Cambois Connection Onshore Scheme

Environmental Statement Volume 2

Chapter 12: Traffic, Transport and Access

sse Renewables

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Basis of Report

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Acronyms

Acronym	Description
AADT	Annual Average Daily Traffic
AIL	Abnormal Indivisible Load
ALAR	Abnormal Load Assessment Report
ATC	Automatic Traffic Counter
ATR	Active Travel Routes
BBWFL	Berwick Bank Wind Farm Limited
CEA	Cumulative Effects Assessment
CTMP	Construction Traffic Management Plan
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
EATM	Environmental Assessment of Traffic and Movement
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
ES	Environmental Statement
GEART	Guidelines for Environmental Assessment of Road Traffic
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
Km	Kilometre
IEMA	Institute of Environmental Management and Assessment
LGV	Light Goods Vehicle
LPA	Local Planning Authority
m	Metre
MDS	Maximum Design Scenario
MLWS	Mean Low Water Springs

Acronym	Description
NCC	Northumberland County Council
NCR	National Cycle Route
NPPF	National Policy Planning Framework
NSL	North Sea Link
NTS	Non Technical Summary
PAMP	Public Access Management Plan
PDE	Project Design Envelope
PIA	Personal Injury Accident
PRoW	Public Right of Way
TAG	Transport Analysis Guidance
TP	Travel Plan

12. Traffic, Transport and Access

12.1. Introduction

1. This Chapter presents the assessment of the likely significant effects (as per the 'Environmental Impact Assessment (EIA) Regulations'[1]) on the environment arising from the Cambois Connection Onshore Scheme on traffic, transport and access. Specifically, this Chapter considers the likely significant effects of the Onshore Scheme during the construction and decommissioning phases as the operational and maintenance phase has been scoped out of the assessment.

2. Traffic data has been derived to inform the following technical Chapters:

    - Chapter 13: Noise and Vibration;
    - Chapter 14: Air Quality; and
    - Technical Appendix 5.1: Climate Assessment (Greenhouse Gas Emissions).

12.2. Purpose of this Chapter

3. This Chapter:

    - Presents the existing environmental baseline established from desk studies, and feedback obtained during engagement with stakeholders.
    - Identifies any assumptions and limitations encountered in compiling the environmental information;
    - Presents the potential environmental impacts on Traffic, transport and access from the Onshore Scheme, and reaches a conclusion on the likely significant effects on Traffic, transport and access based on the information gathered and the analysis and assessments undertaken; and
    - Highlights any necessary monitoring and/or mitigation measures recommended to prevent, minimise, reduce or offset the likely significant adverse environmental effects of the Onshore Scheme on traffic, transport and access.

12.3. Study Area

4. The Site (the red line boundary) is located at Cambois, Blyth, south of the River Wansbeck and north of the River Blyth, as shown on Volume 4, Figure 12.1, with the indicative infrastructure development zone shown in Figure 5.1.

5. The Study Area for traffic, transport and access was set out in the EIA Scoping Report for the Onshore Scheme (BBWFL, 2022) and included a series of specific individual roads and footpaths within it (A189, A1147, Wembley Gardens and Brock Lane); however, this has changed due to the likely construction vehicle access routes.

6. The Study Area for the highway network is defined as:

    - A189 between East Sleekburn and the River Wansbeck;
    - C415 Spine Road between the A189 and Unity Terrace; and

[1] Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended).

- Unity Terrace

7. It is likely that temporary access tracks will be required within the Site to access the construction sites, such as the HVDC/HVAC cable route. The Onshore Converter Station will require permanent access during the construction, and operation and maintenance and decommissioning phase. The routeing for these tracks is not as yet known and will be considered at the detailed design stage.

8. The Study Area for formal footpaths is defined as the Site boundary, whereby the footpaths could be directly impacted by the construction of the Onshore Scheme. This comprises three Public Rights of Way (PRoW) and a national trail:

   - 600/054;
   - 600/059;
   - 600/062; and
   - King Charles III England Coast Path.

9. The formal cycle route within the Study Area is:

   - National Cycle Route (NCR)1.

12.4. Policy and Legislative Context

10. A summary of the relevant policy and legislative provisions is provided in Table 12-1 and Table 12-2 below.

Table 12-1 Summary of national policy relevant to onshore matters for offshore windfarms (HVDC/HVAC cable route and substation) for assessment of traffic, transport and access

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
Overarching National Policy Statement for Energy (EN-1)[2]		
Paragraph 5.13.3	'If a Proposed Development 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.'	This Chapter has been produced in accordance with current transport guidance, being the NATA/WebTAG methodology stipulated in DfT guidance and the Scoping Report, which has been agreed by Northumberland County Council (NCC).
Paragraph 5.13.4	'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.'	Table 12-21 outlines the designed in Traffic, transport and access mitigation measures for the construction phase of the Onshore Scheme, including the Construction Traffic Management Plan (CTMP) and Travel Plan (TP) that will be prepared.
Draft Overarching National Policy Statement for Energy (Draft EN-1)[3]		
Paragraph 5.14.5	'If a project is likely to have significant transport implications, the applicant's ES (see section 4.2) should include a transport appraisal. The DfT's Transport Analysis Guidance (TAG) and Welsh Governments WelTAG provides guidance on modelling and assessing the impacts of transport schemes.'	This Chapter has been produced in accordance with current transport guidance.
Paragraphs 5.14.7 & 5.14.8	'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 active, public and shared transport to:	Table 12-21 outlines the designed in Traffic, transport and access mitigation measures for the construction phase of the Onshore Scheme, including the CTMP and TP that will be prepared.

[2] Whilst it is acknowledged that neither BBWF nor the Onshore Scheme comprise or form part of an NSIP (please see Volume 2: Chapter 2: Legislative Context and Policy), NPSs are however a statement of government intention relating, in this case, to renewable energy projects, therefore can be taken into consideration during the preparation of the Onshore Scheme ES.

