assessment of the potential impacts and associated mitigation for the construction, operation, and decommissioning of the proposed East Anglia TWO project. This chapter was produced by Royal HaskoningDHV.

2. The assessment considers the potential impacts of the onshore infrastructure. The assessment also considers cumulative impacts of other proposed projects. The proposed methodology adhered to for the Environmental Impact Assessment (EIA) and Cumulative Impact Assessment (CIA) is discussed in ***section 26.7***.

3. In preparing the traffic and transport PEIR chapter for the proposed East Anglia TWO project, reference has been made to the applicable National Policy Statement (NPS) for Energy EN-1, which includes details on the assessment of traffic and transport. EN-1 outlines that if a project is likely to have significant transport implications, the applicant's Environmental Statement (ES) should include a transport assessment and where appropriate, the applicant should prepare a travel plan including demand management measures to mitigate transport impacts.

4. In compliance with national policy, an outline Construction Traffic Management Plan (outline CTMP) would also be provided with the DCO application to secure the assessed parameters. The outline CTMP will include:

   - Details of the measures to be adopted to ensure that the traffic demand forecasts are not exceeded:
   - The mitigation measures to be adopted to manage the traffic and transport impacts;
   - Travel plan measures to manage construction employee movements; and
   - Details of the proposed access works and traffic management.

26.2 Consultation

5. Consultation is a key driver of the Environmental Impact Assessment (EIA) process, and continues throughout the lifecycle of a project, from its initial stages through to consent and post-consent.

6. To date, consultation with regards to traffic and transport has been undertaken via the Traffic and Transport Expert Topic Group (ETG), described within ***Chapter 5 EIA Methodology***, with meetings held in May, July and September 2018. The Traffic and Transport ETG stakeholder membership includes, Suffolk Coastal District Council, Suffolk County Council and Highways England, and through the East Anglia TWO Scoping Report (ScottishPower Renewables (SPR) 2017). Feedback received through this process has been considered in preparing the PEIR where appropriate and this chapter will be updated following the next stage of consultation for the final assessment submitted with the Development Consent Order (DCO) application.

7. ***Table 26.1*** provides a summary of those consultation responses that have been received and are relevant to traffic and transport.

Table 26.1 Consultation Responses

Consultee	Date/ Document	Comment	Response / where addressed in the PEIR
Suffolk County Council and Suffolk Coastal District Council	08/12/2017 Scoping Response	The onshore study area shown in the Scoping Report does not include the necessary parts of the highway network that will need assessed. For example, as a minimum we would expect to see the transport impact modelled as far westward as and including the A12. Information is limited regarding the length of any ducting or location of onshore structures. This creates uncertainty in estimating the impact of construction traffic on the highway.	The extent of the onshore highway study area has been revised to include all necessary parts of the highway network that will need to be assessed and agreed with Suffolk County Council (SCC) through the ETG process. The detailed derivation of traffic demand including all assumptions is provided within ***section 26.6.1***.
Suffolk County Council and Suffolk Coastal District Council	08/12/2017 Scoping Response	Abnormal Indivisible Load (AIL) delivery will need to be on agreed construction routes and timed to minimise disruption given the rural nature of the area around Sizewell.	An AIL study has been undertaken by Wynns Ltd. to inform the management measures required to deliver AILs. A summary of the findings of the AIL study are provided within ***section 26.4.3.1.5***, whilst the full study is provided as ***Appendix 26.1***.
Suffolk County Council and Suffolk Coastal District Council	08/12/2017 Scoping Response	Cumulative and in-combination impacts will be required to be assessed and if necessary mitigated or compensated. Assessing the onshore study area only is inadequate.	***Section 26.7*** provides a assessment of the cumulative impacts. The extent of the onshore highway study area has been revised to include all necessary parts of the highway network that will need to be assessed and agreed with Suffolk County

Consultee	Date/ Document	Comment	Response / where addressed in the PEIR
			Council (SCC) through the ETG consultation process.
Leiston-cum-Sizewell Town Council	21/12/2017 Scoping Response	The access to any potential site and how the access road will be fenced off should be addressed and a very clear indication of what rights of way or right to roam inhibitions will have to be put in place to achieve this.	Preliminary access concepts are provided within ***Appendix 26.14***. Potential impacts upon Public Rights of Way (PRoW) are considered within ***Chapter 30 Tourism Recreation and Socio Economics***.
Norfolk County Council	01/11/2017 Scoping Response	Define the nature of the traffic likely to be generated. In addition, for the largest vehicles proposed to use each access route(s) this must include minimum width (including unhindered horizontal space), vertical clearance and axle weight restriction.	Norfolk County Council (NCC) have raised numerous issues in their Scoping response. The NCC administration area is not included in the onshore highway study area and would not be directly impacted by the proposed East Anglia TWO project. Notwithstanding, the issues raised by NCC are valid in terms of the approach to the Traffic and Transport Chapter and are therefore addressed to inform wider stakeholders. ***Section 26.6.1*** provides a summary of the likely traffic demand. The AIL study provided in ***Appendix 26.1*** details the dimensions of the largest vehicles proposed.
Norfolk County Council	01/11/2017 Scoping Response	Assessment of the access route should include a site inspection and details of contact with the appropriate Highway Authority (including the Highways Agency [now Highways England] for Trunk Roads where applicable). In addition: [numbered for ease of reference] 1. Details of any staff/traffic movements/access routes; 2. Detailed plans of site access/e.g. incorporating sightline provision; 3. Confirmation of any weight restrictions applicable on the	1. A summary of the forecast HGV and employee vehicle movements is provided within ***section 26.6.1***. 2. Preliminary access concepts including 'sightline provision' are provided in ***Appendix 26.14***. 3. No weight limits exist within the onshore highway study area. 4. All statutory undertakers will be formally

Consultee	Date/ Document	Comment	Response / where addressed in the PEIR
		route together with details of contact with the relevant Bridge Engineer; 4. Overhead/ underground equipment – details of liaison with statutory undertakers - listing statutory undertakers consulted together with a copy of their responses; and 5. Details of any road signs or other street furniture along each route that may need to be temporarily removed/relocated.	consulted though the PEI process. 5. The AIL study (provided in ***Appendix 26.1***) provides details of the street furniture that would need to be temporarily removed / relocated.
Norfolk County Council	01/11/2017 Scoping Response	The following details of construction must be made clear: [numbered for ease of reference] 1. Timing of construction works; 2. Removal of parked vehicles along the route(s) – including whether or not alternative parking arrangements are being offered or bus services provided; 3. Removal and reinstatement of hedgerows – since these are usually in private ownership has contact been made with the owners; 4. Identification of the highway boundary along the construction traffic route together with verification from the Highway Authority; 5. Confirmation of whether the identified route involves the acquisition of third party land and if so has consent been given; 6. Confirmation of any required third party easements – e.g. will construction vehicles need to overhang ditches (these are usually in private ownership), private hedges or open land adjacent to the highway; 7. Any modifications required to the alignment of the carriageway or verges/over-runs; 8. Identification of sensitive features along route;	1. Details regarding the potential timing of the construction works are provided in ***Chapter 6 Project Description*****.** 2. ***Appendix 26.1*** provides details of where temporary parking suspension would be required to accommodate the movement of AILs. 3 - 7. All works would be within land controlled by the Applicant (or with the agreement of the landowner) or within the highway boundary. 8. ***Figure 26.4*** provides a graphical plot of sensitive receptors within the onshore highway study area. 9 - 11. ***Chapter 22 Onshore Ecology*** considers the impacts of the proposed East Anglia TWO project on trees, verges, etc. 12. The requirements and scope of extraordinary maintenance will be discussed with SCC as part of the development of the outline CTMP.

Consultee	Date/ Document	Comment	Response / where addressed in the PEIR
		9. Trimming of overhead trees; 10. Confirmation of whether any affected trees are covered by a tree preservation order; 11. Confirmation of whether any of the verges along the route(s) are classified as SSSI or roadside Nature Reserve status; and 12. Confirmation of any extraordinary maintenance agreement/s required by the Highway Authority.	
Norfolk County Council	01/11/2017 Scoping Response	A description of the route/s, and plans at an appropriate scale, must be provided for the cabling route/grid connection.	A description of the proposed onshore highway study area and supporting figures are provided within ***section 26.5.***
Norfolk County Council	01/11/2017 Scoping Response	Details of type and frequency of vehicle to be used to service the facility/structure(s) when in operation must be provided.	***Section 26.6.2*** provides a summary of the likely operational requirements.
Norfolk County Council	01/11/2017 Scoping Response	Details of any long-term highway impact e.g. will trees and hedgerows need additional trimming to allow access for service vehicles during operation must be provided.	***Section 26.6.2*** provides a summary of the likely operational requirements.
Norfolk County Council	01/11/2017 Scoping Response	The position of structures relative to public highways and/or public rights of way – the minimum distance of which should be no less than 50m – must be provided.	Further details regarding the position of structures is provided within ***Chapter 6 Project Description*****.**
Norfolk County Council	01/11/2017 Scoping Response	The applicant must provide define the expected life span of the facility/structures and provide details of decommissioning works including an assessment of whether or not the structure is to be scrapped - i.e. can it be broken up on site and removed or will it require the same logistical process as initial construction.	***Section 26.6.3*** provides a summary of the likely decommissioning impacts.
Royal Mail	01/11/2017 Scoping Response	The PEI should include information on the needs of major road users (such as Royal Mail) and acknowledge the requirement to ensure that major road users are not disrupted through full advance consultation by the applicant at the	***Section 26.6*** provides an assessment of likely increases in traffic.

Consultee	Date/ Document	Comment	Response / where addressed in the PEIR
		appropriate time in the DCO and development processes.	
Royal Mail	01/11/2017 Scoping Response	The PEI and subsequent DCO application should include detailed information on the construction traffic mitigation measures that are proposed to be implemented by Scottish Power Renewables / its contractor, including a draft Construction Traffic Management Plan (CTMP).	***Section 26.10*** provides a summary of the proposed impacts and mitigation measures. An outline CTMP would be included as an appendix of the ES.
Royal Mail	01/11/2017 Scoping Response	Royal Mail is fully pre-consulted by Scottish Power Renewables / its contractor on any proposed road closures / diversions/ alternative access arrangements, hours of working and the content of the CTMP. The PEI should acknowledge the need for this consultation with Royal Mail and other relevant major road users.	Detail of proposed road works, closures and diversions will be included within the outline CTMP.
The Planning Inspectorate	20/12/2017 Scoping Response	Baseline data in the Scoping Report is listed as being collated for roads within the onshore study area. The Applicant should consider, as part of the assessment, whether potential impacts to the road network outside of the onshore study area are likely.	The extent of the onshore highway study area has been agreed with SCC and Highway England through the ETG consultation process during the preparation of the PEIR.
The Planning Inspectorate	20/12/2017 Scoping Response	The Scoping Report commits to developing the baseline to ensure a DfT-compliant Transport Assessment is undertaken. The Scoping Report does not explain what is meant by this and which DfT guidance will be followed specifically, therefore it does not provide clarity on the baseline studies to be undertaken. The assessment in the PEI should be undertaken against a robustly defined baseline consistent with relevant guidance.	***Section 26.5*** provides details of how the baseline highway conditions have been established.
The Planning Inspectorate	20/12/2017 Scoping Response	The PEI should clearly set out the predicted number of people/vehicles and regularity of maintenance visits to ensure that associated impacts are appropriately identified and assessed. Any assumptions used to inform this assessment should be explained within the PEI.	***Section 26.6.1*** and ***26.6.2*** provide details of the projected numbers of vehicle movements for the construction and operational phases respectively.

Consultee	Date/ Document	Comment	Response / where addressed in the PEIR
The Planning Inspectorate	20/12/2017 Scoping Response	The Scoping Report sets out that 'proposed developments with the potential to generate significant traffic' will be included in the cumulative impact assessment. The Inspectorate draws the Applicant's attention to Planning Inspectorate Advice Note 17 and would expect the cumulative impact assessment to include all relevant developments, whether the individual development concludes significant effects alone or not. This should be clarified in the PEI.	***Section 26.7*** provides an assessment of the cumulative impacts.
The Planning Inspectorate	20/12/2017 Scoping Response	The Scoping Report refers to Transport Assessments and Traffic Impact Assessments. The PEI should set out in the methodology the types of assessments being undertaken and the titles attributed to these assessments should be consistently applied throughout the PEI.	***Table 26.5*** details the scope of assessment being undertaken.
Suffolk County Council	8 May 2018 Highways Modelling Meeting	Discussion regarding the suitability of using the SCC transport network model. SCC provided detail on coverage, available time periods, etc.	It has been agreed with SCC that a simple (fixed assignment) spreadsheet model would be appropriate to inform the assessment within the PEIR.
		SCC committed to providing a method statement for deriving future year traffic forecasts. Following a meeting on the 18 July 2018, WSP (as consultants) to SCC provided factors for deriving future year flows.	***Appendix 26.6*** provides a summary of the factors provided by SCC and used to derive future year flows.
		SCC advised that the initial study area should be extended to encompass the A12 and 'four villages'.	The onshore highway study area was extended and subsequently agreed with SCC at the 18 July 2018 Traffic and Transport ETG meeting. The extent of the agreed onshore highway study area is highlighted within ***Figure 26.1.***
		SCC advised that they held a number of traffic counts for the study area that could be provided but also recommended that SPR undertook independent counts for validation purposes.	***Section 26.5.2*** provides details of background traffic counts undertaken by the Applicant and those provided by SCC. Agreement was reached with SCC at the 18

Consultee	Date/ Document	Comment	Response / where addressed in the PEIR
			September 2018 Traffic and Transport ETG meeting that the counts undertaken by the Applicant can be utilised.
Suffolk County Council	18 July 2018 Traffic and Transport Meeting	SCC confirmed that a neutral period (i.e. no seasonality) could be adopted for the assessment.	Background traffic flows presented within this PEIR represent 'annual averages' and therefore do not include for seasonality.
		SCC advised that all access proposals should be supported by swept path analysis.	Swept path analysis for each access is provided within ***Appendix 26.14*****.**
		The principle of using an pilot vehicle to escort HGVs along the B1353 rather than extensive road widening was discussed. SCC expressed a wish to see further detail regarding how this would operate and the associated delays.	***Section 26.6.1.11*** provides details of how the pilot vehicle system would operate and the associated delays.
		Options for how construction vehicles would access either side of the B1353 were presented, (including direct access from the B1353 or access from Sizewell Gap with vehicles crossing the B1353). SCC stated a preference for a signal controlled crossing at the B1353, with HGVs accessing from Sizewell Gap.	***Appendix 26.14*** provides details of the proposed traffic management proposals for vehicles crossing the B1353.
		SCC advised that where open trenching of the road would be required they would wish to understand the potential impacts of either a full closure or single lane closure.	***Section 26.6.1.11*** provides a assessment of the potential impacts of road closures.
		SCC advised that they wish to see copies of the speed surveys before agreeing visibility splays at the Grove Road accesses.	Copies of the speed surveys are provided at ***Appendix 26.3*****.**
		Options for how construction vehicles would access the onshore substation site were presented.	The traffic distribution presented herein assumes that all HGVs access the onshore substation site during construction from the B1069.
		SCC advised that they wished to see swept path analysis undertaken	***Section 26.6.1.12*** includes a summary of the results of this swept path analysis.

Consultee	Date/ Document	Comment	Response / where addressed in the PEIR
		for the junction of the A1094 / B1069 and A1094 / B1122.	
		The distribution of HGVs to the wider highway network (A12) was discussed. SCC advised that they wish to see a maximum and minimum that could come from the A12 north and south.	***Section 26.6.1.1*** identifies that the final distribution of HGV traffic cannot be determined prior to the DCO submission. Therefore, a sensitivity test has been adopted whereby 100% of HGV traffic is assessed heading north and 100% heading south as a worst case scenario.
		SCC advised that a Stage 1 Road Safety Audit would be required for all accesses.	Stage 1 Road Safety Audits will be provided as an appendix of the outline CTMP with the DCO application.
		SCC identified those junctions that they considered to be sensitive to increases in traffic and that could require further assessment. It was agreed that the assessment should focus on delays during the evening pm peak hour.	***Section 26.6.1.11*** provides a summary of the likely increases in construction traffic through the sensitive junctions.
		An approach to assessing collisions within the study area was presented. SCC confirmed that they agreed with the approach but would also like to see a review of collision clusters.	***Section 26.5.4*** provides a summary of the baseline road safety conditions whilst ***section 26.6.1.10*** provides a review of the potential impacts.
Suffolk County Council and Highways England	18 September 2018 Expert Topic Group Meeting	Highways England advised that they wished to see the forecast traffic flows through the junctions of the A12 and A14 (junctions 55 and 58).	***Section 26.6.1.11*** provides a summary of the forecast traffic demand through junctions 55 and 58.
		The proposed approach for deriving construction traffic flows was shared. This included the consideration of using the worst case demand for all sections, but with a reduction for the A12. SCC and Highways England confirmed that they agreed with the principle of the approach but would wish to see the full traffic demand data.	***Section 26.6.1*** provides detail of the derivation of the construction traffic demand.

Consultee	Date/ Document	Comment	Response / where addressed in the PEIR
		General discussion regarding the suitability of adopting a 1.5 employee to vehicle ratio. SPR confirmed that 1.5 represented a worst case and would be utilised for screening purposes. It was advised that a higher ratio may be adopted for mitigating of impacts.	***Section 26.6.1.4*** sets out proposed approach to applying an employee to vehicle ratio.

8. Ongoing public consultation has been conducted through a series of Public Information Days (PIDs) and Public Meetings. PIDs have been held throughout Suffolk in November 2017, March 2018, and June / July 2018 with further events planned in 2019. A series of stakeholder engagement events were also undertaken in October 2018 as part of consultation phase 3.5. These events were held to inform the public of potential changes to the onshore substation location. This consultation aims to ensure that community concerns are well understood and that site specific issues can be taken into account, where practicable. Consultation phases are explained further in ***Chapter 5 EIA Methodology***. Full details of the proposed East Anglia TWO project consultation process will be presented in the Consultation Report, which will be submitted as part of the DCO application.

9. ***Table 26.2*** shows public consultation feedback pertaining to traffic and transport. Consultation phases are explained further in ***Chapter 4 Site Selection and Assessment of Alternatives.***

Table 26.2 Public Consultation relevant to Traffic and Transport

Topic	Response / where addressed in the PEI
Phase 1	
• Increasing road movements • Connection point site selection to consider road access and traffic impacts	Impacts to road movements are considered in ***sections 26.6.1*** and ***26.6.2*** Traffic considerations have been considered throughout the site selection process, this is explained further in ***Chapter 4 Site Selection and Assessment of Alternatives***
Phase 2	
• Impacts from additional traffic on narrow roads • Impacts from works traffic and road disruption	Impacts to road movements (including construction traffic) are considered in ***sections 26.6.1*** and ***26.6.2***

Topic	Response / where addressed in the PEI
• Road improvement opportunities at local to the sites • Access for locals on local roads during construction • Upgrade potential of whole road infrastructure (including A12) • Junction improvements at Sizewell C • Construction traffic to use B1122 strengthened lorry route via A12 from north	Potential upgrades to road networks are discussed throughout the assessment as additional mitigation measures
Phase 3	
Assessment methodology – lack of full traffic and transport assessment for site selection: • Full traffic demand data required	Assessment methodology detailed in ***section 26.4*** Traffic assessment has been taken into consideration in ***Chapter 4 Site Selection and Assessment of Alternatives***
Increased disruption from traffic through and around the local villages: • Additional traffic to the A12 • Cumulative traffic disruption with Sizewell C • Pressure on local infrastructure • Impact on trucking route south of Grove Wood • Impacts on holiday traffic • Impacts on road safety and increasing accidents • Impacts on local schools • Contractors should obey local traffic conditions • Traffic impacts on farmers • Concerns over traffic through Knodishall and cumulative traffic with Sizewell and impacts on emergency vehicles at Leiston/Sizewell Road • Road network already at capacity • Health, fire and security risks associated with construction traffic • Impact of traffic and road construction leading to coastal erosion	Impacts to road movements (including construction traffic) are considered in ***sections 26.6.1*** and ***26.6.2*** Cumulative traffic impacts are considered in ***Appendix 26.25*** and ***section 26.7.2*** Impacts on road safety are assessed in ***section 26.6.1.10***
Transport improvements and suggestions: • Road widening and improvements • Access tracks should be built • Use more sea-borne traffic to reduce pressure on rural roads • Link should be built from A12 for all construction traffic	Potential upgrades to road networks are discussed throughout the assessment as additional mitigation measures Embedded mitigation is given in ***section 26.3.3***

Topic	Response / where addressed in the PEI
• Dual carriageway construction of A12 may impact traffic levels • Access point for landfall construction traffic should be field adjacent to Ogilvie pavilion • More suitable transport solution at Sizewell (e.g. train, village bypass scheme) • Direct route built to A12 with connection south of Saxmundham (D2 route)	
Concern over inadequate roads/ road improvements/ traffic routing: • Concern over inadequate roads around Zone 7/ Friston and around the cable route which are small and narrow and do not have the capacity for construction traffic • Concerns over road closures • Impacts on other road users such as pedestrians, cyclists and agricultural traffic • Impacts with new housing developments • Damage to verges and hedges through large vehicles on small roads • Concerns that contractors on East Anglia ONE did not follow agreed routes. • Inadequate roads for population increases • Impact on Suffolk Energy Gateway Four Villages Bypass	Potential upgrades to road networks are discussed throughout the assessment as additional mitigation measures Embedded mitigation is given in ***section 26.3.3*** Impacts on other road users are assessed in ***section 26.6***
Phase 3.5	
• Concerns of traffic accidents • Traffic through Leiston, Benhall Green, Friston and Knodishall • Impacts on cyclists (particularly on the B1353) • Strains on road network, at Aldeburgh from the roundabout towards Leiston • Traffic jams on the A12 and A1220 • Impacts during peak tourist times • HGV journeys should be managed to avoid passing problems • Cumulative traffic impacts with Sizewell C, Inter-connectors and National Grid • Significant road widening will be necessary	Potential upgrades to road networks are discussed throughout the assessment as additional mitigation measures Cumulative traffic impacts are considered in ***Appendix 26.25*** and ***section 26.7.2*** Impacts on road safety are assessed in ***section 26.6.1.10***

26.3 Scope

26.3.1 Onshore Highway Study Area

10. The onshore highway study area has been informed by determining the most probable routes for traffic, for both the movement of materials and employees, during both construction and operational phases of the proposed East Anglia TWO project.

11. The extent of the onshore highway study area has been agreed with SCC and Highways England through the ETG process. The agreed onshore highway study area is illustrated in ***Figure 26.1*** and is divided into 15 separate highways sections known as links, which are defined as sections of highway with similar characteristics and traffic flows.

12. Routes that extend outside of the onshore highway study area are routes where construction traffic has dissipated and / or include roads with negligible sensitive receptors. When combined these parameters do not represent significant impacts on the highway network.

26.3.1.1 Proposed Onshore Development Area Access

13. Road modifications could be required to facilitate the safe ingress and egress from the public highways to the onshore cable route or CCSs through construction accesses. This assessment has identified eight locations where these additional accesses may be required, and further detailed design will be undertaken post consent based on the final design of the proposed East Anglia TWO project. An Outline Access Management Plan will be submitted with the DCO application. Accesses are expected to be located at each CCS and at intersections between the public highway and onshore cable route, where suitable, to facilitate access to the onshore cable route. These are identified as Access IDs in ***Figure 26.7.*** Further detail is provided in ***Chapter 6 Project Description.***

26.3.1.2 Offsite Highway Improvements

14. In order to facilitate construction traffic and / or construction-related deliveries, temporary modifications may be required at locations on the existing public road network. The purpose of the temporary modifications would be to allow larger vehicles than normal to access certain parts of the public road network. It is anticipated that the works would be concentrated at junctions.

15. It is anticipated that the temporary modifications would be completed prior to construction starting within relevant sections of the onshore cable route.

16. The temporary modifications could potentially comprise:

- Abnormal Indivisible Load structural works;
- Localised widening / creation of overrun areas;
- Temporary moving or socketing of street signs; and
- Temporary moving of street furniture.

17. Any temporary modifications to roads would be undertaken in accordance with the requirements of the local Highways Authority.

26.3.2 Worst Case Scenarios

18. This section identifies the realistic worst case parameters associated with the proposed East Anglia TWO project alone. This includes all onshore infrastructure for the proposed East Anglia TWO project and the National Grid infrastructure that the proposed East Anglia TWO project will require for ultimate connection to national electricity grid.

19. ***Table 26.3*** identifies those realistic worst case parameters of the onshore infrastructure that are relevant to potential impacts on traffic and transport during construction, operation and decommissioning phases of the proposed East Anglia ONE North project. Please refer to *Chapter 6 Project Description* for more detail regarding specific activities, on and their durations, which fall within the construction phase.

Table 26.3 Realistic Worst Case Scenarios

Parameter	Notes
Construction	
Minimum construction duration for onshore works of 36 months (three years).	The minimum realistic duration that the onshore works can be completed in, resulting in the highest traffic demand due to the intensity of activities. This duration has been used as the realistic onshore construction duration date for the purpose of the assessment of environmental impacts in this PEIR. Refer to ***Table 26.16*** for further details.
Minimum duration for individual construction activities.	Minimum durations for individual activities within the 36month programme have been adopted to represent the peak traffic demand for each activity.
Full overlap of the peak period for all discrete components of the onshore infrastructure, namely: • Landfall location; • Four onshore cable route sections; • National Grid Infrastructure; and • Onshore Substation.	Represents maximum possible intensity of activities resulting in peak traffic generation.

Parameter	Notes
Earliest start of construction 2024.	2024 has been used as the realistic construction start date for the purpose of the assessment of environmental impacts in this PEIR.
Adoption of an employee to vehicle ratio of 1.5 employees per vehicle.	An employee to vehicle ratio of 1.5 employees per vehicle represents a worst case, as a ratio closer to the construction industry exemplar of 2.5 would result in fewer vehicle movements on the highway network.
No allowance for construction workers to be able to travel by non-car modes (bus, rail, walking and cycling) has been applied to the traffic demand.	Distributes construction employee travel to work by car only resulting in a higher traffic demand for the purpose of a worst case assessment.
No allowance for a reduction of HGV traffic due to intermodal freight transfer (rail, maritime).	Transfer of bulk materials by rail or maritime modes would lead to a reduction in HGV traffic on some of the links within the onshore highway study area. However, there would still be a need for local transfer by road, therefore any potential gains have been disregarded for the purpose of this assessment.
Haul road to be provided within the onshore cable route for the entire length.	A base assumption to inform the impact assessment. However, as detailed design progresses, any reduction in the length of haul road, though the implementation of construction techniques such as ground stabilisation, or use of tracked vehicles would result in a reduction in HGV movements.
50% of surplus excavated material arising from substation excavation to be exported off site (remaining 50% to be used on site for landscape bunding. All other (landfall and cable route) surplus excavated material to be exported off site.	Assumes a worst case that surplus excavated material cannot be spread on site in some locations.
Assessment based upon a five day working week. Noting that it is likely that there will be a requirement for Saturday working and Sunday working for critical activities, such as Horizontal Directional Drilling (HDD).	Results in peak traffic generation as vehicle movements associated with transport of employees and deliveries are condensed over five days rather than six.
Daily HGV movements derived based upon 22 working days per month (equivalent to five day working).	Results in peak traffic generation as deliveries are condensed over five days rather than six.
HGVs deliveries profiled over a 10 hour window.	A 7am to 7pm (12hr) ‘delivery window’ has been assumed with ten hours delivery time allocated. This results in higher hourly HGV flows (than 12hrs) but allows for breaks in deliveries.
Workers departing for home are assumed to overlap with the evening network peak hour (17:00 – 18:00).	The nature of construction works typically requires that employees work longer hours in the summer and shorter hours in the winter to take advantage of the available daylight. Therefore, as a worst case, peak construction

Parameter	Notes
	worker movements are assumed to overlap with peak background traffic.
An appropriate level of contingency (reflecting the uncertainties in the design) has been applied to all material quantities, full details are contained within ***Appendix 26.10***.	Ensures minor omissions or design changes can be accommodated within the assessed traffic flows.
Total employee movements increased by 10% to account for miscellaneous movements.	Ensures unplanned changes can be accommodated within the assessed traffic flows.
Operation	
It anticipated that the onshore substation and National Grid substation would not normally be staffed. During the operational phase, vehicle movements would therefore be limited to occasional repair, maintenance and inspection visits at the substation(s) and annual routine integrity tests of the onshore cable route.	
Decommissioning	
HGV and Light Commercial Vehicle (LCV) traffic demand as per construction, assuming minimal opportunities to leave components in-situ or recycle materials on site.	Represents peak decommissioning traffic impacts.

26.3.3 Embedded Mitigation

20. Embedding mitigation into the proposed East Anglia TWO project design is a type of primary mitigation and is an inherent aspect of the EIA process. The following ***Table 26.4*** outlines the key embedded mitigation which has been applied to the traffic forecasts contained in this chapter. Any further mitigation measures suggested within this chapter are therefore considered to be additional to this embedded mitigation.

Table 26.4 Embedded Mitigation Measures for Traffic and Transport

Parameter	Mitigation Measures Embedded into the Project Design
General	
Access Strategy	The access strategy applies a hierarchical approach (informed by the SCC HGV route hierarchy, see paragraph 89) to selecting routes and where possible, seeks to reduce the impact of HGV traffic upon the most sensitive communities. This access strategy includes the following commitments: • All HGV traffic would be required to travel via the A1094 or B1122 from the A12, no HGV traffic would be permitted to travel via alternative routes, such as the B1121 or B1119. • No HGV traffic would be permitted to travel though Leiston or Coldfair Green / Knodishall.

Parameter	Mitigation Measures Embedded into the Project Design
	• No HGV traffic would be permitted to travel via the B1121 through Friston, Sternfield or Benhall-Green.
Landfall location access	To avoid the requirement for significant road widening, during periods when access to landfall is not available via a temporary haul road from Sizewell Gap Road, a pilot vehicle would be used to escort vehicles along the B1353 from a holding area to the landfall location access. This strategy would also be adopted for vehicles departing landfall location access.
Adoption of car sharing for construction employees	A target of an average of at least 1.5 employees per vehicle is proposed and would be secured through the outline CTMP.
Construction and use of temporary haul roads for the length of the onshore cable route	Reducing trips on the local highway network.
Onshore substation and National Grid Substation access.	All HGV traffic to the onshore substation and National Grid Substation to avoid travelling via Friston or Sternfield by accessing from the B1069 (south of Knodishall/ Coldfair Green) and travelling along a temporary haul road and crossing over Grove Road.
Limiting construction traffic movements via the B1353.	All cable route construction traffic to travel to Sizewell Gap and then travel south along a temporary haul road, crossing the B1353 via a traffic signal controlled crossing.

26.3.4 Monitoring

21. An outline CTMP would be submitted in support of the DCO application for the proposed East Anglia TWO project. The outline CTMP will set out the standards and procedures for managing the impact of construction traffic.

22. The outline CTMP will contain a commitment to monitoring and enforcement measures to ensure the project's HGV and employee traffic is within the bounds of the worst case impacts assessed.

23. A final CTMP would be submitted to the local planning authority prior to commencement of construction and following the appointment of a Contractor, ensuring contractor design led information is incorporated within the CTMP.

26.4 Assessment Methodology

26.4.1 Guidance and Policy

24. This section sets out the salient traffic and transport policy and guidance that has informed the development of the PEIR and identifies how the application has been shaped by the relevant policy and guidance.

26.4.1.1 National Policy Statements

25. The assessment of potential traffic and transport impacts has been made with specific reference to the Government's National Policy Statements (NPSs). NPSs set out policies or circumstances that Government consider should be taken into account in decisions on Nationally Significant Infrastructure Project's (NSIPs). Those relevant to the proposed East Anglia TWO project are:

- Overarching NPS for Energy (EN-1) (DECC 2011a);
- NPS for Renewable Energy Infrastructure (EN-3) (DECC 2011b); and
- NPS for Electricity Networks Infrastructure (EN-5) (DECC 2011c).

26. The specific assessment requirements for traffic and transport, as detailed in the NPSs, are summarised in ***Table 26.5***, together with an indication of where each stipulation is addressed. Where any part of the NPS has not been followed within the assessment, an explanation as to why the requirement was not deemed relevant, or has been met in another manner, is provided.

Table 26.5 NPS Assessment Requirements

NPS Requirement	NPS Reference	PEIR Response
If a project is likely to have significant transport implications, the applicant's ES should include a transport assessment, using the NATA/WebTAG methodology stipulated in Department for Transport (DfT) guidance, or any successor to such methodology.	EN-1 Section 5.13.3	This chapter of the PEIR has been produced in accordance with current transport guidance (referenced later in this chapter) and this is evidenced throughout.
Where appropriate, the applicant should prepare a travel plan including demand management measures to mitigate transport impacts. The applicant should also provide details of proposed measures to improve access by public transport, walking and cycling, to reduce the need for parking associated with the proposal and to mitigate transport impacts.	EN-1 Section 5.13.4	***Section 26.3.3*** outlines the embedded mitigation measures for construction, such as car-share and HGV controls. An outline CTMP will be submitted with the DCO application and will include travel plan measures. The National Planning Policy Framework (NPPF) notes that all developments that generate significant amounts of transport movements should be supported by a Travel Plan. ***Section 26.6.2*** details a small operational workforce, and therefore an operational travel plan has not been prepared.

26.4.1.2 National Planning Policy Framework

27. The National Planning Policy Framework (NPPF) was published in July 2018 by the 'Ministry of Housing, Communities and Local Government'. The NPPF contains the Government's strategies for economic, social and environmental

planning policies in England and it is designed to be a single, tightly focused document.

28. At the heart of the NPPF (Paragraph 11) is a "*presumption in favour of sustainable development*", which for decision making means:

- *"c) Approving development proposals that accord with an up-to-date development plan without delay; or*
- *d) Where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:*

  i. the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or

  ii. any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole."

29. Under the heading 'Promoting Sustainable Transport' paragraph 103 of the NPPF requires the planning system to actively manage patterns of growth in order to address the potential impacts of development on transport networks.

30. Paragraph 109 of the NPPF states that "*development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe*."

31. Paragraph 111 of the NPPF states that "*all developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed*."

26.4.1.3 Local Planning Policy

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

33. The onshore highway study area falls under the jurisdiction of Suffolk County Council (SCC) as the local highway authority and Suffolk Coastal District Council (SCDC) as the local planning authority (LPA). SCDC are in the process of merging with Waveney District Council (WDC) into an East Suffolk Council (ESC)

to take effect from 1st April 2019. At the time of writing the councils have not yet merged, therefore the local plan for WDC has been considered also.

34. SCDC is reviewing their Local Plan, a First Draft Local Plan has been published for public consultation (period of consultation from 20th July to 14th September 2018) (SCDC 2018). This plan sets out strategic planning policies within East Suffolk and how the local planning authorities address the NPPF on a local basis.

35. ***Table 26.6*** provides details of the local planning policy documents and the policies contained within these which are relevant to traffic and transport.