[3] A suite of draft revised Energy NPSs were published and consulted on by the UK Government in March 2023, and consultation closed on 23rd June. The consultation responses will be subject to consideration and the draft revised NPSs may now be revised before the NPSs are formally adopted. There is currently no date for the next stage of the review process and therefore this ES presents the current adopted NPSs which have been considered during the preparation of this ES. It is however noted by the Applicant that the new draft NPSs state that they may be material considerations in other applications which are not considered under the Planning Act (2008), this includes the Marine Scheme. Further detail on the consideration of the draft NPSs in this ES is provided in Volume 2 Chapter 2: Legislative Context and Policy.

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
	• reduce the need for parking associated with the proposal; • contribute to decarbonisation of the transport network; • reduce the need to travel; and • secure behavioural change and modal shift through an offer of genuine modal choice and to mitigate transport impacts. The assessment should also consider any possible disruption to services and infrastructure (such as road, rail and airports).'	
Paragraph 5.14.11	'Where mitigation is needed, possible demand management measures must be considered. This could include identifying opportunities to: • reduce the need to travel by consolidating trips; • locate development in areas already accessible by active travel and public transport; • provide opportunities for shared mobility; • re-mode by shifting travel to a sustainable mode that is more beneficial to the network; • retime travel outside of the known peak times; and • reroute to use parts of the network that are less busy.'	Table 12-21 outlines the designed in Traffic, transport and access mitigation measures for the construction phase of the Onshore Scheme, including the CTMP and TP that will be prepared.
Paragraph 5.14.14	'The Secretary of State may attach requirements to a consent where there is likely to be substantial HGV traffic that: • control numbers of HGV movements to and from the site in a specified period during its construction and possibly on the routing of such movements • make sufficient provision for HGV parking, and associated high quality driver facilities either on the site or at dedicated facilities elsewhere, to support driver welfare, avoid 'overspill' parking on public roads, prolonged queuing on approach roads and uncontrolled on-street HGV parking in normal operating conditions • ensure satisfactory arrangements for reasonably foreseeable abnormal disruption, in consultation with network providers and the responsible police force.'	The assessment of the increases in heavy goods vehicles (HGVs) associated with the construction phase of the Onshore Scheme is set out in section 12.9. Any impacts of increases in HGVs are further reduced by the types of traffic management measures that will be set out in the CTMP and therefore will be managed to considered to be a level of impact that is not significant in EIA terms. The CTMP will consider parking on public roads and set out how the emergency services will be consulted regarding Abnormal Indivisible Load (AIL) movements during the construction of the Onshore Scheme.

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
Paragraph 5.14.16	'Applicants should consider the DfT policy guidance "Water Preferred Policy Guidelines for the movement of abnormal indivisible loads" when preparing their application'.	The Port of Blyth is the closest port to the Study Area, however, further engagement with the Port of Blyth and EPCI Contractors' preferences for transformer deliveries is required before confirming the use of this port for the delivery of the AILs required for the Onshore Scheme. It is acknowledged that the use of a nearby port for the delivery of AILs would minimise the movement of these on the local road network. An Abnormal Load Assessment Report (ALAR) will be undertaken during detailed design of the Onshore Scheme and once details of the final transformer have been confirmed.
Paragraph 5.14.21	'The Secretary of State should only consider refusing development on highways grounds if there would be an unacceptable impact on highway safety, residual cumulative impacts on the road network would be severe, or it does not show how consideration has been given to the provision of adequate active public or shared transport access and provision.'	The assessment of road safety in relation to the additional traffic associated with the construction phase of the Onshore Scheme is set out in sections 12.11.1.12 to 12.11.1.15. It is concluded that there are no significant road safety effects, with any impacts further reduced by the types of traffic management measures that would be implemented as part of a CTMP and therefore considered be a level of impact that is not significant in EIA terms. The cumulative impact assessment is set out in section 12.13.
National Planning Policy Framework (NPPF)		
Paragraph 110	'In assessing applications for development in plans, or specific allocations for development it should be ensured that: a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location. b) safe and suitable access to the site can be achieved for all users; c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.'	Table 12-21outlines the designed in Traffic, transport and access mitigation measures for the construction phase of the Onshore Scheme, such as the TP. The TP will include demand management measures to be adopted.

Relevant Policy	Summary of Relevant Policy Framework	How and Where Considered in the ES
Paragraph 113	’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.’	Table 12-21outlines the designed in Traffic, transport and access mitigation measures for the construction phase of the Onshore Scheme, such as the TP. The TP will include demand management measures to be adopted.
Paragraph 111	’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’.	An analysis of the construction vehicles forecast for the Onshore Scheme has been undertaken, including the consideration of movements in the peak periods on the highway network in section 12.9.1.1. A review of road safety has been undertaken in section 12.11.1 A cumulative effects assessment is provided in section 12.13.

Table 12-2 Summary of Northumberland County Council local plan relevant to Traffic, Transport and Access

Relevant Legislation	Summary of Relevant Legislative Framework	How and Where Considered in the ES
Northumberland County Council Local Plan 2016 – 2036		
TRA 2 (the effects of development on the transport network)	All developments affecting the transport network will be required to: • Provide effective and safe access and egress to the existing transport network; • Include appropriate measures to avoid, mitigate and manage any significant impacts on highway capacity, congestion or on highway safety including any contribution to cumulative impacts; • Minimise conflict between different modes of transport, including measures for network, traffic and parking management where necessary; • Facilitate the safe use of the network, including suitable crossing points, footways and dedicated provision for cyclists and equestrain users where necessary; • Suitably accommodate the delivery of goods and supplies, access for maintenance and refuse collection where necessary; and • Minimise any adverse impact on communities and the environment, including noise and air quality.	Table 12-21 outlines the designed in Traffic, transport and access mitigation measures for the construction phase of the Onshore Scheme, including the CTMP and TP that will be prepared.

12.5. Consultation and Technical Engagement

11. A summary of the key issues raised during consultation and technical engagement activities undertaken to date specific to traffic, transport and access is presented in Table 12-3. below, together with how these issues have been considered in the production of this Traffic, transport and access Chapter. Further detail is presented within Volume 1, Chapter 6 of the ES.

Table 12-3 Summary of key consultation and technical engagement undertaken for the Onshore Scheme relevant to Traffic, transport and access

Date	Consultee and TypeIssue(s) Raised of Consultation		Response to Issue Raised and/or Where Considered in this Chapter
Consultation on the Onshore Scheme: Scoping Opinion			
January 2023	NCC Highways	None – agreed with the scope set out in the Scoping Report	n/a
January 2023	NCC Area Countryside Officer	The developer should consider what impact the proposal may have on public rights of way and access by the public during the construction and operational phases of the Proposed Development. Where an impact on the public right of way is identified and/or public access could be affected, the developer should explain what mitigation measures and/or temporary closures or diversions are proposed.	The assessment of the effects of the construction of the Onshore Scheme on users of PRoW is provided within section 12.11.1.
October 2023	NCC Highways	Discussion on the approach to the traffic and transport assessment and confirmation that a Construction Traffic Management Plan (CTMP) would be produced at the Reserved Matters stage once the design is finalised. Abnormal load assessment, if required, to be at Reserved Matters stage and managed through the use of a CTMP. An overall approach was agreed that the Applicant could present potential access options within the outline planning application with a view to conditioning the agreement of final accesses and design as part of Reserved Matters.	Abnormal Indivisible Load (AIL) assessment to be deferred to detailed design and assessment stage and application for Reserved Matters, therefore the impacts of AILs are not assessed within this Chapter.

12.6. Methodology to Inform Baseline

12.6.1. Methodology

12. The Scoping Report set out the baseline environment and likely data sources to inform this. Due to the evolving Onshore Scheme design and likely access routes, the sources of data have changed and are set out in this section.

12.6.2. Desktop Study

Information on traffic, transport and access within the Study Area was collected through a detailed desktop review of existing studies and datasets. These are summarised in Table 12-4 below.

Table 12-4 Summary of key desktop studies and datasets

Title	Source	Year
Traffic Data	Department for Transport (DfT)[4]	2019
Brock Lane Interchange Junction Capacity Assessment	Waterman Transport Assessment for planning application 22/00879/FUL	2022
Baseline Traffic data estimates on Brock Lane/Old Main Road	Waterman Transport Assessment for planning application 22/00879/FUL	2013
Personal Injury Accident (PIA) Data	Crashmap[5]	2017-2021
PRoW	NCC[6]	2023
Cycle network	NCC[7]	2023
Bus services	Traveline North East[8]	2023

12.6.3. Site-specific Surveys

13. Automatic Traffic Counters (ATC) for Volume and speed were installed at four locations within the Study Area (as shown in Volume 4, Figure 12.2), which could comprise the construction vehicle access routes, for a period of seven days between the 16th and 22nd March 2023. Only locations 2 and 3 are used for the assessment due to these being undertaken prior to the identification of the likely construction vehicle access routes.

12.7. Baseline Environment

14. The baseline environment within the Study Area is shown in Volume 4, Figure 12.1.

12.7.1. Highway Network

15. The following section provides a description of the highway network within the defined Study Area, which would form the construction vehicle (HGVs) and workforce vehicles (cars and light goods vehicles (LGVs)) access routes for the Onshore Scheme, depending on the final design.

12.7.1.1. A189

16. The A189 provides a key connecting route from Annitsford in the south to the A1068 towards Ellington in the north. This dual carriageway road is predominantly subject to the national speed limit (70 mph) and has a two-lane arrangement in both directions, separated by a central reservation.

17. The A189 connects with C403 Brock Lane (west of the A189) and the C415 Spine Road (east of the A189), via a diamond arrangement grade-separated layout (Brock Lane Interchange), which includes slip roads leading to/from two staggered priority junctions. The slip roads have two lanes and are approximately 8.3 m in width and the C415 Spine Road is slightly wider at around 10 m. Junction radii are wide to facilitate HGV vehicle movements. The verges in the vicinity to the slip roads of the western

[4] https://roadtraffic.dft.gov.uk/ [Accessed August 2023].
[5] https://www.crashmap.co.uk/ Accessed August 2023].
[6] https://www.northumberland.gov.uk/About/Maps/Public-rights-of-way.aspx [Accessed August 2023].
[7] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Roads-streets-and-transport/cycling
[8] https://travelinenortheast.info/ [Accessed August 2023].

slip roads consist of grasscrete with removable road signs, suggesting that AIL manoeuvres have used this route with the potential for future AIL movements.

18. The baseline traffic flows on the A189, north and south of Brock Lane Interchange are presented in Table 12-5. The data are from 2019 (as set out in the Scoping Report), which is the most recent data available avoiding the Covid-19 pandemic, which impacted traffic flows on the highway network.

19. Paragraph 6.8 of the Transport Assessment prepared by Waterman (2022) to support the planning application for a manufacturing facility for subsea cables at land North of Blyth Power Station Substation, East Sleekburn (22/00879/FUL) states there is significant spare capacity at the Brock Lane Interchange with a maximum queue on any arm of 1 vehicle in the existing scenario and with the addition of background traffic growth, committed developments and the development.

Table 12-5 DfT traffic data (A189, north and south of Brock Lane Interchange)

DfT Reference	Location	Annual Average Daily Traffic (AADT)		HGV Percentage	Year
		Total Vehicles	HGVs		
81563	South of Brock Lane Interchange	40,391	1,371	3.0	2019
90774	North of Brock Lane Interchange	36,405	1,038	2.9	2019

12.7.1.2. C415 SPINE ROAD

20. The C415 Spine Road provides a connection between the A189 (at the Brock Lane Interchange) to the Port of Blyth and consists of a single carriageway subject to national speed limit (60mph).

21. The spine road is known as C415 between Brock Lane Interchange and the roundabout approximately 1 km east of the Brock Lane Interchange and then as the C415 to the roundabout with Unity Terrace. There are intermittent footways present along the route.