Table 26.6 Relevant Local Planning Policies

Document	Policy / guidance	Policy / guidance purpose
Suffolk County Council		
Local Transport Plan 2011 - 2031	The Council wants to maintain and, over time, improve Suffolk's transport networks, reduce congestion, and improve access to jobs and markets.	***Section 26.6*** and ***26.7*** contain an assessment of the proposed East Anglia TWO project's impact on the transport network.
Suffolk Coastal District Council		
Local Plan - Core Strategy and Development Management Policies July 2013	Construction management: Transport issues such as the routing of vehicles during construction, improvements to the road system (including the A12), and use of rail and sea for access all having regard to such factors as residential amenity; and Social issues – local community issues during long construction period and the housing of workers in the local area." (Note this is from Policy SP13 – Nuclear Energy This is considered relevant)	***Section 26.6*** and ***26.7*** contain an assessment of the proposed East Anglia TWO project on the transport network. Details of impacts upon local communities and housing workers is addressed within ***Chapter 30 Tourism Recreation and Socio Economics***.
	DM20 – Travel Plans: "Proposals for new development that would have significant transport implications should be accompanied by a 'green travel plan'. It is not necessarily the size of the development that would trigger the need for such a plan but more the nature of the use. The travel plans should seek to reduce the use of private cars by: • encouraging car sharing;	An outline CTMP will be submitted with the DCO application and will include travel plan measures to manage the impact of construction traffic.

Document	Policy / guidance	Policy / guidance purpose
	• provide links to enable the use of public transport; • improve road safety for pedestrians and cyclists; and • identify any mitigation works to be funded by the developer in conjunction with the proposal, such as improvements of facilities at the nearest transport interchanges."	
Waveney District Council		
Existing Waveney Local Plan – Core Strategy	CS15 – Sustainable transport "Development that could generate significant traffic, including goods vehicles, will only be acceptable in the most accessible locations where there are opportunities to reduce the need to travel. Proposals for development will need to provide for travel by a choice of means of transport other than the private car, in accordance with the following hierarchy: • walking • cycling • public transport • taxis and car pooling Development proposals that will have significant transport implications will need to be accompanied by a transport assessment and travel plan showing how car based travel to the site can be minimised"	***Section 26.6*** *and* ***26.7*** contain an assessment of the Project's impact on the transport network. An outline CTMP will be submitted with the DCO application and will include travel plan measures to manage the impact of construction traffic.

26.4.1.4 Traffic Management Act 2004

36. The Traffic Management Act (TMA) 2004 was introduced to deal with congestion and disruption on the road network. The TMA places a duty on local traffic authorities to ensure the expeditious movement of traffic on their road network and those networks of surrounding authorities.

37. The TMA directs effective communication between highway authorities and parties interested in carrying out street work. The TMA encourages a disciplined approach and advance communication to plan the street works. The ETG has provided a vehicle for a collaborative approach to planning road works in line with the requirements of this act.

26.4.1.5 The Strategic Road Network and the Delivery of Sustainable Development

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

39. Under the heading of Environmental Impact 02/2013 notes that:

> *"…developers must ensure all environmental implications associated with their proposals, are adequately assessed and reported so as to ensure that the mitigation of any impact is compliant with prevailing policies and standards. This requirement applies in respect of the environmental impacts arising from the temporary construction works and the permanent transport solution associated with the development, as well as the environmental impact of the existing trunk road upon the development itself".*

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

> *"The promoter of a wind farm should prepare a report covering the construction, operation and de-commissioning stages of the development. From this, the acceptability of the proposal should be determined and any mitigating measures should be identified"*
>
> *Access to the site for construction, maintenance and de-commissioning should be obtained via the local road network and, normally, there should be no direct connection to the strategic road network"*
>
> *Swept path analyses should be provided by the developer for the abnormal load deliveries to the site."*

41. Circular 02/2013 requirements are addressed within this PEIR.

26.4.1.6 The Guidelines for the Environmental Assessment of Road Traffic

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

43. The purpose of the guidelines is to provide the basis for systematic, consistent and comprehensive coverage for the appraisal of traffic impacts arising from

development projects. Impacts that may arise include: pedestrian severance and amenity, driver delay, accidents and safety and noise, vibration and air quality.

44. GEART is the guidance that informs this assessment and ***section 26.4.3*** of this PEIR chapter contains full details of how the guidance has been applied.

26.4.1.7 DfT Transport Assessment Guidance and Successors

45. The DfT Transport Assessment guidance referred to in NPS EN-1, was withdrawn in October 2014 and was replaced with DCLG Planning Practice Guidance (PPG). For the purpose of assessing the impact of the proposed East Anglia TWO project, the relevant PPG is 'Travel Plans, Transport Assessment and Statements' (henceforth referred to as the Transport PPG).

46. The Transport PPG sets out the key principles to be adopted when developing a Transport Assessment as follows:

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

47. The Transport PPG key principles have shaped the development of this PEIR and can be seen throughout this chapter.

26.4.2 Data Sources

48. The following data sources were used to inform the assessment (***Table 26.7***).

Table 26.7 Data Sources

Data	Date	Coverage	Confidence	Notes
Classified * Automatic Traffic Counts	June 2018	14 of the 15 links within the onshore highway study area	High	Traffic counts commissioned by the Applicant which provide classified hourly and daily count and speed data.
Classified * Automatic	Various	8 of the 15 links within the onshore	High	Traffic counts obtained from Suffolk County Council which provide

Data	Date	Coverage	Confidence	Notes
Traffic Counts		highway study area		classified hourly and daily count data.
Manually Classified * Turning Count	07:00 to 19:00, 18 May 2017	Junction of the A12 and A1094	High	Traffic counts obtained from Suffolk County Council which provide classified hourly turning count data.
Personal Injury Collision Data	Latest five year period available, February 2013 to February 2018	All links within the onshore highway study area	High	Details of all recorded personal injury collisions within the onshore highway study area obtained from Suffolk County Council.
*	Classified counts include classification of the vehicle type, e.g. cars, motorbikes, buses, HGVs, etc.			

49. Further detail regarding the location of the traffic surveys is provided in ***section 26.5.2***.

50. In addition to the data sources listed in ***Table 26.7***, a desk-based assessment supported by site visits was undertaken to provide information with regard to the existing baseline highway network.

26.4.3 Impact Assessment Methodology

51. This section describes the assessment methodology, including data collation, impacts and impact assessment criteria that were used in the traffic and transport assessment.

52. The traffic and transport assessment methodology follows the principles set out in ***Chapter 5 EIA Methodology*** and adopts the 'project wide' significance evaluation. However, these principles have been augmented by traffic and transport specific methodologies (as prescribed in GEART) to inform a significance evaluation.

26.4.3.1 Scale of Assessment

53. The following rules, taken from the GEART, have informed the screening process and thereby defined the extent and scale of this assessment:

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

- Rule 2: Include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more (or where the number of HGVs is predicted to increase by 10% or more).

54. In justifying these rules GEART examines the science of traffic forecasting and states:

> *"It is generally accepted that accuracies greater than 10% are not achievable. It should also be noted that the day to day variation of traffic on a road is frequently at least some + or -10%. At a basic level, it should therefore be assumed that projected changes in traffic of less than 10% create no discernible environmental impact.*
>
> *…a 30% change in traffic flow represents a reasonable threshold for including a highway link within the assessment."*

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

56. The exception to the GEART Rule 1 and 2 is the consideration of the effects of driver delay and road safety. These effects can be potentially significant when high baseline traffic flows are evident, and a lower change in traffic flow can be potentially significant. Full details of the methodology adopted for these effects are set out later in this chapter (***section 26.4.3.1.1*** to ***section 26.4.3.4***).

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

58. The following environmental effects have been identified as being susceptible to changes in traffic flow and are appropriate to the local area.

26.4.3.1.1Severance

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

60. GEART suggests that changes in total traffic flow of 30%, 60% and 90% are considered to be slight, moderate and substantial respectively.

26.4.3.1.2Pedestrian / Cycle Amenity

61. Pedestrian amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and footway width and separation from traffic. This definition also includes pedestrian fear and intimidation, and can be considered to be a much broader category including consideration of the exposure to noise and air pollution, and the overall relationship between pedestrians and traffic.

62. GEART suggests that a threshold of a doubling of total traffic flow or the HGV component may lead to a negative impact upon pedestrian amenity.

26.4.3.1.3Road Safety

63. The salient GEART guidance on road safety is as follows:

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

64. In this context, an examination of the existing collisions occurring within the onshore highway study area will be undertaken to identify any areas of the highway with concentrations of collisions with similar patterns, or roads with collision rates that are higher than national averages. These sites are considered to be sensitive to changes in traffic flows (sensitive receptors) and therefore a more detailed analysis of significance has been undertaken in the context of the proposals.

65. In addition to considering existing patterns of collisions that could be exacerbated by the development proposals, the road safety assessment also considers the potential for introduction of new risks associated with the formation of new junctions.

26.4.3.1.4Driver Delay

26.4.3.1.4.1 Capacity

66. During consultation with SCC and Highways England sensitive junctions have been identified that require an assessment of potential delays for drivers during peak hours. The assessment therefore seeks to disaggregate the peak hour traffic movements for these junctions to enable a judgement of the potential significance of the driver delays effect.

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

68. In addition to considering the potential for delays associated with increases in traffic at critical junctions, the potential for delays associated with the following activities was also raised:

- Delays resulting from the temporary closures of roads to install the proposed East Anglia TWO project cables across the existing public highway; and
- Delays to the public associated with the traffic being held back whilst HGVs are escorted to landfall location access via the B1353.

26.4.3.1.4.2 Highway Geometry

69. In addition to considering the potential for delays associated with increases in traffic, SCC have requested that the potential for delays associated with HGVs attempting to pass at locations where the existing highway width is constrained be assessed. To test if these delays are likely to be significant 'swept path analysis' vehicle simulation has been used at these locations.

26.4.3.1.5Abnormal Indivisible Loads

70. The importing of large Abnormal Indivisible Loads (AILs) may lead to delays on the highway network. The construction of the onshore substation would require the delivery of up to two transformers, each of which would be classified as an AIL delivery. An AIL study has been undertaken by Wynns Ltd to inform the management measures required to deliver AILs to the onshore substation site. The AIL study is provided within ***Appendix 26.1*** and details the management measures to be employed to minimise the disruption to baseline traffic.

71. The AIL study has identified that the load could come from either Felixstowe or Lowestoft ports, travelling via the A12. Network Rail have advised that a rail bridge over the A1094 should be avoided and as such, the study has considered that the impact of travelling via the B1122 from Yoxford and passing through Leiston along the B1069 to the junction with the A1094.

72. The AIL study identifies the requirement for localised widening at the junction of the A1094 and the B1069. From this point the vehicle would then travel along the A1094 and B1121 through Friston to access the onshore substation site.

73. To ensure that delays are managed and co-ordinated, prior to the movement of any AIL the contractor would be required to submit notifications to the relevant authorities (police, highway authorities and bridge / structure owners) through

ESDAL (Electronic Service Delivery for Abnormal Loads). The ESDAL process would ensure the timing of AIL movements would be co-ordinated and (including the issuing of the required advanced notification to stakeholders and residents) potential impacts would not be significant.

74. Details of the proposed AIL routes and indicative vehicle / trailer combinations to be used to transport the AIL have been submitted to SCC for comment. Through this consultation process, SCC have identified a number of structures (bridges, culverts and pipes) along the proposed AIL routes that require further review to confirm their suitability. This work is currently ongoing and the results of this work, including the requirements for the potential strengthening of any structures would be provided as part of the DCO application.

26.4.3.1.6 Other Impacts

75. Traffic borne noise and vibration effects and air quality effects informed by the traffic data outlined in this chapter are assessed in ***Chapter 19 Air Quality*** and ***Chapter 25 Noise and Vibration***, respectively.

26.4.3.2 Sensitivity

76. The sensitivity of a highway (link) can be defined by the type of user groups who may use it, e.g. elderly people or children. A sensitive area may be a village environment or where pedestrian or cyclist activity may be high, for example in the vicinity of a school. ***Table 26.8*** provides broad definitions of the different sensitivity levels which have been applied to the assessment.

Table 26.8 Example Definitions of the Different Sensitivity Levels for a Highway Link

Sensitivity	Definition
High *	High concentrations of sensitive receptors (e.g. hospitals, schools, areas with high tourist footfall etc.) and limited separation provided by the highway environment.
Medium	A low concentration of sensitive receptors (e.g. residential dwellings, pedestrian desire lines, etc.) and limited separation from traffic provided by the highway environment.
Low	Few sensitive receptors and / or highway environment that can accommodate changes in volumes of traffic.
Negligible	Links that fall below GEART Rule 1 and 2 screening thresholds.
* High sensitivity links are considered to be 'specifically sensitive areas' for the purpose of GEART Rule 2	

26.4.3.2.1 Other Receptors

77. In addition to the consideration of the sensitivity of highway links, areas with existing road safety issues and congested junctions (as advised by SCC and Highways England) have also been assigned a degree of sensitivity.

78. With regards to highway safety areas with existing road safety concerns are considered to be highly sensitive to changes in traffic and are outlined further in ***section 26.5.4***.

79. With regards to driver delay discussions with the highway authorities, SCC and Highway England have identified locations considered to be highly sensitive to changes in traffic. These locations are discussed further in ***section 26.5.5***.

26.4.3.3 Magnitude

80. ***Table 26.9*** details the assessment framework for magnitude thresholds adapted from GEART. These thresholds are guidance only and provide a starting point by which transport data will inform a local analysis of the impact magnitude.

Table 26.9 Traffic and Transport Assessment Framework

Effect	Magnitude of Effect			
	Very Low	**Low**	**Medium**	**High**
Severance*	Changes in total traffic flows of less than 30%.	Changes in total traffic flows of 30 to 60%.	Changes in total traffic flows of 60 to 90%.	Changes in total traffic flows of over 90%.
Pedestrian and cycle amenity*	Change in traffic flows (or HGV component) less than 100%.	Greater than 100% increase in traffic (or HGV component) and a review based upon the quantum of vehicles, vehicle speed and pedestrian footfall.		
Road Safety	Informed by a review of existing collision patterns and rates based upon the existing personal injury collision records and the forecast increase in traffic.			
Driver delay (capacity)	Informed by projected traffic increases through sensitive junctions within the onshore highway study area and further detailed junction modelling analysis as required.			
Driver delay (highway geometry)	Informed by swept path analysis at critical locations.			
*	Effects not assessed for the operational phase as agreed at scoping			

26.4.3.4 Impact Significance

81. ***Table 26.10*** sets out the assessment matrix adapted from GEART which combines the initial impact assessment derived from the assessment framework presented in ***Table 26.9*** with the receptor sensitivity to determine the magnitude of impact.

Table 26.10 Impact Significance Matrix

		Negative Magnitude				Beneficial Magnitude			
		High	Medium	Low	Negligible	Negligible	Low	Medium	High
Sensitivity	High	*Major*	*Major*	*Moderate*	*Minor*	*Minor*	*Moderate*	*Major*	*Major*
	Medium	*Major*	*Moderate*	*Minor*	*Minor*	*Minor*	*Minor*	*Moderate*	*Major*
	Low	*Moderate*	*Minor*	*Minor*	*Negligible*	*Negligible*	*Minor*	*Minor*	*Moderate*
	Negligible	*Minor*	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Minor*

82. Note that for the purposes of the EIA, major and moderate impacts are deemed to be significant. In addition, whilst minor impacts are not significant in their own right, it is important to distinguish these from other non-significant impacts as they may contribute to significant impacts cumulatively or through interactions.

26.4.4 Cumulative Impact Assessment

83. The proposed East Anglia TWO project CIA initially considers the cumulative impact with only the East Anglia ONE North project against two different construction scenarios (i.e. construction of the two projects concurrently and sequentially). The worst case scenario of each impact is then carried through to the full CIA which considers other developments which are in close proximity to the proposed East Anglia TWO and East Anglia ONE North projects.

84. For a general introduction to the methodology used for the cumulative impact assessment, please refer to ***Chapter 5 Environmental Impact Assessment Methodology***.

85. This chapter will assess those cumulative impacts that are specific to traffic and transport (see ***section 26.7***).

26.4.5 Transboundary Impact Assessment

86. There are no transboundary impacts with regard to traffic and transport as the proposed onshore development area is entirely within the UK and would not be sited in proximity to any international boundaries. Transboundary impacts are therefore scoped out of the assessment and are not considered further.

26.5 Existing Environment

87. Characterisation of the existing environment in relation to traffic and transport has been informed through a number of sources, including:

- Desktop studies and site visits;
- Personal injury collision data sourced from SCC;
- Traffic count information sourced from SCC; and
- Traffic surveys commissioned for the proposed East Anglia TWO project.

26.5.1 Existing Highway Network

88. The highway network in the vicinity of the proposed onshore development area is illustrated in ***Figure 26.2***. Within the proposed onshore development area, the principal highway network (managed by SCC) includes the A12 and A1049.

89. A route hierarchy for the whole of Suffolk has been developed by SCC to encourage HGV drivers to use the most appropriate route according to their destination. These routes have been classified by the following categories and are shown in ***Appendix 26.2***:

- Strategic Lorry Routes – all movements crossing Suffolk should use these routes;
- Zone distributor routes – roads within a zone serving as a route directly to a location or as a route to local access routes; and
- Local access routes – roads or parts of roads servicing as access to a specific location.

26.5.1.1 A-roads

90. The A12 trunk route provides one of the key strategic connections within Suffolk and is identified within the Suffolk Lorry Route Network as a Strategic Lorry Route.

91. The A12 provides the main north-south road connection between Great Yarmouth and Lowestoft to the north and Ipswich and the A14 to the south. Heading north from the A14 the A12 is predominantly dual carriageway to Wickham Market (except for a short section around Woodbridge). North of Wickham Market the A12 continues as a single carriageway road passing through a number of small villages prior to its junction with the A1094.

92. The first settlement that the A12 passes through between Wickham Market and the A1094 is Marlesford, where the speed limit is 40mph before reducing to 30mph through Little Glemham. Through these villages there is a footway along at least one side of the road. Upon leaving Little Glemham the speed limit then increases to 50mph before reducing to 30mph upon the entrance to the villages of Stratford St Andrew and Farnham. Through these villages there is a footway along at least one side of the road.

93. As the A12 passes through the village of Farnham there is a tight bend (known locally as Farnham Bends). In this location, due to the road alignment and position of existing properties adjacent to the edge of the road, larger vehicles are required to slow significantly to complete the turn without encroaching into the oncoming lane.

94. SCC have submitted an outline business case to the Department for Transport (DfT) to bypass the section of A12 from Wickham Market to the A1094. The bypass proposals are known as Suffolk's Energy Gateway (SEGWay) and seek to alleviate congestion and community severance along this route and by bypassing the villages of Marlesford, Little Glemham, Stratford St Andrew and Farnham. To date, SCC have consulted on two options for a single carriageway bypass and a dual carriageway bypass and are awaiting a funding allocation decision from the DfT.

95. Travelling north from its junction with the A1094 the A12 continues as a dual carriageway before again returning to a single carriageway at the junction with the B1119 for Saxmundham. North of this junction the A12 is predominantly provided as a single carriageway to Lowestoft. To the north of the junction with Saxmundham the A12 passes through the village of Yoxford, where it intersects with the A1120 and B1122.

96. As the A12 passes through the village of Yoxford the speed limit reduces to 30mph and there is a footway along at least one side of the road.

97. The A1094 is identified by SCC as a zone distributor route in the Suffolk Lorry Route Network and provides a key link from the A12 in the west to the town of Aldeburgh to the east. East of the junction with the A12, the A1094 rural single carriageway road is subject to the national speed limit (60mph) until it reaches the settlement of Church Common. Through Church Common the speed limit reduces to 30mph and a footway is provided along the southern side of the road for a short distance. Upon leaving Church Common, the A1094 continues as a rural single carriageway road subject to the national speed limit (60mph) providing links to the B1121 towards Friston and B1069 towards Knodishall, Coldfair Green and Leiston.

98. Upon entering the built-up area of Aldeburgh, the speed limit reduces to 30mph and footways are provided along both sides of the road linked by a zebra crossing close to the junction with the B1122.

26.5.1.2 B-roads

99. A number of strategically important B class roads are located within the onshore highway study area, providing access to the proposed onshore development area, these include the B1069, B1122 and B1353.

100. The B1122 is a single carriageway road that provides a link from the A12 at Yoxford to Leiston. The link is designated as a zone distributor route within the Suffolk Lorry Route Network. The link is a predominantly rural 'B' road subject to the national speed limit (60mph) except through the settlements of Middleton Moor and Theberton where the speed limit reduces to 30mph. Through the village of Theberton a footway is provided along at least one side of the road.

101. To the south of the junction with Lover's Lane as the B1122 enters Leiston, the road becomes more urban in character with street lighting, and footways along both sides of the road. This section of the B1122 is also subject to a 30mph speed limit.

102. Within Leiston, the B1122 intersects with the B1119 (towards Saxmundham) and the B1069 (which heads south towards Knodishall and Coldfair Green) at a traffic signal controlled junction.

103. The B1069 heads south from Leiston and provides a link to the A1094 to the south. The link is designated as a zone distributor route within the Suffolk Lorry Route Network. Travelling south through Leiston and the village of Knodishall / Coldfair Green the B1069 is an urban 'B' road, subject to 30mph speed limit with footways along at least one side of the road and street lighting. Between Leiston and village of Knodishall / Coldfair Green the speed limit increases to 40mph and there is an off-road shared use footway / cycleway.

104. To the south of Knodishall / Coldfair Green the character of the road changes to a more rural 'B' road subject to the national speed limit (60mph) with the exception of a short 40mph section upon leaving Knodishall.

105. Within Knodishall / Coldfair Green, the B1069 intersects with the B1353 at a priority junction. The B1353 provides an east west link from Thorpeness to the east and the B1069 to the west. The B1353 also intersects with the B1122 at Aldringham.

106. Between the B1069 and the B1122 the B1353 Aldringham Lane is a narrow 'B' road with a footway along one side of the road. Aldringham Lane is subject to a 30mph speed limit through the built-up sections and 40mph in-between.

107. The B1353 intersects with the B1122 at a staggered priority cross roads. The B1353 then continues east towards Thorpeness. The B1353 east of the B1122

is a predominantly rural 'B' road subject to the national speed limit (60mph). At the B1353 approach to Thorpeness the road narrows and the speed limit reduces to 30mph.

108. The B1122 provides a north south link from Leiston in the north to Aldeburgh to the south. To the south of its junction with the B1353 at Aldringham the road is a predominantly rural 'B' road subject to a 40mph speed limit with intermittent sections of footway. Upon entering the more built up area of Aldeburgh the speed limit reduces to 30mph and there are footways along both sides of the road. On the approach to the junction with the A1094 there is also evidence of on-street parking.

109. The B1121 provides a north south link between the A12 and Saxmundham, the B1121 also spurs off east at Benhall Green and provides an east west link passing through the settlements of Sternfield and Friston before linking to the A1094.

110. Heading north from the A1094 the B1121 continues as a rural 'B' road subject to the national speed limit (60mph). Upon entering the built-up area of Friston the speed limit reduces to 30mph and a footway is provided along one side of the road. Upon leaving Friston the B1121 continues towards Sternfield, this section of the road has a number of localised areas where the carriageway width prevents two HGVs from passing. Through Sternfield the speed limit reduces again to 30mph, a footway is provided through the northern part of the village only.

26.5.1.3 Other Roads

111. In addition to the main 'A' and 'B' roads within the onshore highway study area, Lover's Lane / Sizewell Gap also provides a strategically important link from the B1122 to the proposed onshore development area which avoids the need for vehicles to travel through Leiston.

112. Lover's Lane / Sizewell Gap provides the main signed route for HGVs traveling to the Sizewell B nuclear power station and the industrial estates to the east of Leiston. The road also provides access to Sizewell Beach and Sizewell Village. The road is subject to a 60mph speed limit and from its junction with Sandy Lane there is a narrow footway south to the junction with King Georges Avenue. At the junction with King Georges Avenue (which links to Leiston) there is a shared use cycle / footway towards the Sizewell nuclear power stations.

113. Historically Lover's Lane / Sizewell Gap was the main access for the construction of Sizewell B nuclear power station and more recently has provided access for

construction traffic associated with the construction of the Sizewell B Dry Fuel Store and the Galloper offshore windfarm substation.

26.5.1.4 Heavy Load Routes

114. Within the onshore highway study area, the links between Lowestoft and the Sizewell nuclear power stations (A12, B1122 and Lover's Lane / Sizewell Gap) are identified by Highways England as a 'Heavy Route' (HR100). The route is also depicted graphically with ***Appendix 26.2***. This HR100 designation (as defined by Highways England) identifies routes that have been historically assessed as being suitable for carrying abnormal loads. HR100 is designated as weight group D, equivalent to a trailer weight of ~264tonnes across 12 axels or ~299tonnes across 14 axels.

26.5.2 Traffic Flow Data

115. Traffic flow data for all the key links (sections of road with similar characteristics and traffic flows) within the onshore highway study area has been captured from a number of sources, namely:

- Automatic Traffic Counts (ATCs) commissioned by SPR for 14 links within the onshore highway study area (SPR ATCs);
- ATCs from SCC for eight links within the onshore highway study areas (SCC ATCs);
- Manually classified turning counts (MCTC) for the A12 / A1094 junction provided by SCC (SCC MCTC); and
- Daily forecast baseline traffic counts provided by EDF Energy within the proposed Sizewell C nuclear power station Stage 2 consultation document for key links (Sizewell C baseline forecasts).

116. Baseline traffic flow data for the four data sets including the date and type of survey is summarised in ***Table 26.11***, the survey locations are also depicted graphically within ***Figure 26.3***. ***Table 26.11*** provides details of the total Annual Average Daily Traffic Flows (AADT) and the HGV component. This assessment uses the term HGV as a proxy for HGVs and buses / coaches recognising the similar size and environmental characteristics of the respective vehicle types.

Table 26.11 Existing Annual Average Daily Traffic Flows and Associated Data Sources

Link ID	Link Description	SPR ATCs		Sizewell C baseline forecasts		SCC ATCs		SCC MCTC	
		Total Flow	HGVs	Total Flow	HGVs	Total Flow	HGVs	Total Flow	HGVs
1	A12 north of the B1122	12,598	999	14,000	810				
2	A12 between the B1122 and A1094	11,279	976			11,248	301	12,938	857
3	A12 south of the A1094			18,700	900	17,703		17,023	1,034
4 and 14	B1122 from the A12 to Leiston	2,589	190						
5	B1121 from the A12 to Friston	1,169	46			1,118	32		
6	A1094 from the A12 to the B1121 / B1069	7,523	397	7,400	190	7,499	93	7,605	361
7	B1122 from Friston to the A1094	1,190	53						
8	A1094 from the B1121 / B1069 to Aldeburgh	5,499	203	5,300	200	4,806	130		
9 and 15	B1069 from the A1094 to Leiston	4,525	185			4,304	126		
10	B1122 from Aldeburgh to the B1353	3,159	139	3,500	110				
11	B1353 from the B1122 to Thorpeness	2,143	70						
12	Lover's Lane / Sizewell Gap	2,655	82	1,900	170	2,069	49		
13	Aldringham Lane	2,393	89						
	Link not surveyed or no data available								

117. It can be observed from ***Table 26.11*** that with regards to total traffic flows there is generally a good correlation between the four datasets. With regards to HGVs it can be noted that there is generally good correlation between the SPR ATCs, Sizewell C forecast and SCC MCTC datasets, however, the SCC ATCs do not correlate suggesting a different vehicle classification scheme may have been adopted.

118. It has been agreed with SCC (at the 18th September 2018 ETG meeting) that the traffic counts commissioned by the Applicant are representative of existing traffic flows and is therefore suitable for assessing impacts. It is noted that no counts were undertaken for link 3 by the Applicant and as such the SCC MCTCs have been adopted for this link.

119. ***Appendix 26.3*** provides a summary of all Applicant commissioned traffic counts.

120. Data from the ATCs has been assessed to identify the network weekday peak hours as 08:00 – 09:00 and 16:00 – 17:00.

26.5.3 Link Based Sensitive Receptors

121. A desktop exercise augmented by site visits has been undertaken to identify the sensitive receptors in the onshore highway study area utilising the definitions outlined in ***Table 26.8***. All 15 links within the onshore highway study area have been assessed and assigned a sensitivity.

122. Recognising that the characteristics of a link may change along its length, the 15 links have been sub-divided to reflect the varying concentration of receptors. For example, a road passing through a village providing access to a school could be considered highly sensitive, whilst the same road passing between the villages where there is no frontage development could be considered a low sensitive receptor.

123. ***Table 26.12*** details the routes and the rationale for the applied link sensitivity and ***Figure 26.4*** illustrates these routes graphically.

Table 26.12 Link Based Sensitive Receptors

Link ID	Link Description			Link sensitivity	Comments
1	A12 north of the B1122			**Low**	The link is a main 'A' Road and forms part of the SCC Strategic Lorry Route. North of the B1122 there is sporadic frontage development.
2		2a	A12 through Yoxford	**High**	The link is a main 'A' Road and forms part of the SCC Strategic Lorry Route.

Link ID	Link Description			Link sensitivity	Comments
	A12 between the B1122 and A1094				Through Yoxford the A12 is fronted by residential properties and a public house.
		2b	A12 south of Yoxford	**Low**	The link is a main 'A' Road and forms part of the SCC Strategic Lorry Route. South of Yoxford there is sporadic frontage development.
3	A12 south of the A1094	3a	A12 though Farnham	**High**	The link is a main 'A' Road and forms part of the SCC Strategic Lorry Route. The A12 through Farnham is fronted by residential properties with little separation from the road.
		3b	A12 south of Farnham to Little Glemham	**Low**	The link is a main 'A' Road and forms part of the SCC Strategic Lorry Route. South of Farnham there is sporadic frontage development.
		3c	A12 through Little Glemham / Marlesford	**High**	The link is a main 'A' Road and forms part of the SCC Strategic Lorry Route. The A12 through Little Glemham / Marlesford is fronted by residential properties with little separation from the road.
		3d	A12 west of Little Glemham / Marlesford	**Low**	The link is a main 'A' Road and forms part of the SCC Strategic Lorry Route. West of Little Glemham / Marlesford South there is sporadic frontage development.
4	B1122 from the A12 to Leiston	4a	B1122 from the A12 to Theberton	**Low**	The link forms part of the SCC Zone distributor routes for HGVs. South of A12 there is sporadic frontage development.
		4b	B1122 through Theberton	**High**	The link forms part of the SCC Zone distributor routes for HGVs. Through the village of Theberton there are residential properties, a public house and church along the road.
		4c	A12 south of Theberton to Lover's Lane	**Medium**	The link forms part of the SCC Zone distributor routes for HGVs. South of Theberton to the junction with Lover's Lane there is sporadic frontage development. Regional Cycle Route 42 runs along the B1122, between Abbey Lane and an unnamed road to the Eels Foot Inn.

Link ID	Link Description			Link sensitivity	Comments
5	B1121 from the A12 to Friston	5a	B1121 Main Road	**Low**	The link forms part of the SCC Zone local access routes for HGVs. Between the A12 and Church Hill Road there is sporadic frontage development.
		5b	B1121 Church Hill Road through Sternfield	**High**	Through the village of Sternfield there are residential properties and church along the road with minimal separation from traffic.
		5c	B1121 Sternfield to Friston	**Low**	South of Sternfield to Friston there is sporadic frontage development.
6	A1094 from the A12 to the B1121 / B1069	6a	A1094 from the A12 to Church Common	**Low**	The link forms part of the SCC Zone distributor routes for HGVs. South of A12 there is sporadic frontage development.
		6b	A1094 through Church Common	**High**	The link forms part of the SCC Zone distributor routes for HGVs. Through the village of Church Common there are residential properties and church along the road.
		6c	A1094 from Church Common to the B1121 / B1069	**Medium**	The link forms part of the SCC Zone distributor routes for HGVs. South of Church Common there is sporadic frontage development. Regional Cycle Route 42 runs along the A1094 between Priory Road and Mill Road.
7	B1121 Friston to the A1094			**High**	Through the village of Friston there are residential properties, a public house and play area that front directly on to the road.
8	A1094 from the B1121 / B1069 to Aldeburgh	8a	A1094 from the B1121 / B1069 to Aldeburgh	**Low**	The link forms part of the SCC local access routes for HGVs. From the junction with the B1121 / B1069 there is sporadic frontage development.
		8b	A1094 through Aldeburgh	**High**	The link forms part of the SCC local access routes for HGVs. Upon entering Aldeburgh there are a number of residential properties and shops that front the road.
9	B1069 from the A1094 to south of Knodishall / Coldfair Green			**Low**	The link forms part of the SCC Zone distributor routes for HGVs. North of the A1094 there is sporadic frontage development.

Link ID	Link Description			Link sensitivity	Comments
10	B1122 from Aldeburgh to the B1353	10a	B1122 through Aldeburgh	**High**	Through the built-up area of Aldeburgh there are residential properties and a public house that front directly on to the road.
		10b	B1122 from Aldeburgh to the B1353	**Medium**	Between Aldeburgh and the B1353 there are a number of residential properties.
11	B1353 from the B1122 to Thorpeness			**Medium**	At the western end of the link there are a small number of residential properties, no footway is provided to link these properties to Aldringham. Within the vicinity of Aldringham Common the link is also crossed by multiple Public Rights of Way.
12	Lover's Lane / Sizewell Gap			**Low**	The link forms part of the SCC local access routes for HGVs. From the junction with the B1122 there is sporadic frontage development.
13	B1353 Aldringham Lane			**High**	There are residential properties and a public house that front directly on to the road.
14	B1122 south of Lover's Lane to Leiston			**High**	The link forms part of the SCC Zone distributor routes for HGVs. Through Leiston there are residential properties and a public house along the road.
15	B1069 through Knodishall, Coldfair Green and Leiston			**High**	The link forms part of the SCC Zone distributor routes for HGVs. Through the villages of Knodishall and Coldfair Green and town of Leiston there are residential properties, a public house, shops and park / play area alongside the road.

26.5.4 Road Safety

124. To understand whether the proposed East Anglia TWO project would have a significant road safety impact, it is necessary to establish a baseline and identify any inherent road safety issues within the onshore highway study area. This review utilises historic STATS19[1] obtained from SCC for the most recently available period, February 2013 to February 2018 inclusive. A graphical plot of

[1] Accidents on the public highway that are reported to the police and which involve injury or death are recorded by the police on a STATS19 form. The form collects a wide variety of information about the accident (such as time, date, location, road conditions).

all Personal Injury Collisions (PICs) within the onshore highway study area is provided as ***Appendix 26.4***.

125. In consultation with SCC it has been agreed that the road safety review should examine the baseline collision data to identify those areas that are potentially sensitive to changes in traffic. This review includes:

- Examining the rate of collisions per length of road in miles (known as collision rates); and
- Reviewing the types of collisions at defined clusters to understand any patterns or trends, especially those involving HGVs and vulnerable road users (namely cyclists, pedestrians and motorcyclists).