22. The North Sea Link (NSL) Onshore Converter Station priority arrangement site access was a signal-controlled junction during the construction of the Onshore Converter Station. The signal heads were designed to be removed and reattached (most likely for periods of upgrades at the Onshore Converter Station and also to be taken down for AIL deliveries).

23. The baseline traffic flow on the C415 Spine Road is presented in Table 12-6

Table 12-6 ATC 2 (C415 Spine Road)

AADT			
Total Vehicles	HGVs	HGV Percentage	Year
2816	96	3.5	2023

12.7.1.3. UNITY TERRACE

24. Unity Terrace runs parallel to the coastline and is a single carriageway road. In some places the road narrows, due to on-street parking and priority-controlled build outs which have been put in place to reduce vehicle speeds in the area. This route is subject to a 20 mph speed limit, which increases to 30 mph where the road passes over the railway line at the level crossing. There are a number of sensitive receptors along this route, including residential properties close to the carriageway, St Andrews Church and Cambois Primary School.

25. The baseline traffic flow on the Unity Terrace is presented in Table 12-7.

Table 12-7 ATC 3 (Unity Terrace)

AADT		HGV Percentage (%)	Year
Total Vehicles	HGVs		
883	14	1.6	2023

12.7.2. Pedestrian and Cycle Network

12.7.2.1. FOOTPATHS

26. The PRoW routes within the Study Area are set out in Table 12-8 and shown on Figure 12.1.

Table 12-8 PRoW in the Study Area

PRoW	Route	
	Start	End
600/054	Wembley Gardens	600/062
600/059	Foster Terrace	C415 Spine Road
600/062	600/054	Sandfield Road
King Charles III England Coast Path		

12.7.2.2. CYCLE ROUTES

27. Foster Terrace / Unity Terrace and the C415 Spine Road are part of National Cycle Route 1 (NCR 1); a long-distance route connecting Dover and the Shetland Islands. In the Study Area, the NCR 1 passes through East Sleekburn, connects with the C415 Spine Road then follows the coastline on Foster Terrace / Unity Terrace. The route then travels inland on South View / Wembley Gardens. There are other cycle routes and cycle lanes to the north and west of the Study Area, including an on-road cycle lane on Brock Lane as shown in Figure 12.2.

12.7.3. Access by Public Transport

12.7.3.1. BUS

28. There are a number of bus stops in the Study Area, however all with limited frequency bus services. A summary of the local bus services available is shown in Table 12-9.

Table 12-9 Bus services

Service	Route	Typical Weekday Frequency	Typical Saturday Frequency
434	Bedlington Station/ Bedlington - Linton	4 Services a Day between 09:30 and 15:00	4 Services a Day between 09:30 and 15:00
434	Linton – Bedlington Station, Bedlington	4 Services a Day between 08:00 and 14:00	4 Services a Day between 08:00 and 14:00

12.7.3.2. RAIL

29. There are no train stations located in the Study Area, with the nearest stations being Pegswood and Cramlington. There is however:

    - a disused railway line that connected Bedlington with Blyth Docks, which crosses the Onshore Scheme, running parallel to the west of Unity Terrace; and
    - a railway line to the east of Unity terrace, operated by Network rail connecting to the Port of Blyth.

12.7.4. Personal Injury Accident (PIA) Data

12.7.4.1. SOURCE OF DATA

30. PIA records between 2016 to 2021 (inclusive) have been obtained for the highway links in the Study Area using the Crashmap database[9] (as data is only available up to the end of 2021 in Crashmap).

31. Crashmap is based on official accident data reported by the Police and is approved by the National Statistics Authority and reported on by the DfT each year. It is therefore a reliable data source to analyse any safety issues on a local highway network.

32. It should be noted that PIAs are classified into three categories: slight, serious and fatal, and the definition of these are provided below:

    - **Slight Injury:** Injuries of a minor nature, such as sprains, bruises, or cuts not judged to be severe, or slight shock requiring only roadside attention (medical treatment is not a pre-requisite for an injury to be defined as slight);
    - **Serious Injury:** Injuries for which a person is detained in hospital, as an in-patient, or any of the following injuries, whether or not a person is detained in hospital: fractures, concussion, internal injuries, severe cuts and lacerations, severe general shock requiring medical treatment and injuries which result in death 30 days after the collision. The serious category, therefore, covers a very broad range of injuries; and
    - **Fatal Injury**: Injuries which cause death either immediately or any time up to 30 days after the collision.

12.7.4.2. A189

33. The Onshore Scheme EIA Scoping Report provided a review of PIAs on the A189, noting several fatal PIAs at the A189/B1334 North Seaton roundabout (outside of the Study Area), which would need further investigation. One of the fatal PIAs occurred on a section of the circulating carriageway that would not be used by vehicles associated with the Onshore Scheme. The second fatal accident occurred in the early hours of the morning and did not involve another vehicle, colliding with a sign and therefore may have been down to driver error (and possibly high speed). The other PIAs that occurred within the vicinity of the fatal accidents were all slight in severity, rear end shunts and none involved an HGV.

[9] www.crashmap.co.uk [Accessed August 2023]

34. There have only been three PIAs at the Brock Lane Interchange, these were at different locations and all slight in severity. None of the PIAs involved an HGV.

12.7.4.3. C415 SPINE ROAD

35. There has been one slight PIA and three serious PIAs on the C415 Spine Road, which all occurred at different locations and did not involve an HGV or a non-motorised user.

12.7.4.4. FUTURE BASELINE SCENARIO

36. Traffic flows on the highway network may rise between the baseline and the anticipated construction years, through consented developments in the vicinity of the Study Area generating vehicle movements on the highway network within the Study Area and for the A189 additional background traffic growth associated with other vehicle trip generators located a greater distance from the Study Area. However, for a robust assessment of impact, no background traffic growth has been applied to the baseline data. The potential impacts of the Onshore Scheme being constructed with additional vehicle movements associated with consented developments (cumulative developments) is considered in section 12.13.