26.5.4.1 Collision Rates

126. Collision rates have been calculated in billion vehicle miles to enable direct comparison with national road safety statistics provided within Road Casualties Great Britain[2]. The following formula has been utilised to calculate the collision rate, where 1,826 is the sample size in number of days over which the collision data has been sourced (i.e. there are 1,826 between February 2013 to February 2018).

$$\text{Collision Rate} = \frac{\text{Number of recorded PICs (per road)} \times 1 \text{ billion}}{1{,}826 \times \text{AADT} \times \text{length of road}}$$

127. A summary of the results of the analysis is presented in ***Table 26.13***, whilst details of the derivation are included as ***Appendix 26.5***.

Table 26.13 Baseline PIC Analysis

Link	No. of PICs and Severity				No. of PICs Involving Vulnerable Road Users and HGVs				Collision Rates	
	Total	Fatal	Serious	Slight	P2W*	Pedal Cycles	Peds **	HGVs	National Average	Calculated
A12 (Links 1, 2 and 3)	85	1	10	74	1	0	1	1	813	348
B1122 (Links 4 and 14)	17	0	3	14	0	2	1	3	760	654
B1122	2	0	0	2	1	0	0	0	760	133

[2] Road Casualties Great Britain, prepared by Department for Transport, September 2017.

Link	No. of PICs and Severity				No. of PICs Involving Vulnerable Road Users and HGVs				Collision Rates	
	Total	Fatal	Serious	Slight	P2W*	Pedal Cycles	Peds **	HGVs	National Average	Calculated
(Link 10)										
B1121 (Link 5 and 7)	6	1	2	3	0	2	0	0	760	819
A1094 (Links 6 and 8)	36	0	4	32	4	3	1	3	487	466
B1069 (Links 9 and 15)	9	0	0	9	0	2	1	3	760	403
B1353 (Link 11 and 13)	1	0	0	1	1	0	0	0	760	105
Lover's Lane / Sizewell Gap (Link 12)	3	0	1	2	0	0	0	2	760	248

*	Powered two-wheelers (e.g. motorcycles and scooters)
**	Pedestrians

128. It is evident from ***Table 26.13*** that the B1121 (links 5 and 7) has a collision rate that is higher than the national average for a comparable road type and may be particularly sensitive to changes in traffic flow / type. In addition, the A1094 (links 6 and 8) has a collision rate that is just below the national average.

129. These links (links 5, 6, 7 and 8) are considered potentially sensitive to changes in traffic flow and are therefore assessed further in ***section 26.6.1.10***. The remaining links have collision rates below the national average and are therefore not considered further.

26.5.4.2 Collision Clusters

130. During consultation with SCC five collision cluster sites were identified. The following section provides a review of the types of collisions occurring at these five clusters to understand any emerging patterns or trends that could potentially be exacerbated by an increase in traffic. The location of the five clusters are depicted graphically within ***Figure 26.5***.

26.5.4.2.1 Cluster 1 – A12 / B1119 Rendham Road Junction

131. Cluster 1 is located at the junction of the A12 and B1119 to the west of Saxmundham. The junction comprises of a staggered priority junction with right turn lanes.

132. During the five year study period, a total of nine collisions have been recorded at this staggered junction, resulting in seven slight injuries, one serious injury and one fatal injury. Five of these collisions, including a fatal collision involving a motorcyclist, occurred at the B1119 Rendham Road north junction and four occurred at the B1119 Rendham Road south junction.

133. The five collisions at the B1119 Rendham Road north junction were the result of vehicles turning right out of the minor road. All of the collisions were attributed to emerging drivers failing to look properly or to judge the speed of traffic on the A12.

134. The four collisions recorded at the B1119 Rendham Road south junction included one collision resulting in serious injury and three resulting in slight injury. Three of the collisions at the B1119 Rendham Road south junction were the result of vehicles turning out of the minor road. The remaining collision was a rear end shunt within the centre of the junction. The majority of these collisions were attributed to a failure to look properly or to judge traffic speeds on the A12.

135. It is considered that there is a pattern of collisions involving vehicles right turning from Rendham Road to the A12. This junction is considered to be potentially sensitive to changes in traffic flow and is therefore assessed further in ***section 26.6.1.10***.

26.5.4.2.2 Cluster 2 – A1094 / B1069 Junction

136. Cluster 2 is located at the junction of the A1094 and B1069 to the south of Knodishall. The junction comprises of simple priority junction.

137. A total of six collisions have been recorded at this crossroads during the five-year study period, all resulting in slight injury. Five of the six collisions took place in 2013 between March and November with the remaining collision recorded in August 2015. No collisions have been recorded at the junction between August 2015 and the end of the study period.

138. Of the five collisions that occurred in 2013 one was as a result of junction overshoot from the B1069 onto the A1094 due to failing to see the give way signs. Two collisions were attributed to vehicles turning right out of the B1069 across the path of oncoming traffic on the A1094. The final two collisions were a rear end shunt collisions on the minor road at the give way line and an intoxicated

driver swerving to avoid collision with a deer. Since 2013 there has only been one collision and this was attributed to a junction overshoot due to gravel deposits on the carriageway surface.

139. It is considered that as five of the six collisions occurred within 2013 and there has only been one collision since (that is not attributable to the highway layout) there is not an emerging pattern of collisions at this junction. This junction is therefore not assessed further.

26.5.4.2.3Cluster 3 – A12 / A1094 Junction

140. Cluster 3 is located at the junction of the A12 and A1094 to the north of Farnham. The junction comprises of a priority junction with central right turn lane and westbound deceleration lane.

141. A total of 17 collisions have been recorded at this junction during the study period, resulting in 16 slight injuries and one serious injury. Eleven of the collisions involved vehicles turning across the path of traffic on the A12; nine of these involved vehicles turning right into the A1094 from the A12, including the serious collision, with the remaining two collisions occurring as vehicles turned right out of the A1094. Six of the collisions were rear end shunt type collisions; three within the central reserve, and three on the A1094 approach to the A12.

142. It is considered that there is a pattern of right turning collisions between the A12 and A1094. This junction is considered to be potentially sensitive to changes in traffic flow and is therefore assessed further in ***section 26.6.1.10***.

26.5.4.2.4Cluster 4 – A1094 / B1069 / Unnamed Road Junction

143. Cluster 4 is located at the junction of the A1094, B1069 and an unnamed road at Church Common. The junction comprises of a staggered priority junction with central right turn lanes and a westbound deceleration lane.

144. A total of seven collisions have occurred at, or on the approach to the staggered junction within the five year study period. Five of these collisions resulted in slight injury with the remaining two collisions leading to serious injuries.

145. Three of the collisions were due to vehicles pulling out of the minor roads onto the A1094 across the path of oncoming vehicles. Two of these were recorded as drivers pulled out of the unnamed road to the north.

146. Two of the collisions were due to a loss of control, one of which was due to icy surface conditions, and the other was due to excessive speed. Both resulted in serious injury to the vehicle occupants.

147. One collision involved a pedestrian who was struck from behind by a car during the hours of darkness. The final collision occurred as an agricultural vehicle towing a trailer turned north off the main road. As the trailer swung into the westbound carriageway it was struck by a car, resulting in slight injury to the driver.

148. The causation factors indicate that there is no emerging pattern of collisions at this location. This junction is therefore not considered further.

26.5.4.2.5 Cluster 5 – A12 / B1122 Junction

149. Cluster 5 is located at the junction of the A12 and the B1122 at Yoxford. The junction comprises of a priority junction with right turn lane.

150. A preliminary review of the plotted collisions locations, has identified six collisions have been recorded at the junction of A12 and B1122, however, a detailed review of the descriptions has confirmed that just four collisions actually occurred at the junction. The remaining two collisions having been plotted incorrectly.

151. All four of the collisions occurring at the junction of the A12 and B1122 resulted in slight injuries. Two of the collisions were as a result of single vehicles losing control whilst negotiating the A12, one collision involved a rear end shunt as a driver approached the A12 from the B1122. The final collision appears to be a result of a collision between two vehicles turning between the A12 and B1122.

152. The causation factors indicate there is no emerging pattern of collision types, and therefore this junction is not assessed further.

153. The following ***Table 26.14*** provides a summary of the collision cluster analysis.

Table 26.14 Summary of Collision Cluster Analysis

Cluster notation	Location	Emerging Pattern of Collisions (Y / N)	Further Assessment (Y / N)
Cluster 1	A12 / B1119 Rendham Road Junction	Yes	Yes
Cluster 2	A1094 / B1069 Junction	No	No
Cluster 3	A12 / A1094 Junction	Yes	Yes
Cluster 4	A1094 / B1069 / Unnamed Road Junction	No	No
Cluster 5	A12 / B1122 Junction	No	No

26.5.5 Sensitive Junctions (Capacity)

154. During consultation with SCC and Highways England, the junctions that are potentially sensitive to the changes in traffic (due to capacity constraints) have

been identified as detailed within ***Table 26.15*** (and depicted graphically on ***Figure 26.6***). These junctions are subject to further assessment in ***section 26.6*** and ***26.7***.

Table 26.15 Junctions Identified as Sensitive to Changes in Traffic

Junction notation	Location	Junction description
Junction 1	Junction of the A12 and A1094	Major / Minor priority junction with single lane dualling
Junction 2	Junction of the A12, B1122 and A1120	Staggered major / minor priority junction with a ghost island for the A12 to B1122 turn
Junction 3	Junction of the A1094 and B1069	Major, minor priority junction
Junction 4	Junction of the A12, A14 and A1156 (A14 Junction 58)	Grade separated roundabout junction
Junction 5	Junction of the A12, A14 and A1214 (A14 Junction 55)	Signalised grade separated roundabout junction

26.5.6 Sensitive Locations (Highway geometry)

155. During consultation with SCC, the following two locations were identified as posing a potential constraint to two HGVs passing and are subject to further assessment in ***section 26.6,*** and shown on ***Figure 26.6***:

- Major / Minor priority junction of the A1094 and B1069; and
- Roundabout junction of the A1094 and B1122.

26.5.7 Anticipated Trends in Baseline Condition

156. It is considered that the earliest date that construction could commence would be 2024; as such a baseline year for background traffic of 2024 has been derived for the purpose of the assessment. This assumed construction start date has been used for the assessment presented in this PEIR. Any refinement of the programme prior to submission of the DCO will be captured in the Environmental Statement.

157. To take account of sub-regional growth in housing and employment, a proportionate approach to forecasting future traffic growth has been agreed with SCC. The baseline flows have been factored to the future year baseline traffic demand using factors supplied by WSP (consultants working on behalf of SCC). The factors have been derived from the Suffolk Coastal Development Plan process taking into account the forecasts for committed and emerging development trajectories. A summary of the factors is presented in ***Appendix 26.6***.

158. There is also the requirement to consider planned events such as Sizewell B outages or the Latitude Festival (an annual music festival held near Southwold). Adopting a proportionate approach to assessment, it is not proposed to undertake sensitivity tests of these temporary 'spikes' in baseline traffic. It is considered that potential impacts are better mitigated by the outline CTMP that would seek to manage construction traffic demand during planned events through robust communication plans.

26.6 Potential Impacts

26.6.1 Potential Impacts during Construction

26.6.1.1 Trip Generation and Assignment

159. This section forecasts the traffic generated by the proposed East Anglia TWO project and distributes vehicle trips to the highway network to establish a basis for assessing the potential transport impacts.

160. The realistic worst case traffic demand scenarios have been developed by examining:

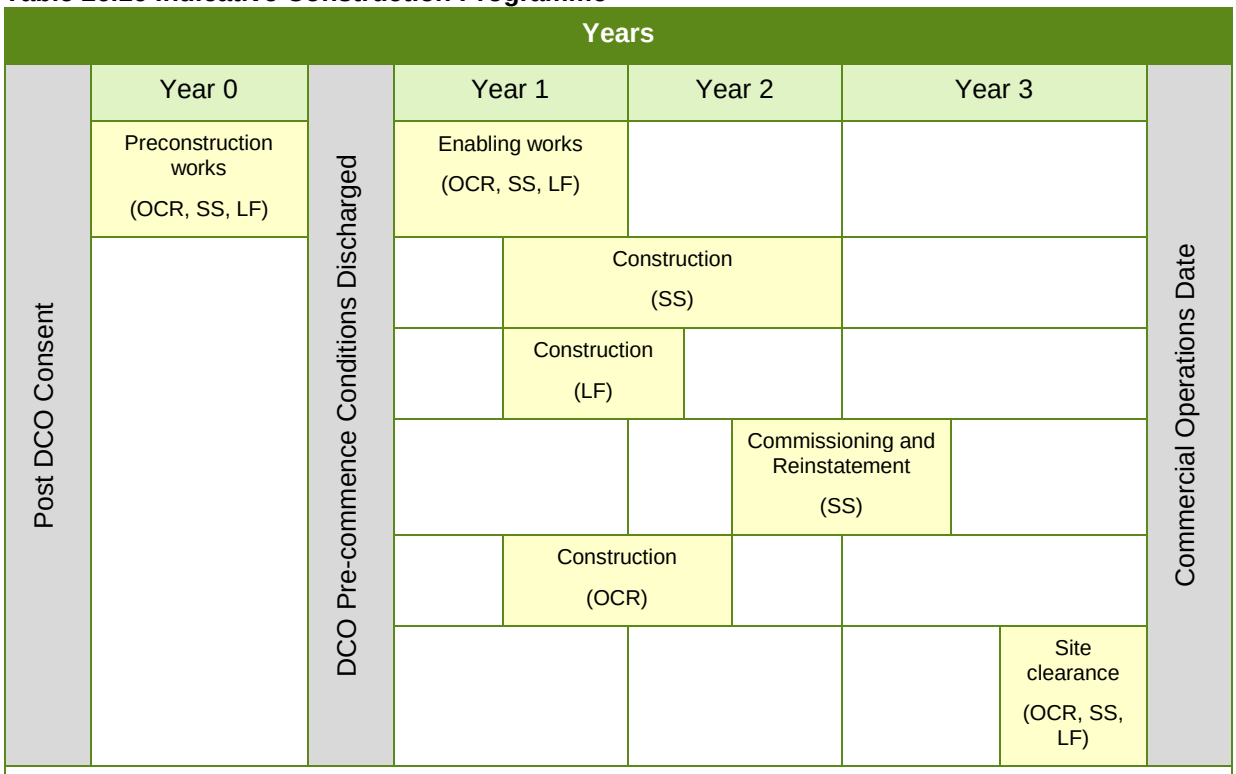
- The likely minimum construction programme;
- The earliest commencement date;
- Demand for materials and personnel;
- Likely mode share;
- Likely shift patterns;
- Likely delivery windows; and
- The distribution of traffic.

161. The assumptions that underpin the worst case scenario are discussed below and have been developed with the input from a specialist construction consultant (Wardell Armstrong) and are augmented with experience gained through the construction of the proposed East Anglia ONE project.

26.6.1.2 Construction Programme

162. ***Table 26.16*** provides an overview of the indicative construction programme for the proposed East Anglia TWO project as used in this assessment.

Table 26.16 Indicative Construction Programme



Key	
OCR	Onshore cable route
SS	onshore substation
LF	Landfall

163. Full details of all construction activities are contained within ***Chapter 6 Project Description*** and a more detailed construction programme are provided in ***Appendix 26.7***.

164. The construction programme (provided at ***Appendix 26.7***) represents a realistic minimum duration for each construction activity and therefore the worst case in terms of traffic intensity. Any lengthening of the construction duration would reduce the intensity of daily traffic and therefore the associated impacts.

165. The construction timeframe presented for assessment is provided in the format of month 1, 2, etc. and is representative of the duration and dependency of each activity. It is considered that the earliest date that construction could commence would be 2024; as such a baseline year for background traffic of 2024 has been derived for the purpose of the assessment.

26.6.1.3 Trip Distribution

166. At the time of DCO submission, the supply chain for materials and workforce cannot be informed by early contractor involvement as the procurement process has not commenced. Therefore, for the purpose of the assessment, traffic distribution is based upon worst case assumptions for HGV distributions and refined socio economics data for employees.

167. For the purpose of a worst case HGV assessment HGVs have been distributed to the A12 south (100%) and the A12 north (100%) to an origin/destination outside the study area. In applying this 'sensitivity test' it should be noted:

- The traffic flow data presented for the A12 links is the maximum flow that could occur from either the north or the south. The data does not represent double counting of HGV demand; and
- HGV distribution on the local network bounded by the A12 does not change for a north or south scenario.

168. To inform the potential distribution of construction employees for the proposed East Anglia TWO project, the availability of local labour and rented accommodation has been reviewed as part of the socio economics study to inform the potential employee distribution.

169. The types of specialist skills required for projects such as the proposed East Anglia TWO project means that construction personnel often have to be drawn from across the country and not necessarily from local labour sources. This is addressed within ***Chapter 30 Tourism Recreation and Socio Economics*** which estimates that 34% of the workforce would be drawn from the local area (known as 'resident' labour). The remaining (66%) of the workforce would be beyond a daily commute (known as 'in-migrant' labour).

170. Those personnel who are not local (in-migrant labour) i.e. beyond a reasonable daily commute (up to a 45 minute drive from Leiston) are likely to base themselves within temporary local accommodation. To inform the distribution of in-migrant labour the availability of local rented accommodation within a 45 minute commute of the proposed East Anglia TWO project has been captured.

171. ***Table 26.17*** provides a summary of likely distribution, point of entry into the onshore highway study area and origin for in-migrant labour. The distribution set out in ***Table 26.17*** includes for 'distance decay' i.e. those areas closest to the onshore cable corridor are likely to be most attractive, even though areas further away may have a greater provision of accommodation.

172. The distance decay approach divides the number of bed spaces by the journey time (taken from a route planner) from the centre of the postcode cluster to the centre of the onshore cable corridor, near Leiston. Further details of the distribution of local rented accommodation and the application of distance decay are provided within ***Appendix 26.8***.

Table 26.17 Distribution of In-migrant Labour

Point of entry to onshore highway study area	% distribution (in-migrants)	Incorporating the areas of
Link 1 (A12 north of the B1122)	31.9	Halesworth, Bungay, Beccles, Southwold and Lowestoft
Link 2 (A12 between the B1122 and A1094)	13.0	Saxmundham
Link 3 (A12 south of the A1094)	28.7	Ipswich, Felixstowe, Framlingham and Woodbridge
Link 8 and 10 (A1094 and B1122 through Aldeburgh)	17.3	Aldeburgh
Link 14 and 15 (B1122 and B1069 through Leiston)	9.1	Leiston

173. To inform the distribution of the 34% of employees who could potentially be drawn from the local area (resident workers), the socio economics study has examined the distribution of residents within the local area (a 60 minute drive of Leiston) with the relevant skill sets.

174. The following ***Table 26.18*** provides a summary of likely distribution, point of entry onto the onshore highway study area and origin for resident workers. Similar to the distribution of in-migrants, the distribution of resident workers set out in ***Table 26.18*** includes for distance decay.

175. Further detail of the distribution of resident workers is provided within ***Appendix 26.9***.

Table 26.18 Distribution of Resident Workers

Point of entry to onshore highway study area	% distribution (residents)	Incorporating the areas of
Link 1 (A12 north of the B1122)	31.0	Halesworth, Harleston, Long Stratton, Bungay, Norwich, Great Yarmouth, Lowestoft, Beccles and Southwold
Link 2 (A12 between the B1122 and A1094)	8.3	Saxmundham

Point of entry to onshore highway study area	% distribution (residents)	Incorporating the areas of
Link 3 (A12 south of the A1094)	42.4	Manningtree, Colchester, Ipswich, Felixstowe, Framlingham, Woodbridge and Bury St. Edmunds
Link 4 (B1122 from the A12 to Leiston)	10.9	Stowmarket, Diss and Eye
Link 8 and 10 (A1094 and B1122 through Aldeburgh)	1.6	Aldeburgh
Link 14 and 15 (B1122 and B1069 through Leiston)	5.8	Leiston

26.6.1.4 Material and Personnel Demand

176. The traffic generation that will inform this assessment will be derived and undertaken by way of a 'first principles' approach. The first principles approach generates traffic volumes from an understanding of material quantities and personnel numbers required for the proposed East Anglia TWO project and converts these metrics into vehicle movements.

177. Following an approach established for the East Anglia THREE DCO application, construction consultants (Wardell Armstrong) were commissioned to provide additional industry expertise to develop the methodologies and quantities that underpin the assessment for the proposed East Anglia TWO project. This advice has been augmented with data provided by National Grid for the construction of the proposed National Grid substation and National Grid connection infrastructure.

178. ***Appendix 26.10*** details the forecast quantity of materials and plant movements that could be expected for each of the construction activities.

179. It is typical for construction projects that employees will travel to work together and in contractor provided vehicles. It is reasoned that an employee to vehicle ratio of 2.5 employees per vehicles would provide a worst case scenario when considering:

- The established industry exemplar of Heathrow Terminal 5 (BAA 2003, Terminal 5 Construction Workers Public Transport Strategy 2003 / 04) established that a car share ratio of 3 employees per vehicle was achievable; and
- The ratio does not take into account the propensity for employees to walk, cycle or use public transport or the limitation of car parking on site.

180. However, during the development of the East Anglia THREE project SCC expressed concerns regarding the suitability of adopting an employee to vehicle ratio of 2.5 and required a sensitivity test utilising a value of 1.5 employees per vehicle. This sensitivity ratio is therefore adopted for the purposes of screening impacts for proposed East Anglia TWO project. However, it has been discussed through consultation with SCC that should mitigation of employee vehicle movements be required, a higher employee to vehicle ratio may be adopted (and if so, would be justified).

181. This assessment therefore assumes all employee trips have been reduced by a factor of 1.5 at entry point to the onshore highway study area (as shown in ***Appendix 26.12***). This approach simulates multi pick up of employees prior to entering the onshore highway study area typically by crew-van or car share syndicates.

26.6.1.5 Peak Construction Demand

182. The onshore infrastructure includes works at the following seven discrete sites:

- Landfall location;
- Onshore cable route section 1;
- Onshore cable route section 2;
- Onshore cable route section 3;
- Onshore cable route section 4;
- Onshore substation; and
- National Grid Substation and Infrastructure.

183. The location of these seven discrete sites in relation to the proposed access locations is depicted graphically within ***Figure 26.7***.

184. To develop the construction programme industry guidance for productivity has been utilised to forecast the shortest realistic construction duration for individual activities for each of the seven discrete sites (and therefore maximum intensity).

185. ***Appendix 26.11*** disaggregates the proposed East Anglia TWO project traffic demand (contained within ***Appendix 26.10***) by activity over time to provide total one-way (deliveries) and two-way HGV and LCV movements per day. ***Table 26.19*** and ***Table 26.20*** provide 'snap shot' summaries of the peak daily HGV and employee movements per discrete site respectively.

Table 26.19 Daily Two-Way HGV Movements per Month

Discrete sites	Months																	
	1	2	3	4	5	6	7	8	9	10		30	31	32	33	34	35	36
Landfall location	22	38	35	25	17	15	15	15	15	15		0	0	0	0	0	0	0
Onshore cable route section 1	24	22	22	22	46	44	20	27	18	22		0	0	0	0	41	37	41
Onshore cable route section 2	24	22	22	22	36	39	17	22	17	22		0	0	0	0	41	37	41
Onshore cable route section 3	25	23	23	23	25	23	10	15	13	18		0	0	0	0	35	31	35
Onshore cable route section 4	25	25	25	25	46	46	39	44	44	22		0	0	0	0	71	71	71
Onshore substation	13	13	13	51	39	41	55	51	50	29		0	2	0	0	17	15	17
National Grid Substation and Infrastructure	45	45	45	45	45	45	25	25	25	5		18	33	33	33	27	27	27
Total two-way * daily HGV movements accessing all discrete sites	**178**	**188**	**185**	**213**	**254**	**253**	**181**	**199**	**182**	**133**		**18**	**35**	**33**	**33**	**232**	**218**	**232**

Key	
	Peak period
*	Total two-way movements represent the inbound and outbound trip, i.e. 254 two-way movements equates to 127 arrivals and 127 departures

Table 26.20 Daily Two-Way Employees Movements per Month

Discrete sites	Months																	
		7	8	9	10	11	12	13	14	15	16	17	18		32	33	34	35	36
Landfall location		8	8	8	8	8	8	8	20	22	32	32	30		0	0	0	0	0
Onshore cable route section 1		51	48	48	51	49	55	54	51	58	58	58	45		21	21	53	53	50
Onshore cable route section 2		34	31	31	34	32	38	37	34	41	41	38	28		4	4	36	36	33
Onshore cable route section 3		31	30	30	33	31	34	34	34	34	34	28	28		4	4	36	36	33
Onshore cable route section 4		38	40	40	33	31	34	34	34	34	34	28	28		4	4	39	39	36
Onshore substation		48	42	42	32	32	36	36	45	45	51	50	43		14	14	37	37	37
National Grid Substation and Infrastructure		7	8	8	8	8	8	14	14	14	19	19	19		17	17	14	14	14
Total two-way * daily employee movements accessing all discrete sites		**217**	**237**	**207**	**199**	**191**	**213**	**217**	**232**	**248**	**269**	**253**	**221**		**64**	**64**	**215**	**215**	**203**

Key	
	Peak period
*	Total two-way movements represent the inbound and outbound trip, i.e. 269 two-way movements equates to 134 arrivals and 134 departures

186. It can be observed from ***Table 26.19*** and ***Table 26.20*** that construction traffic demand fluctuates according to the intensity of activities that are occurring at any point in the programme.

187. The seven discrete sites have then been assigned to the overarching construction programme for the proposed East Anglia TWO project informed by understanding which sites (and associated activities) can realistically be implemented concurrently.

188. This approach results in all seven sites of the onshore infrastructure being constructed concurrently, albeit with peak activity occurring at different times during the construction programme. This means that for any particular month, the seven sites would display different peak demand with unique traffic assignments and impacts on discrete parts of the highway network. Noting this, it would be incorrect to select a discrete time period as being representative of the peak impact on the entire highway network.

189. To address this issue and develop a worst case impact upon the local highway network, the peak traffic demand for each of the seven sites has been added together to create a theoretical 'in-combination worst case' month whereby the peak construction activity for all seven sections would occur concurrently. This method has the advantage of assessing the peak impact on all links and is therefore appropriate for applying GEART (Rule 1 and 2) screening.

190. However, there is a drawback in that the potential combined traffic flows on the A12 are over estimated by assigning traffic flows for seven sites of peak activity. To place the 'in-combination' worst case approach in context for the impact assessment, it has been established that a peak programme demand of 331 (two-way) vehicle movements per day (i.e. 166 arrive and 166 depart) all of which would have an origin on the A12. However, the worst case month impact would be 254 two-way HGV movements per day. It has therefore been agreed with SCC and Highways England that for the A12, a worst case month period is adopted.

26.6.1.6 Construction Traffic Assignment

191. Having derived an in-combination worst case it is necessary to assign the construction traffic to the highway network. The traffic assignment on the highway network will be determined by where access is provided to the proposed onshore development area.

192. The following ***Table 26.21*** describes the proposed access strategy, the location of the proposed accesses and associated infrastructure components which are served. This information is also depicted graphically within ***Figure 26.7***.

Table 26.21 Proposed East Anglia TWO Accesses and Associated Infrastructure Components

Infrastructure component	Access	Route
Landfall (Access option 1)	1 (link 12)	Vehicles to travel from the A12 via the B1122 and Lover's Lane / Sizewell Gap.
Landfall (Access option 2)	3 (link 11)	Vehicles to travel from the A12 via the A1094 towards Aldeburgh before heading north on the B1122 and then turning on to the B1353.
Onshore cable route section 1	1 (link 12)	Vehicles to travel from the A12 via the B1122 and Lover's Lane / Sizewell Gap.
Onshore cable route section 2	2 (link 12)	Vehicles to travel from the A12 via the B1122 and Lover's Lane / Sizewell Gap. Vehicles wishing to access south of B1353 would cross the B1353 at access 4 and 5.
Onshore cable route section 3	8 (link 9)	Vehicles to travel from the A12 via the A1094 before heading north to access 8 on the B1069.
Onshore cable route section 4	9 (link 9)	Vehicles to travel from the A12 via the A1094 before heading north to access 9 on the B1069. Works to the west of Grove Road would cross Grove Road at access 10 and 11.
East Anglia TWO Substation	9 (link 9)	Vehicles to travel from the A12 via the A1094 before heading north to access 9 on the B1069, vehicles would then travel via the haul road and crossing Grove Road at access 10 and 11.
National Grid Substation and Infrastructure		

193. It should be noted from ***Table 26.21*** that two options exist for accessing the proposed landfall location. Option 1 represents direct access from the B1353 near Thorpeness. Option 2 represents a solution where access is taken from Sizewell Gap (at access 1) with vehicles then tracking south on the temporary haul road to towards the proposed landfall location. In order to consider a worst case, 100% of landfall traffic is assigned to access 1 and access 3.

194. There is a small part of section 3 of the onshore cable route that is located either side of the B1122 to the south of Aldringham (***Figure 26.7***). At this stage three options are being investigated for serving section 3B. These include serving section 3B directly from access 2 or 8, or providing two new accesses from the B1122.

195. In order to consider a worst case, it has been assumed that all traffic for Section 3B would initially travel to access 8 before being consolidated and sent onwards to accesses 6 and 7.

196. The proposed access strategy is promoted for all employees with the exception of the National Grid employees. These employees would instead access from access 12, the B1121 link 5 (to the north of Friston) once this access is available.

197. ***Appendix 26.12*** details the assignment of HGV and employees traffic to highway network.

26.6.1.7 Traffic Impact Screening

198. In accordance with the GEART (Rule 1 and Rule 2), a screening process has been undertaken for the onshore highway study area to identify routes that are likely to have sufficient changes in traffic flows and therefore require further impact assessment.

199. ***Table 26.22*** summarise the assigned daily peak two-way vehicle movements (i.e. arrivals and departures) of all materials, personnel and plant during the peak in-combination month when distributed across the highway network. ***Appendix 29.13*** graphically depicts this demand on the highway network.

200. ***Table 26.22*** also provide a comparison of the peak daily construction flows with the forecast background daily traffic flows in 2024 and identifies the links exceeding the GEART screening thresholds.

Table 26.22 Existing and Proposed Daily Traffic Flows

Link ID	Link Description	Link sensitivity	Background 2024 flows (24Hr AADT)		Forecast Construction Vehicle Movements (two-way)		Percentage Increase	
			All vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
1	A12 north of the B1122	Low	13,763	1,069	375	254	3%	24%
2	A12 between the B1122 and A1094	Low to High	12,320	1,045	323	254	3%	24%
3	A12 south of the A1094	Low to High	18,807	1,120	382	254	2%	23%
4	B1122 from the A12 to Leiston	Low to High	2,818	203	268	125	10%	61%
5	B1121 from the A12 to Friston	Low to High	1,273	49	63	0	5%	0%
6	A1094 from the A12 to the B1121 / B1069	Low to High	8,223	425	359	244	4%	58%

Link ID	Link Description	Link sensitivity	Background 2024 flows (24Hr AADT)		Forecast Construction Vehicle Movements (two-way)		Percentage Increase	
			All vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
7	B1121 Friston to the A1094	High	1,296	57	33	0	3%	0%
8	A1094 from the B1121 / B1069 to	Low to High	6,013	217	100	45	2%	21%
9	B1069 from the A1094 to south of Knodishall / Coldfair Green	Low	4,928	198	460	213	9%	108%
10	B1122 from Aldeburgh to the B1353	Medium to High	3,440	149	100	45	3%	30%
11	B1353 from the B1122 to Thorpeness	Medium	2,334	75	81	38	3%	51%
12	Lover's Lane / Sizewell Gap	Low	2,892	88	300	125	10%	142%
13	Aldringham Lane	High	2,606	95	38	0	1%	0%
14	B1122 south of Lover's Lane to Leiston	High	2,818	203	161	0	6%	0%
15	B1069 through Knodishall, Coldfair Green and Leiston	High	4,928	198	160	0	3%	0%
	Exceeds GEART screening thresholds							

201. In accordance with GEART only those links that are showing greater than 10% increase in total traffic flows (or HGV component) for sensitive links, or greater than 30% increase in total traffic or HGV component for all other links, are considered when assessing the traffic impact upon receptors.

202. It is noted from ***Table 26.22*** that links 1, 5, 7, 13, 14 and 15 are below the GEART screening thresholds and are therefore not considered further in the impact assessment. The remaining links (highlighted within ***Table 26.22***) are all above the GEART screening thresholds and are therefore considered further.

203. The following paragraphs summarise the assessment of construction traffic impacts on the effects identified as being susceptible to changes in flow.

26.6.1.8 Impact 1: Severance

204. The peak daily change in total traffic flow for all screened links is significantly less than a 30% change in total traffic, therefore, applying the GEART severance threshold (***Table 26.9***) the magnitude of effect is assessed as very low on low to high sensitivity links giving a maximum impact of **negligible** to **minor adverse.**

205. Noting impacts are assessed as no greater than minor adverse for all screened links, no mitigation further to that embedded within the design of the proposed East Anglia TWO project is considered necessary.

26.6.1.9 Impact 2: Pedestrian Amenity

206. The peak daily change in total flows or HGV component for links 9 and 12 is greater than the 100% GEART impact threshold, which suggests adverse amenity impacts may be experienced.

207. Link 9 comprises of the B1069 from the junction of the A1094 to the south of Knodishall. This link is assessed as low value sensitivity noting there is minimal frontage development, and no footways along the road, suggesting limited pedestrian demand. The link is subject to a 108% increase in HGVs (i.e. an additional 213 HGVs against a baseline of 198 HGVs per day) and therefore the magnitude of effect is assessed as medium on a low sensitivity link resulting in a **minor adverse** impact.

208. Link 12 comprises Lover's Lane / Sizewell Gap. This link is assessed as having low value sensitivity noting there is minimal frontage development and pedestrians and cyclists are segregated from traffic with a dedicated shared use pedestrian footway / cycleway. The link is subject to a 142% (125 HGVs) increase in HGVs (against a baseline of 88 HGVs per day) and therefore the magnitude of effect is assessed as medium on a low sensitivity link resulting in a **minor adverse** impact.

209. Noting impacts are assessed as no greater than minor adverse for all screened links, no mitigation further to that embedded within the design of the proposed East Anglia TWO project is considered necessary.

26.6.1.10 Impact 3: Road Safety

26.6.1.10.1 Impacts Prior To Mitigation

210. ***Table 26.23*** provides a summary of collision clusters and links with a collision rate higher than national average for comparable roads identified in ***section 26.5.4. Table 26.23*** also includes details of the peak increase in daily

construction flows in comparison to the forecast background daily traffic flows in 2024 (being the assumed worst case realistic start of construction).