12.8. Key Parameters for Assessment

12.8.1. Maximum Design Scenario

37. The maximum design scenario (MDS) summarised here has been selected as having the potential to result in the greatest effect on an identified receptor or receptor group. These scenarios have been derived from the details provided in the Chapter 5: Project Description of this ES. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the PDE (Project Design Envelope) (e.g., different infrastructure layout), to that assessed here, be taken forward in the final design scheme.

38. Given that the maximum design scenario is based on the design option (or combination of options) that represents the greatest potential for change, confidence can be held that development of any alternative options within the design parameters will give rise to no worse effects than assessed in this impact assessment. Table 12-10 presents the maximum design scenario for potential impacts on Traffic, transport and access during construction/installation and the details of how this has been derived is set out in section 12.8.2.

39. The boundary and extent of the Onshore Scheme have been the subject of discussions with NCC. There are some design details related to the Onshore Scheme that are still to be finalised due to further ground investigations required, ongoing engineering design work and the procurement of cable and converter station suppliers which will define the final specification. The Site boundary has been chosen to allow flexibility to accommodate design details which will be subject to future Reserved Matters application(s) to NCC.

12.8.1.1. APPROACH

40. As described in Chapter 5: Project Description, the location of final access routes and final traffic numbers and vehicles types will be dependent upon the final design of the Onshore Scheme and will be influenced by factors such as final Landfall location, final onshore HVDC/HVAC cable routes (High Voltage Direct Current (HVDC) and High Voltage Alternating Current (HVAC)) including requirements for use of trenchless techniques or open cut trench installation techniques and final Onshore Converter

Station design including final earthworks, drainage design, road layouts etc. Consequently, it is not possible to include final traffic numbers/vehicle types as part of this planning application.

41. For the purpose of informing the Traffic, transport and access assessment, indicative vehicle numbers and proportions of the types of vehicles comprising the estimated total numbers have been provided based on the PDE presented in Chapter 5: Project Description. Please note, these estimated numbers and proportions by vehicle type will be subject to refinement / change as the Onshore Scheme progresses to final design.

42. Berwick Bank Wind Farm Limited (BBWFL) ('the Applicant') is committed to completing a CTMP covering the construction, operational and decommissioning phases of the Onshore Scheme for approval by NCC prior to the commencement of construction. This plan will include details of all traffic movements and vehicle types based on the final design for the Onshore Scheme.

43. For the delivery of AILs, an ALAR has not been undertaken to inform this outline planning application; however, one will be undertaken during detailed design of the Onshore Scheme and once details of the final transformer have been confirmed.

44. The approach taken to derive the MDS is to establish the peak month for the indicative forecast vehicle movements across the anticipated construction programme. For a robust assessment the anticipated peak month for HGVs and the anticipated peak month for workforce vehicle (cars / LGVs) has been identified, which is the same month.

45. The anticipated maximum daily and peak hour vehicle movements have then been calculated and distributed onto the highway network using a number of parameters as set out in section 12.8.2.1 and section 12.8.2.2.

46. The MDS is based on the maximum Onshore Scheme footprint and areas of temporary infrastructure detailed in Chapter 5: Project Description, along with a construction programme of 60 months.

Table 12-10 Maximum design scenario specific to Traffic, transport and access impact assessment

Potential Impact	Maximum Design Scenario	Justification
Construction	The maximum number of total daily vehicles / HGVs expected at each potential construction access location.	The maximum number assessed would not occur at each access and therefore the magnitude of impact would be lower on certain sections of the highway network in reality. .
	Should open cut trenching technology be used for the HVAC and HVDC cables to be installed under the C415 Spine Road it is assumed that there would be a temporary lane closure.	
	The assessment does not take into account car sharing or the implementation of measures within a Travel Plan (TP).	
Decommissioning	Assumed to be no worse than construction/installation.	

12.8.2. Trip Generation and Distribution

12.8.2.1. TRIP GENERATION PARAMETERS

47. In order to undertake an assessment of the likely significant effects during the construction or decommissioning of the Onshore Scheme, a number of trip generation parameters have been identified, as follows:

- Core working hours – 07:00 to 19:00, with 24-hour working for trenchless technique crossing works;
- The construction workforce arrive and depart in cars or LGVs;
- Construction workforce indicative arrival and departures:
- 80% arriving before 08:00 and leaving after 18:00 (April to October), or before 17:00 (November to March), based on approximate daylight hours; and
- 20% (as a sensitivity test) arriving between 08:00 and 09:00 and leaving between 17:00 and 18:00 (the peak periods on the highway network);
- Core HGV deliveries - 07:00 to 19:00;
- The two-way HGV movements assumes a vehicle arriving at a construction access uploading and departing at the same access;
- Car occupancy – single occupancy, which is considered a very conservative estimate, given core working hours will be the same for the majority of workers, who may frequent the same local accommodation and wish to share travel costs; and
- The two-way workforce movements assumes a vehicle arriving at a construction access in the morning and leaving in the evening, as per the assumptions above.

12.8.2.2. TRIP DISTRIBUTION PARAMETERS

48. It is assumed that all construction traffic would arrive from and depart to the A189 via the C415 Spine Road and the Brock Lane Interchange, with 75% from/to the A189 south and 25% from/to the A189 north.

49. The construction access options (coded for the purposed of this assessment and shown in Figure 12.1) for the Onshore Scheme are set out in Table 12-11, which also identifies which construction activities each access is likely to be utilised for, and the assumed maximum proportion of the indicative construction traffic.

Table 12-11 Construction vehicle distribution at each potential construction access

Access Point (AC)	Description	Assumed Maximum Proportion of Construction Vehicles (%)		
		HVDC/HVAC cable route	Onshore Converter Station	Landfall
AC1	C415 Spine Road between A189 and North Sea Link Onshore Converter Station Access	30	100	
AC2	C415 Spine Road at the North Sea Link Onshore Converter Station Access	30	100	
AC3	C415 Spine Road between the North Sea Link Onshore Converter Station Access and roundabout (Saint Eligius Way Private Road)	30		
AC4	C415 Spine Road at the roundabout (Saint Eligius Way Private Road)	70		
AC5	C415 Spine Road at Taranis Street (Private Road)	30		
AC6	C415 Spine Road at existing gated access 800 m east of Taranis Street (Private Road)	70		

AC7	C415 Spine Road at the former Britishvolt site	70		
AC8	Unity Terrace (south or north of Cambois Primary School)	10		100

50. Based on the assumptions set out above, Table 12-12 sets out the resulting proportion of the construction traffic on each highway link within the Study Area.

Table 12-12 Construction vehicle distribution on highway links

Highway Link	Assumed maximum proportion of construction vehicles (%)		
	HVDC/HVAC cable route	Onshore Converter Station	Landfall
A189 (S)	75	75	75
A189 (N)	25	25	25
C415 Spine Road west of Brock Lane	100	100	100
C415 Spine Road between AC1 and 3	100	100	100
C415 Spine Road between AC3 and 4	70		100
C415 Spine Road between AC4 and 5	70		100
C415 Spine Road between AC5 and 7	70		100
C415 Spine Road east of AC7			100
Unity Terrace			100

12.8.2.1. TRIP ASSIGNMENT

12.8.2.1.1. DAILY CONSTRUCTION TRAFFIC

51. Using the indicative construction vehicle movements from the anticipated peak month and applying assumptions set out in section 12.8.2 and Table 12-12, the forecast daily (two-way) construction vehicle movements have been derived for the highway links in the Study Area, as shown in Table 12-13.

Table 12-13 Construction vehicle assignment (maximum daily two-way)

Highway Link	Maximum Daily Construction Vehicles (2 Way)		
	HGVs	Cars / LGVs	Total
A189 (S)	94	175	270
A189 (N)	31	58	90
C415 Spine Road west of Brock Lane	126	234	360
C404C415 Spine Road between AC1 and AC4	126	234	360
C404C415 Spine Road between AC4 and AC5	82	152	234
C415 Spine Road between AC5 and AC6	82	152	234
C415 Spine Road between AC6 and AC8	82	152	234

Highway Link	Maximum Daily Construction Vehicles (2 Way)		
	HGVs	Cars / LGVs	Total
C415 Spine Road east of AC8	70	130	200
Unity Terrace	70	130	200

52. Using the indicative maximum monthly construction vehicle movements within any 12 month period during the anticipated construction programme and applying assumptions set out in section 12.8.2 and Table 12-12, the forecast average daily (two-way i.e. a vehicle arrival and departure) construction vehicle movements associated the Onshore Scheme have been derived for the highway links in the Study Area, as shown in Table 12-14.

Table 12-14 Construction vehicle assignment (average daily two-way)

Highway Link	Average Daily Construction Vehicles (2 Way)		
	HGVs	Cars / LGVs	Total
A189 (S)	58	108	166
A189 (N)	19	36	55
C415 Spine Road west of Brock Lane	78	144	222
C404C415 Spine Road between AC1 and AC3	78	144	222
C404C415 Spine Road between AC3 and AC4	30	55	85
C415 Spine Road between AC4 and AC5	30	55	85
C415 Spine Road between AC5 and AC7	30	55	85
C415 Spine Road east of AC7	42	78	120
Unity Terrace	42	78	120

12.8.2.1.2. PEAK HOUR CONSTRUCTION TRAFFIC

53. Using the indicative maximum construction vehicles movements in Table 12-13, the forecast peak hour (two-way), either morning (between 08:00 and 09:00) or evening (between 17:00 and 18:00), construction vehicle movements have been derived for the highway links in the Study Area, as shown in Table 12-15.

Table 12-15 Construction vehicle assignment (maximum peak hour two-way)

Highway Link	Maximum Peak Hour Construction Vehicles (2 Way)		
	HGVs	Cars / LGVs	Total
A189 (S)	8	18	25
A189 (N)	3	6	8
C415 Spine Road west of Brock Lane	10	23	34
C415 Spine Road between AC1 and AC3	10	23	34

Highway Link	Maximum Peak Hour Construction Vehicles (2 Way)		
	HGVs	Cars / LGVs	Total
C415 Spine Road between AC3 and AC4	7	15	22
C415 Spine Road between AC4 and AC5	7	15	22
C415 Spine Road between AC5 and AC7	7	15	22
C415 Spine Road east of AC7	6	13	19
Unity Terrace	6	13	19

54. Using the indicative average construction vehicles movements in Table 12-14, the forecast average hour (two-way), either morning (between 08:00 and 09:00) or evening (between 17:00 and 18:00), construction vehicle movements have been derived for the highway links in the Study Area, as shown in Table 12-16.

Table 12-16 Construction vehicle assignment (average peak hour two-way)

Highway Link	Average Peak Hour Construction Vehicles		
	HGVs	Cars / LGVs	Total
A189 (S)	5	11	16
A189 (N)	2	4	6
C415 Spine Road west of Brock Lane	6	14	20
C415 Spine Road between AC1 and AC3	6	14	20
C415 Spine Road between AC3 and AC4	2	6	8
C415 Spine Road between AC4 and AC5	2	6	8
C415 Spine Road between AC5 and AC7	2	6	8
C415 Spine Road east of AC7	4	8	12
Unity Terrace	4	8	12

55. Traffic data have been prepared to inform Chapter 13: Noise and Vibration and Chapter 14: Air Quality but are not reported in this Chapter.

12.8.3. Impacts Scoped Out of the Assessment

56. Impacts scoped out of the assessment were agreed with key stakeholders through consultation following receipt of the EIA Scoping Opinion from NCC in January 2023. These, together with a justification, are presented in Table 12-17.