Table 26.23 Collision Analysis

Sensitive Links	Description	% increase		Summary
		All vehicles	HGVs	
Cluster 1 (Link 2)	A cluster of nine collisions at the junction of the junction A12 and B1119 Rendham Road that demonstrates a pattern of collisions involving vehicles right turning from Rendham Road on to the A12.	3%	24%	No construction traffic is projected to turn from the B1119 to A12. This routing strategy would be secured through controls and measures (such as direction signing and delivery instructions) embedded within the outline CTMP. It is therefore considered that an increase in total traffic of 3% through the junction represents a very low magnitude of effect on a potentially high sensitive receptor. Therefore, the impact is assessed as **minor adverse**.
Cluster 3 (Link 2, 3 and 6)	A cluster of 17 collisions at the junction of the A12 and A1094 that demonstrates a pattern of collisions between vehicles turning between the A12 and A1094.	4%	58%	It is considered that the change in HGV traffic could potentially lead to significant impacts. Further assessment is outlined in paragraphs 215 to 219.
B1121 (Links 5 and 7)	It has been identified that the number of collisions along the B1121 is higher than the national average for comparable roads.	5%	0%	It is considered that a peak change in total traffic of 5% represents a very low magnitude of effect on a potentially high sensitive receptor. Therefore, the impact is assessed as **minor adverse**.
A1094 (Links 6 and 8)	It has been identified that the number of collisions along the A1094 is just below the national average for comparable roads.	4%	58%	It is considered that the change in HGV traffic could potentially lead to significant impacts. Further assessment is outlined in paragraphs 213 to 214.

211. ***Table 26.23*** identifies that of the two potentially sensitive collision clusters within the onshore highway study area, Cluster 1 would experience a very low magnitude of effect on a potentially high sensitive receptor resulting in a **minor adverse** impact. The remaining Cluster 3 would experience increases in HGV traffic, which could potentially result in significant impacts and is therefore considered further in the assessment.

212. In addition to the collision clusters, ***Table 26.23*** identifies that of the two potentially sensitive links within the onshore highway study area, the B1121 would experience a very low magnitude of effect on a potentially high sensitive receptor, resulting in a **minor adverse** impact. The links along the A1094 would experience increases in HGV traffic which could potentially result in significant impacts and is therefore considered further in the assessment.

213. In order to understand if the projected increases in traffic on the A1094 could have a potentially adverse impact upon road safety, it is necessary to consider the types, times, and locations of the collisions in detail. The A1094 is identified as having a collision rate (per billion vehicle miles) of 466. This is just below the national average collision rate for comparable roads of 487 and has experienced 36 collisions within the last five years (equivalent to 7.2 collisions per year). However, a review of the annual trend in collisions has identified that of the 36 collisions, 12 occurred in 2013, eight in 2014, six in 2015, five in 2016 and five in 2017. It is therefore reasoned that there is a downward trend in collision rates and if this trend continued, the link would have a collision rate significantly below the national average for comparable roads.

214. Noting that the link has a collision rate similar to national averages and in the last three years there has been a significant reduction in collisions, the link is reassessed as having a low sensitivity value. An increase in total traffic of 4% and HGV traffic of 58% is considered to represent a medium magnitude of effect on a low value sensitive receptor. Therefore, the impact is assessed as **minor adverse**.

215. In order to understand if the projected increase in traffic through Cluster 3 (the junction of the A1094 and A12) could have a potentially significant impact, a further, more detailed investigation of the 17 collisions has been undertaken. It has been established that of the 11 collisions involving vehicles turning between the A12 and A1094, nine are attributed to vehicles turning right from the A12 onto the A1094, and colliding with vehicles travelling south on the A12. All of these 11 collisions were between cars.

216. Typically, such collisions are the result of either poor visibility of oncoming vehicles or poor gap acceptance. A review of the existing highway environment has established that there is good forward visibility at this location and in addition, all the collisions occurred during daylight conditions. It is therefore reasoned that the collisions are the result of car drivers taking unnecessary risks and crossing in gaps in the traffic.

217. The remaining eight collisions, involved three rear end shunts, one the A1094 approach, three on the A12 approach and two collisions between vehicles turning

right from the A12 on the A1094. These collisions are considered to be more 'typical' for a junction of this type.

218. A review of the baseline highway conditions, has identified that a number of road safety measures have already been introduced, specifically for drivers on the A12 travelling south, these include:

- Advanced signing warning of an 'accident site';
- A safety camera to enforce the 50mph speed limit; and
- High friction road surfacing on the approach to the junction.

219. It is considered that an increase in HGV traffic of 58% represents a medium magnitude of effect on a high value sensitive receptor. Therefore, the impact is assessed as **major adverse**. Noting the potential for significant road safety impacts at the junction of the A12 and A1094 additional mitigation measures are required and discussed further in ***section 26.6.1.10.2***.

26.6.1.10.2 Additional Mitigation Measures

220. It is understood that as part of the SEGWay proposals (bypassing the villages of Marlesford, Little Glemham, Stratford St. Andrew and Farnham) SCC propose to replace the junction of the A12 and A1094. To date, SCC have consulted on two options for a single and dual carriageway bypass and are awaiting a decision from the DfT.

221. The replacement of the existing junction would help to alleviate the existing road safety issues and provide a modern standard compliant junction. However, it is unclear at this stage whether the SEGWay proposals would be delivered prior to the commencement of construction of the proposed East Anglia TWO project.

222. It is therefore necessary to develop a package of mitigation measures that allows the proposed East Anglia TWO project to proceed independently of the SEGWay proposals whilst also not compromising the potential deliverability of the SEGWay proposals.

223. The following additional measures would therefore be applied to reduce the impacts associated with the existing issue of drivers right turning from the A12 to A1094 colliding with traffic travelling south on the A12:

- A reduction in the posted speed limit in advance of the junction from 50mph to a 40mph;
- Provision of enhanced warning signage to better highlight the junction to approaching drivers; and

- Provision of 'rumble strips' and associated slow markings, to provide an audible and visual warning of the hazard to approaching drivers.

224. It is reasoned that the proposed mitigation package would reduce the speed of drivers passing through the junction giving turning drivers more time to turn and drivers on the A12 a greater potential to avoid collisions.

225. Consideration has also been given to road safety impacts at new temporary points of access and crossings of the highway network. It is considered that at these locations, the intensification of slow moving construction traffic aligned to high speed rural roads could have the potential to lead to significant adverse road safety impacts.

226. Therefore, a package of mitigation measures has been developed to reduce the risk to the travelling public and construction employees at these locations. Preliminary access and crossing concepts are detailed within ***Appendix 26.14***, with the key mitigation measures also outlined below:

- Temporary direction and warning signs to advise of turning vehicles would be provided for all accesses. This signage would highlight the proposed accesses to drivers to avoid late breaking manoeuvres and highlight to the travelling public the potential for turning vehicles;
- Temporary warning signs to advise of crossing vehicles would be provided for all crossings. This signage would highlight to the travelling public the potential for crossing vehicles;
- All accesses constructed to facilitate two-way HGV movements to prevent vehicles having to give way on the highway;
- All crossings constructed to prevent access from the highway, ensuring vehicles do not attempt to access or egress at these locations;
- All accesses and crossings provided with appropriate visibility splays to allow vehicles to safely access and exit from the junctions;
- All accesses and crossings to incorporate a bound (concrete or asphalt) surface to prevent dust and dirt being tracked on to the highway, reducing the potential for vehicles to lose control on loose material; and
- Temporary reduction in the existing speed limit in the vicinity of all accesses and crossings to reduce the speed of vehicles in the vicinity of these locations.

227. In addition, all access proposals would be subject to an independent Stage 1 Road Safety Audit. The Stage 1 Road Safety Audits will be provided as an appendix of the outline CTMP presented with the DCO application.

228. Full details of the proposed accesses, including details of junction geometry, signage and swept path analysis are provided within ***Appendix 26.14***.

26.6.1.10.3 Impacts Following Mitigation

229. The implementation of the additional mitigation measures at the junction of the A12 and A1094 would reduce the speed to traffic on the A12 and help highlight the junction to drivers. It is reasoned therefore that these measures would consequently assist in reducing the number and potential severity of the collisions at this location.

230. With the implementation of the additional mitigation measures the sensitivity of the junction would be expected to reduce to low sensitivity. The magnitude of effect remains medium upon a low sensitive receptor resulting in a **minor adverse** residual impact.

231. Following the provision of a package of measures to mitigate the potential impact of the slow-moving construction traffic at the proposed accesses, the magnitude is assessed as low on low value receptors resulting in a **minor adverse** residual impact.

26.6.1.11 Impact 4: Driver Delay (Capacity)

26.6.1.11.1 Impacts Prior To Mitigation

232. The GEART screening thresholds do not apply to this effect as the potential impact is defined as significant when the highway network surrounding the development under consideration is at or close to capacity.

233. The most sensitive time for Driver Delay would be when the daytime construction shift finishes at the same time as the evening network peak. During this period construction employees would be departing their place of work and HGVs would be returning from making deliveries.

234. To assess if this has the potential for significant impacts the traffic generation associated with all construction employees departing work and peak hourly HGV demand (daily HGV demand profiled across ten hours) has been considered.

235. This peak hour demand has been assigned to the junctions identified as potentially being susceptible to increases in traffic flow by SCC and Highways England. ***Table 26.24*** details the resultant traffic flows arriving at the junctions during the peak hour. Daily and peak hour turning count diagrams are also provided within ***Appendix 26.15***.

Table 26.24 Peak Hour Construction Traffic Flows Through Sensitive Junctions

Junction	All vehicles	HGVs
Junction 1: Junction of the A12 and A1094	107	30
Junction 2: Junction of the A12 and B1122	100	30
Junction 3: Junction of the A1094 and B1069	82	25
Junction 4: Junction of the A12, A14 and A1156 (A14 Junction 58)	36	30
Junction 5: Junction of the A12, A14 and A1214 (A14 Junction 55)	49	30

236. ***Table 26.24*** identifies that the peak construction traffic total flows through the sensitive junctions is between 36 and 107 vehicle movements per hour.

237. It is considered that the forecast increase in all vehicle movements through the sensitive junctions would not be significant in the context of the existing traffic levels. The magnitude of effect is therefore assessed as very low on a high value receptor resulting in a **minor adverse** impact.

238. In addition to considering the potential for delays associated with increases in traffic at critical junctions, during consultation with SCC the potential for delays associated with the following activities was also raised:

- Delays resulting from the temporary closures of roads to install the proposed East Anglia TWO project cables across the existing public highway; and
- Delays associated with traffic being held back whilst HGVs are escorted to access 3 via along the B1353.

26.6.1.11.2 Driver Delay, Road Closures

239. ***Chapter 6 Project Description*** states that the proposed East Anglia TWO project cables would need to be installed across B1353, B1122, B1069 and Grove Road. The simplest option would be for the contractor to temporarily close the road to complete this activity, thereby allowing the works to be undertaken in the safest and quickest manner possible.

240. In reviewing the potential impact of a road closure, consideration has been given to the following questions in relation to certain receptor groups:

- Would closing the road have a significant impact upon a driver's journey time? This includes consideration of peak hour traffic flows and if a suitable alternative diversion route exists;

- Would closing the road sever a route currently used by pedestrians / cyclists?; and
- Would closing the road lead to a significant detour for scheduled bus services?

241. When considering the potential for alternative routes, diversions should ensure that vehicles are diverted to a road of the same or higher classification, i.e. a B road could only be diverted to a B road, A road or motorway.

242. The following ***Table 26.25*** provides a summary of the likely impacts of closing the road for each crossing location.

Table 26.25 Consideration of Impacts of Road Closures

Crossing location	Peak hour traffic flows	Footway / Cycleway	Bus Route	Alternative Diversion Route	Summary
B1353	am: 110 pm: 189	No	Yes	No. Thorpeness is served by the B1353 and Thorpe Road. Thorpe Road is an unclassified road and therefore would not be a suitable diversion route.	The B1353 is a bus route and no suitable alternative exists for diversions. Therefore, a closure could have a **major adverse** impact.
B1122	am: 229 pm: 272	Yes	Yes	Yes. Traffic travelling between Aldringham and Aldeburgh could be diverted via the B1069 and B1353.	An alternative diversion route exists, however the route is used by buses and pedestrians. Therefore, a closure could have a **major adverse** impact.
B1069	am: 420 pm: 467	No	Yes	Yes. Traffic travelling between the A1094 and Knodishall could travel along the A1094 to Aldeburgh and then head north on the B1122.	An alternative diversion route exists, however the route is used by buses. Therefore, a closure could have a **major adverse** impact.
Grove Road	am: 19 pm: 29	On-road regional cycle route	No	Yes. Traffic could travel via the B1069 and B1119.	An alternative diversion route exists, however the route does from part of a regional cycle route. Therefore, a full closure could have a **major adverse** impact upon cyclists.

243. ***Table 26.25*** identifies the potentially significant impacts associated closing the road for each crossing location. Therefore, additional mitigation measures are required and discussed further in ***section 26.6.1.11.4***.

26.6.1.11.3 Driver Delay, Escorted Vehicles

244. **Section 26.6.1.6**, identifies that access at the landfall location is provided from the B1353 access 3 (**Figure 26.7**). The width of the B1353 is in some parts not wide enough for two HGVs to pass, as such an embedded mitigation strategy has been developed whereby HGVs traveling to the landfall area would first drive to a holding area off the public road at Elm Tree Farm (shown on **Figure 26.7**). At this holding area, once the HGV is ready to depart for access 3, a pilot vehicle hold up oncoming traffic at access 3 on the B1353. Once the traffic has been held at access 3, the escort vehicle driver would then radio the HGV driver(s) to proceed. This process ('the pilot vehicle strategy') would be reversed for HGVs departing from access 3. The pilot vehicle strategy is illustrated graphically within **Appendix 26.16**.

245. SCC have requested clarification of the likely delays to the travelling public. **Appendix 26.3** identifies one-way peak hour flows along the B1353 of 122 vehicles. Within this hour, **Appendix 26.3** identifies traffic flows are relatively constant, it can therefore be calculated that on average, two vehicles pass along the B1353 every minute (122 divided by 60 minutes).

246. The pilot vehicle strategy would result in vehicles being held whilst construction vehicles travel approximately 1.5 miles from the compound to access 3. A HGV travelling at a conservative 30mph would therefore take three minutes to travel the 1.5 miles. As such a vehicle held by the pilot vehicle could be potentially held for up to three minutes, resulting in an estimated worst case average queue build-up of approximately six vehicles (delay in minutes multiplied by the average number of vehicles travelling along the B1353 per minute).

247. During peak periods **Table 26.22** identifies that there could be up to 38 two-way HGV movements to access 3, equivalent to 19 arrivals and 19 departures. Across a typical 10 hour delivery window this could result in four temporary road closures (38 divided by 10) per hour, i.e. every 15 minutes the road would be closed one way for up to three minutes.

248. It is considered that a delay of up to three minutes every 15 minutes during network peak periods with associated queuing could result in a high magnitude of effect upon a low value receptor resulting in a **moderate adverse** impact. Noting the potential for significant delays during network peak hours, additional mitigation measures are required and discussed further in ***section 26.6.1.11.4***.

26.6.1.11.4 Additional Mitigation Measures

249. The following additional measures would be applied to reduce the potentially adverse impacts associated with closing roads to install proposed East Anglia TWO project cables:

- Undertake the road crossing in two stages maintaining one traffic lane in each direction;
- Controlling traffic through temporary traffic signal;
- Maintaining a safe route for pedestrians through the works area along the B1122;
- Working with SCC and local stakeholders to agree an appropriate time to undertake the works;
- Implementation of advanced signing to assist drivers in finding alternative routes; and
- Ensuring that the works are staggered, i.e. not closing a lane on the B1122 at the same time as the B1069.

250. The Traffic Signs Manual Chapter 8, identifies that on roads with two-way flows of more than 1,300 vehicles per hour, overload of the controlled area is possible and exceptional delays may occur. It can be noted from ***Table 26.25*** that the flows on all roads are significantly less than 1,300 vehicles.

251. The following additional measures would be applied to reduce the potentially adverse impacts associated with the pilot vehicle strategy:

- Suspend the pilot vehicle strategy during the most sensitive morning and evening peak hours (08:00 – 09:00 and 17:00 – 18:00);
- Where possible place HGVs in the holding area at Elm Tree Farm and platoon HGVs to site, thereby reducing the numbers of closures per day; and
- Working with SCC and local communities in the development of the CTMP to identify particularly sensitive periods such as bank holidays, and harvest periods where the pilot vehicle strategy should be suspended.

26.6.1.11.5 Impacts Following Mitigation

252. Following the implementation of the additional mitigation measures associated with closing roads to install the proposed East Anglia TWO project cables, the magnitude of effect is assessed as low on low value receptors resulting in a **minor adverse** residual impact.

253. In addition, following the provision of a package of measures to mitigate the potential impact of the slow-moving construction traffic at the proposed accesses, the magnitude of effect is assessed as low on low value receptors resulting in a **minor adverse** residual impact.

26.6.1.12 Impact 5: Driver Delay (Highway Geometry)

26.6.1.12.1 Impacts Prior To Mitigation

254. During consultation with SCC, a request was made to consider the potential for delays associated with HGVs attempting to pass oncoming vehicles at locations where the existing highway width is constrained, namely:

- The priority junction of the A1094 and B1069; and
- The roundabout junction of the A1094 and B1122 at Aldeburgh.

255. To assess if the junctions present a constraint to the free flow of traffic, swept path analysis has been undertaken. Swept path analysis utilises the AutoCAD vehicle tracking software to simulate the path that a vehicle would take whilst negotiating the highway. The swept path has been undertaken using an articulated HGV and a rigid body tipper vehicle, the dimensions of which are shown in ***Appendix 26.17***. These vehicles represent the types of vehicles likely to be used to deliver materials to the proposed East Anglia TWO project.

256. The result of the swept path analysis for both junctions is provided within ***Appendix 26.17***. Results from the swept path analysis show that for junctions of the A1094 and B1069, all likely manoeuvres can be completed by all vehicle types and therefore the impact is assessed as **negligible**.