Table 12-17 Impacts scoped out of the assessment for Traffic, Transport and Access

Potential Impact	Phase[10]			Justification
	C	O	D	
Impacts during operations and maintenance on existing traffic flows and the local road network (all vehicle movements, including HGV)		✓		HGV movements (including AILs) will only be required in the event of equipment failure where a large component needs to be replaced. It is not expected that vehicle movements during operation will result in an increase of 30% (or 10% for specifically sensitive areas) in average daily movement levels for the Study Area (IEMA, 2023) therefore there is no likelihood of a significant effect arising. Vehicle movements associated with operations will mainly be associated with personnel carrying out operations and maintenance activities. The number of people involved will be limited and as such will not give rise to significant vehicle movements, no likely significant effects are predicted

12.9. Methodology for Assessment of Effects

12.9.1. Overview

57. The assessment of traffic, transport and access impacts in relation to the Onshore Scheme has been undertaken with reference to the following key guidance documents:

- Institute of Environmental Management and Assessment (IEMA), Guidelines for Environmental Assessment of Road Traffic (GEART), 1993;
- IEMA, Environmental Assessment of Traffic and Movements (EATM), 2023; and
- Design Manual for Roads and Bridges (DMRB), LA 112 Population and Human Health.

58. EATM has recently replaced GEART, which considers the same effects, broadly; however, EATM provides some changes to the method of assessment in that it has a greater focus on applying professional judgement than simply applying rigorous percentage impact thresholds. The additional guidance in EATM has been considered alongside GEART.

59. As set out in the EIA Scoping Report, which was agreed by NCC, the following factors have been identified as being the environmental effects likely to arise from changes in traffic movements. These are considered in the assessment as likely significant effects which may arise from changes in traffic flows resulting from the Onshore Scheme:

- Driver delay – potential increases to traffic flows, including HGVs on the road network as a result of construction traffic;
- Vulnerable road users and road safety – potential impacts on road safety as a result of the increase to traffic flows, including HGVs on users of the road network (particularly vulnerable road users) as a result of construction traffic;
- Severance – potential for increased traffic, severance and driver delay in residential areas due to Onshore Scheme construction; and

[10] C = Construction, O = Operational and maintenance, D = Decommissioning

- Movement of AILs – potential for impacts on roads and associated structures as well as road users due to the movement of AILs.

60. In addition to the above, taking the comment received from the Access Officer at NCC to assess PRoWs, as outlined inTable 12-3, a further assessment has been undertaken on the impacts on users of formal ATRs.

12.9.1.1. DRIVER DELAY

12.9.1.1.1. JUNCTION CAPACITY

61. GEART and EATM recommend 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.

62. A threshold of 30 two-way vehicle movements on an approach arm to a junction is typically used for the consideration of the requirement to undertake a junction capacity assessment, primarily if a junction has known existing capacity issues.

12.9.1.1.2. TEMPORARY LANE CLOSURE

63. For the potential delay to users of the C415 Spine Road that may require a temporary lane closure to enable open cut trenching technology to be utilised to install the export cable across the road, the assessment is based on the relative importance of the link and the availability of an alternative route, using professional judgement.

12.9.1.2. COMMUNITY SEVERANCE

64. 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.

65. 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.

66. GEART suggests that changes in total traffic flow of 30%, 60% and 90% are considered to be slight, moderate and substantial respectively. However, EATM states thresholds are a starting point for any assessment and typically have been derived from studies of major changes in traffic flow and therefore should be used cautiously in any assessment. The assessment of severance should pay full regard to specific local conditions, e.g., sensitivity of adjacent land uses, prevalence of vulnerable people, whether or not crossing facilities are provided, traffic signal settings.

67. In addition to the GEART/EATM guidance, DMRB LA 112 provides guidance to both the direct effects of a new scheme, and to effects caused by increases in traffic levels on existing roads. The guidance provides example definitions of where severance could be experienced and notes that for pedestrians crossing at-grade (i.e., on the same level), AADT flows of 4,000 or less, 4,000 to 8,000, 8,000 to 16,000 and 16,000 plus, the relative sensitivity would be low, medium, high and very high respectively.

12.9.1.3. VULNERABLE ROAD USERS AND ROAD SAFETY

68. GEART states the following in terms of the assessment of vulnerable road users i.e. non-motorised users of the highway network and road safety:

    '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.'

69. EATM suggests that a 'collision cluster' assessment should be undertaken to identify potential impacts. Collision clusters are identified by a detailed review of the baseline characteristics to determine the road safety sensitivity of discrete areas of the highway network. The collision cluster criterion is typically based on a definition of number of PIAs (three, for the purposes of the assessment in this Chapter) occurring within a defined period in a given spatial radius.

12.9.1.4. MOVEMENT OF ABNORMAL INDIVISIBLE LOADS

70. The construction of the Onshore Converter Station and the installation of the HVDC and HVAC cables would require the delivery of AILs (transformer and cable drums). The transportation of the AILs may lead to delays on the highway network and also require alterations to the geometry of the highway network. Details of the AILs that would be delivered during the construction period and the mitigation that would be required are not provided in this Chapter, as they are currently unknown. Once further details are available at the detailed design stage, an assessment of AILs will be undertaken as part of an ALAR and shared with NCC.

71. Impacts on formal active travel routes (ATR)

72. The criteria in DMRB LA 112 Population and Human Health have been adopted to assess the impact of the construction works associated with the Onshore Scheme for these impacts, which are:

    - The increase of vehicle movements where a highway intersects a formal ATR (PRoW, King Charles III England Coast Path or NCR 1); and
    - The temporary closure and diversion of a formal ATR.

73. Where a formal ATR intersects with highway links, the impacts are considered on a traffic flow percentage increase basis (total traffic or HGVs).

74. Where a formal ATR is proposed to be diverted or closed in part, these are considered on the basis of the disruption incurred to the existing route.

75. DMRB LA 112 states:

    'The study area shall be based on the construction footprint/Proposed Development boundary (including compounds and temporary land take) plus a 500m area surrounding the Proposed Development boundary.'

76. However, it goes on to say:

    'Where effects are unlikely to occur within the 500m area surrounding the Proposed Development boundary, the study area should be reduced accordingly.'

77. The scope of assessment has been defined as all formal ATRs within the Study Area that might be directly impacted by the construction works.