257. The swept path analysis for the junction of the A1094 and B1122 demonstrates that the rigid body tipper can complete all manoeuvres, however, the articulated HGV travelling from A1094 to the B1122 would swing out into the oncoming lane. It is considered that the potential for delays associated with such a manoeuvre would be infrequent, and are therefore assessed as of a low magnitude of effect upon a highly sensitive receptor resulting in a **moderate adverse** impact. Noting the potential for significant delays at the junction of the A1094 and B1122, examples of likely additional mitigation measures that may be used are discussed further in ***section 26.6.1.12.2***.

26.6.1.12.2 Additional Mitigation Measures

258. It is considered that there are three potential options that could all equally mitigate the impacts associated with articulated HGVs turning from the A1094 to the B1122:

- Requiring all HGVs to loop around the roundabout (as shown within ***Appendix 26.18***). This strategy would be communicated to drivers through the issuing of delivery instructions and also supplemented by advanced signing;
- Requiring all articulated vehicles to be escorted by a pilot vehicle to hold back oncoming traffic; and
- Undertaking minor localised carriageway widening (as shown within ***Appendix 26.18***).

259. It is considered that each option would be equally suitable for mitigating potential impacts and the final solution could therefore be agreed post consent with SCC as part of the development of the CTMP.

26.6.1.12.3 Impacts Following Mitigation

260. Following the implementation of the additional measures to mitigate the potential impacts of articulated vehicles turning from the A1094 to B1122 the magnitude is assessed as very low on a high value receptor resulting in a **minor adverse** residual impact.

26.6.2 Potential Impacts during Operation

261. The EIA scoping exercise scoped out consideration of operational severance and amenity impacts but noted the potential for localised driver delay and road safety impacts, therefore these are assessed in this section.

262. It is anticipated that the proposed East Anglia TWO and National Grid substations would not normally be staffed. During the operational phase, vehicle movements would therefore be limited to occasional repair, maintenance and inspection visits at the substation and annual routine integrity tests of the onshore cable route.

263. During the operational phase access to the onshore substation would be via access 12 to the north of Friston (detailed within ***Appendix 26.14***). This access would be constructed during the construction phase and remain in place for the life of the proposed East Anglia TWO project.

264. It is anticipated that access to the jointing bays would be taken from existing field and farm accesses, utilising appropriate off-road vehicles to access each jointing bay.

265. Considering the activities listed above, **no significant** traffic impacts are anticipated during the operational phase.

26.6.3 Potential Impacts during Decommissioning

266. No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. However, the onshore substation will likely be removed and be reused or recycled. It is expected that the onshore cables will be removed and recycled, with the transition bays and cable ducts (where used) left *in situ*. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan will be provided. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.

26.7 Cumulative Impacts

26.7.1 Cumulative Impact with the proposed East Anglia ONE North Project

267. The East Anglia ONE North offshore windfarm project (the proposed East Anglia ONE North project) is also in the pre-application stage. The proposed East Anglia ONE North project will have a separate DCO application but is working to the same programme of submission as the proposed East Anglia TWO project. The two projects will share the same landfall and cable route and the two onshore substations will be co-located, the onshore substation location is shown in Figure 21.7, and feed into the same National Grid substation.

268. The proposed East Anglia TWO project CIA will therefore initially consider the cumulative impact with only the East Anglia ONE North project.

269. The CIA considers the proposed East Anglia TWO project and the proposed East Anglia ONE North project under two construction scenarios:

- Scenario 1 - the proposed East Anglia TWO project and proposed East Anglia ONE North project are built simultaneously; and
- Scenario 2 - the proposed East Anglia TWO project and the proposed East Anglia ONE North project are built with a construction gap.

270. The worst case (based on the assessment of these two construction scenarios) for each impact is then carried through to the wider CIA which considers other developments which are in close proximity to the proposed East Anglia TWO project (***section 26.7.2***). The operational phase impacts will be the same irrespective of the construction scenario. For a more detailed description of the assessment scenarios please refer to ***Chapter 5 EIA Methodology***.

271. Full assessment of scenario 1 and scenario 2 can be found in ***Appendix 26.25*** This assessment found that scenario 1 represented the worst case impacts for traffic and transport. A summary of those impacts can be found in ***Table 26.26***.

Table 26.26 Summary of Potential Impacts Identified for Traffic and Transport under Construction Scenario 1

Potential Impact	Receptor	Value / Sensitivity	Magnitude	Significance	Examples of Potential Mitigation Measures	Residual Impact
Cumulative Construction Impacts with the proposed East Anglia ONE North project						
Impact 1: Severance	Links: 1, 2, 3, 4, 6, 8, 9, 10, 11 and 12	Low – High	Very low	Minor – Negligible	n/a	**Minor – Negligible**
Impact 2: Pedestrian amenity	Links: 1,2, 3, 4, 6, 8, 10, and 11.	Low – High	Very low	Minor – Negligible	n/a	**Minor – Negligible**
	Link 9 and 12	Low	Medium	Minor	n/a	**Minor**
Impact 3: Highway Safety	Cluster 1 (link 2)	High	Very low	Minor	n/a	**Minor**
	Cluster 3 (links 2, 3 and 6)	High	Medium	Major	Speed limit reduction Enhanced Warning signs Rumble Strips	**Minor**
	B1121 (links 5 and 7)	High	Very low	Minor	n/a	**Minor**
	A1094 (links 6 and 8)	Low	Medium	Minor	n/a	**Minor**
Impact 4: Driver Delay (capacity)	Junctions: 1, 2, 3, 4 and 5	High	Very Low	Minor	n/a	**Minor**
	Open trench road crossings	High	High	Major	Traffic management to	**Minor**

Potential Impact	Receptor	Value / Magnitude Sensitivity		Significance	Examples of Potential Mitigation Measures	Residual Impact
Cumulative Construction Impacts with the proposed East Anglia ONE North project						
	B1353, B1122, B1069, Grove Road.				facilitate a single lane closure and ensure the road can remain open.	
	B1353 Convoy system	Low	High	Moderate	Restricted working hours HGV holding pattern	**Minor**
Impact 5: Driver Delay (highway Geometry)	The priority junction of the A1094 and B1069.	High	Very low	Negligible	n/a	**Negligible**
	The roundabout junction of the A1094 and B1122 at Aldeburgh.	High	Low	Moderate	Three mitigation options identified: Re-route articulated vehicles Escorted articulated vehicles Localised widening	**Minor**

26.7.2 Cumulative Impact Assessment with Other Developments

272. The assessment of cumulative impacts with other developments has been undertaken as a two stage process. Firstly, all impacts considered in ***section 26.7.1*** have been assessed for the potential to act cumulatively with other projects. Potential cumulative impacts are set out in ***Table 26.27***.

Table 26.27 Potential Cumulative Impacts

Impact	Potential for Cumulative Impact	Rationale
Construction		
Severance	Yes	Cumulative impacts arising from two or more projects are possible due to the increase in traffic from the projects.
Pedestrian amenity	Yes	
Road Safety	Yes	
Driver Delay (highway capacity)	Yes	
Driver Delay (Highway geometry)	Yes	
Operation		
No cumulative impacts are anticipated as there are no operational impacts associated with proposed East Anglia TWO project.		
Decommissioning		
The detail and scope of the decommissioning works would be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan would be provided. As such, cumulative impacts during the decommissioning stage are assumed to be no worse than those identified during the construction stage.		

273. The second stage of the CIA is an assessment of whether there is spatial overlap between the extent of potential effects of the onshore infrastructure and the potential effects of other projects scoped into the CIA upon the same receptors. To identify whether this may occur, the potential nature and extent of effects arising from all projects scoped into the CIA have been identified and any overlaps between these and the effects identified in ***section 26.7.1***. Where there is an overlap, an assessment of the cumulative magnitude of effect is provided.

274. ***Table 26.28*** provides detail of other projects that could potentially contribute to cumulative effects. The full list of projects for consideration will be updated following PEIR and agreed in consultation with local authorities. The remainder of the section details the nature of the cumulative impacts against all those effects scoped in for cumulative assessment.

Table 26.28 Summary of Projects considered for the CIA in Relation to Traffic and Transport

Project	Status	Development period	[3]Distance from East Anglia TWO proposed onshore development area (km)	Project definition	Level of information available	Included in CIA	Rationale
Sizewell C New Nuclear Power Station	Scoping Opinion Adopted by SoS on 02.06.2014	Uncertain	0.49km	Full Scoping Report Available: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-000103-Sizewell%20C%20EIA%20Scoping%20Report_Main%20text.pdf Full Stage 2 Pre-Application Consulation Document Available: http://sizewell.edfenergyconsultation.info/szc-proposals/stage-2/	Tier 5[4]	Yes	Overlap of respective study area
Suffolk's Energy Gateway	Major scheme business case submitted	Uncertain	~3.0km	Consultation Document Available: https://www.suffolk.gov.uk/council-and-democracy/consultations-petitions-and-elections/consultations/suffolks-energy-gateway-segway-consultation/	Tier 5[5]	Yes	Overlap of respective study area

[3] Shortest distance between the considered project and East Anglia TWO– unless specified otherwise
[4] Based on criteria outlined in ***section 5.7.2*** of ***Chapter 5 EIA Methodology***
[5] Based on criteria outlined in ***section 5.7.2*** of ***Chapter 5 EIA Methodology***

26.7.2.1 Cumulative Impacts during Construction

26.7.2.1.1 Sizewell C New Nuclear Power Station

275. EDF Energy is proposing to build and operate a new nuclear power station, Sizewell C New Nuclear Power Station, on the Suffolk coast, on land immediately to the north of the existing station, Sizewell B. It is proposed that Sizewell C New Nuclear Power Station would comprise of two UK EPR™ units to provide a combined site capacity of approximately 3,260MW.

276. Initial discussions have been held between the Applicant and EDF Energy to discuss the potential for cumulative impacts between the respective projects. These discussions have highlighted that there is potential that the construction of the proposed East Anglia TWO and proposed East Anglia ONE North projects could coincide with the Sizewell C New Nuclear Power Station

277. EDF Energy submitted a Stage 2 consultation document in Autumn / Winter 2016 which contained initial forecasts for construction traffic and potential mitigation options. EDF Energy have advised that an update to this Stage 2 consultation document (Stage 3) would be submitted early in 2019.

278. At the time of writing, the level of information contained with EDF Energy's Stage 2 consultation document would not be sufficient to undertake a full CIA. However, the Applicant and EDF Energy are in regular and on-going dialogue and the Applicant will seek to continue working closely with EDF Energy, and with statutory consultees to assess potential cumulative impacts. This approach complies with the relevant EIA Regulations and is consistent with that taken for other applications, where relevant environmental information has become available after the point of the DCO application submission.

279. The Applicant will incorporate relevant new information presented by EDF Energy at Stage 3 within the CIA in the ES.

26.7.2.1.2 Suffolk's Energy Gateway

280. SCC have submitted an outline business case to the DfT to bypass the section of A12 from Wickham Market to the A1094 the proposals, known as SEGWay, seek to alleviate congestion and community severance along this route and by bypassing the villages of Marlesford, Little Glemham, Stratford St Andrew and Farnham.

281. To date, SCC have consulted on two options for a single and dual carriageway bypass and are awaiting a funding decision from the DfT. At the time of writing, there is no certainty upon the route of the bypass, the likely timescales for construction and whether funding will be secured.

282. The Applicant and SCC are in regular and on-going dialogue through the ETG process and will seek to continue working closely to understand and assess any potential cumulative impacts. This approach complies with the relevant EIA Regulations and is consistent with that taken for other applications, where relevant environmental information has become available after the point of the DCO application submission.

26.7.2.2 Cumulative Impacts during Operation

283. No cumulative traffic impacts are anticipated as there are no operational impacts associated with the proposed East Anglia TWO project.

26.7.2.3 Cumulative Impacts during Decommissioning

284. The detail and scope of the decommissioning works for the proposed East Anglia TWO project would be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. As such, cumulative impacts during the decommissioning stage are assumed to be the same as those identified during the construction stage.

26.8 Inter-relationships

285. In order to address the environmental impact of the proposed East Anglia TWO project as a whole, this section establishes the inter-relationships between traffic and transport and other physical, environmental and human receptors. The objective is to identify where the accumulation of impacts on a single receptor, and the relationship between those impacts, may give rise to a need for additional mitigation. ***Table 26.29*** summarises the inter-relationships that are considered of relevance to traffic and transport and identifies where they have been considered within the PEIR.

Table 26.29 Traffic and Transport Inter-relationships

Inter-relationship all Phases and Linked Chapter	Section where Addressed	Rationale
Chapter 19 Air Quality	***Sections 26.6.1***, ***26.6.2*** and ***26.7***	Traffic increases can have an effect on local air quality
Chapter 25 Noise and Vibration	***Sections 26.6.1***, ***26.6.2*** and ***26.7***	Traffic increases can have an effect on noise and vibration in the area
Chapter 27 Human Health	***Sections 26.6.1, 26.6.2*** and ***26.7***	Traffic increases and emissions can have an effect on local human health
Chapter 30 Tourism Recreation and Socio Economics.	***Sections 26.6.1, 26.6.2*** and ***26.7***	Traffic increases and emissions can have an effect on tourism and PRoW

286. The potential for inter-relationship impacts on a link by link basis has been identified and is set out in ***Appendix 26.24***, which sets out a link by link analysis of the accumulation of effects and reviews the mitigation proposed.

26.9 Interactions

287. The impacts identified and assessed in this chapter have the potential to interact with each other, which could give rise to synergistic impacts as a result of that interaction. For clarity, the areas of interaction between impacts are presented in ***Table 26.30*** along with an indication as to whether the interaction may give rise to synergistic impacts.

Table 26.30 Interactions Between Impacts

Construction					
	Impact 1 Severance	**Impact 2 Pedestrian amenity**	**Impact 3 Highway Safety**	**Impact 4 Driver Delay (capacity)**	**Impact 5 Driver Delay (Highway geometry)**
Impact 1 Severance		Yes	Yes	Yes	Yes
Impact 2 Pedestrian amenity	Yes		Yes	Yes	Yes
Impact 3 Highway Safety	Yes	Yes		Yes	Yes
Impact 4 Driver Delay (capacity)	Yes	Yes	Yes		Yes
Impact 5 Driver Delay (Highway geometry)	Yes	Yes	Yes	Yes	
Operation					
No significant impacts					
Decommissioning					
It is anticipated that the decommissioning impacts would be no worse than those of construction.					

26.10 Summary

288. This chapter of the PEIR has assessed the potential impacts of the onshore elements of the proposed East Anglia TWO project on the surrounding traffic sensitive receptors.

289. This chapter has been developed with regard to the legislative and policy framework outlined in ***section 26.4.1*** and further informed by consultation with SCC and Highways England.

290. Traffic demand has been forecast applying a first principles approach to generate traffic volumes from an understanding of material quantities and personnel numbers. This traffic demand has been assigned to nine access locations serving the proposed onshore development area applying a package of embedded mitigation to minimise the magnitude of environmental effects.

291. In accordance with national guidance, an onshore highway study area has been identified, baseline conditions established and sensitive receptors within the study identified. The onshore highway study area was screened to identify routes that could be potentially adversely impacted by the proposed East Anglia TWO projects' traffic generation.

292. A total of 15 highway links, five cluster sites and five sensitive junctions within the onshore highway study area have been assessed for the effects of severance, pedestrian amenity, road safety and driver delay. With the application of additional mitigation measures (as appropriate) the residual impact for all highway links was assessed to be not significant.

293. This detailed assessment concluded that no residual moderate or major adverse impacts would arise, with all impacts being of either minor adverse or negligible levels as shown in ***Table 26.31*****.**

Table 26.31 Potential Impacts Identified for Traffic and Transport

Potential Impact	Receptor	Value / Sensitivity	Magnitude	Significance	Examples of Potential Mitigation Measures	Residual Impact
Construction						
Impact 1: Severance	Links: 2, 3, 4, 6, 8, 9, 10, 11 and 12	Low – High	Very low	Minor – Negligible	n/a	Minor – Negligible
Impact 2: Pedestrian amenity	Links: 2, 3, 4, 6, 8, 10, and 11.	Low – High	Very low	Minor – Negligible	n/a	Minor – Negligible
	Link 9 and 12	Low	Medium	Minor	n/a	Minor
Impact 3: Highway Safety	Cluster 1 (link 2)	High	Very low	Minor	n/a	Minor
	Cluster 3 (links 2, 3 and 6)	High	Medium	Major	Speed limit reduction Enhanced Warning signs Rumble Strips	Minor
	B1121 (links 5 and 7)	High	Very low	Minor	n/a	Minor
	A1094 (links 6 and 8)	Low	Medium	Minor	n/a	Minor

Potential Impact	Receptor	Value / Sensitivity	Magnitude	Significance	Examples of Potential Mitigation Measures	Residual Impact
Impact 4: Driver Delay (capacity)	Junctions: 1, 2, 3, 4 and 5	High	Very Low	Minor	n/a	Minor
	Open trench road crossings B1353, B1122, B1069, Grove Road.	High	High	Major	Traffic management to facilitate a single lane closure and ensure the road can remain open.	Minor
	B1353 Convoy system	Low	High	Moderate	Restricted working hours HGV holding pattern	Minor
Impact 5: Driver Delay (highway Geometry)	The priority junction of the A1094 and B1069.	High	Very low	Negligible	n/a	Negligible
	The roundabout junction of the A1094 and B1122 at Aldeburgh.	High	Low	Moderate	Three mitigation options identified: Re-route articulated vehicles Escorted articulated vehicles Localised widening	Minor
Operation						
No significant impacts.						
Decommissioning						
It is anticipated that the decommissioning impacts would be no worse than those of construction.						

26.11References

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