12.9.1.5. DECOMMISIONING ACTIVITIES

78. Decommissioning activities are not anticipated to exceed the construction phase worst-case criteria assessed. In addition, it is also recognised that policy and legislation evolve.

79. Furthermore, the decommissioning methodology would be finalised nearer to the end of the lifetime of the Onshore Scheme, to be in line with current guidance, policy and legislation. As such, any methodology would be agreed with the relevant authorities and statutory consultees at the appropriate time.

80. As such, in recognition of the above, given the uncertainty of potential works and it is assumed that decommissioning would be no worse than construction/installation.

12.9.2. Impact Assessment Criteria

81. The magnitude of traffic impacts is a function of the existing Volumes of traffic, the percentage increase and changes in the type of traffic and the temporal distribution of traffic due to a development. The determination of magnitude has been undertaken by considering the parameters of the Onshore Scheme, establishing the scope of the receptors that may be affected and quantifying these effects utilising GEART/EATM, DMRB LA 112 and professional judgement.

82. Consideration is given to the composition of the traffic on the road network under both existing and proposed conditions. For example, LGVs have less impact on traffic and the road system than HGVs. Similarly, HGVs can have less impact than AIL vehicles, depending on the frequency of the AILs.

83. The magnitude of impact assessment criteria are set out in Table 12-18.

Table 12-18 Magnitude of impact

Magnitude of impact	Driver Delay	Community Severance	Road Safety	Formal ATR Intercepted by a Highway Link	Temporary Diversion of a Formal ATR
High	Quantitative assessment of road capacity based on existing traffic flows and predicted future traffic levels. Qualitative assessment of inconvenience associated with a temporary lane or road closure.	>60% increase in traffic	Qualitative assessment of existing accident records and predicted increases in traffic.	Increase in total traffic flows or HGV flows of 90% and above on a link intersecting an ATR.	>500 m increase (adverse)/decrease (beneficial) in journey length.
Medium	Quantitative assessment of road capacity based on existing traffic flows and predicted future traffic levels. Qualitative assessment of inconvenience associated with a temporary lane or road closure.	31% to 60% increase in traffic	Qualitative assessment of existing accident records and predicted increases in traffic.	Increase in total traffic flows of 60 to 89% (40 to 89% HGVs) on a link intersecting an ATR.	>250 m – 500 m increase (adverse) or decrease (beneficial) in journey length.
Low	Quantitative assessment of road capacity based on existing traffic flows and predicted future traffic levels. Qualitative assessment of inconvenience associated with a temporary lane or road closure.	11 - 30% increase in traffic	Qualitative assessment of existing accident records and predicted increases in traffic.	Increase in total traffic flows of 30 to 59% (or increase in HGV flows of 10% to 39% on a link intersecting an ATR.	50 m to 250 m increase (adverse) or decrease (beneficial) in journey length.
Negligible	<30 two-way vehicle movements at a junction approach No temporary lane or road closure	<10% increase in traffic	<10% increase in traffic	Increase in total traffic flows or HGV flows of 29% or under (or increase in HGV flows under 10%) on a link intersecting an ATR	<50m increase (adverse) or decrease (beneficial) in journey length.

84. The potential sensitivity of receptors to changes in traffic levels has been determined by considering the Study Area and the presence of receptors in relation to each potential impact.

85. For impacts associated with the increase in vehicle movements on the highway network, GEART/EATM provide two thresholds, whereby a full assessment of the impact is required:

    - Rule 1 – Include highway links where total 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 total traffic flows are predicted to increase by 10% or more.

86. Rules 1 and 2 are used as a screening tool to determine whether or not a full assessment of effects on routes within the Study Area is required as a result of intensification of road traffic. Where anticipated construction traffic Volumes are not greater than 30% (or 10% at sensitive locations), a detailed assessment of effects is not necessary.

87. In this context, GEART/EATM does not define a sensitive area and, therefore, the assessor makes a professional judgement based on experience and the nature of the study area. Each receptor has been assessed individually to determine its sensitivity, between negligible and high, and the assessment criteria chosen are shown in Table 12-19..

88. For the impacts associated with users of PRoW, Table 3.11 of DMRB LA 112 sets out the sensitivities, between negligible and very high, based on the hierarchy of the route, the type of use and potential for alternatives.

89. For the assessment of potential driver delay associated with the use of open trenching technology, the sensitivity of the link has been based on professional judgement and identified based on the following:

    - The strategic importance of the road/highway hierarchy;
    - The existing types of users of the road; and
    - Availability of suitable alternative routes.

Table 12-19 Sensitivity / importance of the environment

Sensitivity	Impact	Description/Reason
High	Increase in traffic	Receptors of greatest sensitivity to traffic flows: schools, colleges, playgrounds, accident black spots (with reference to accident data), retirement homes, urban / residential roads without footways that are used by pedestrians.
	Formal ATR intersected by a highway link	Users crossing roads with >8,000 to 16,000 vehicles per day
	Temporary diversion of a formal ATR	Regional trails and routes (e.g., promoted circular walks) likely to be used for recreation and to a lesser extent commuting, that record frequent (daily) use. Limited potential for substitution.
	Use of open cut trenching	'A' Roads or any roads with no alternative route available.
Medium	Increase in traffic	Traffic flow sensitive receptors: congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, unsegregated cycleways, community centres, parks, recreation facilities.
	Formal ATR intersected by a highway link	Users crossing roads with >4,000 to 8,000 vehicles per day.
	Temporary diversion of a formal ATR	PRoW and other routes close to communities which are used for recreational purposes (e.g., dog walking), but for which alternative routes can be taken. These routes are likely to link to a wider network of routes to provide options for longer, recreational journeys.
	Use of open cut trenching	Roads that are regularly used, with alternative routes available.
Low	Increase in traffic	Receptors with some sensitivity to traffic flow: places of worship, public open space, nature conservation areas, listed buildings, tourist attractions, residential areas with adequate footways.
	Formal ATR intersected by a highway link	Users crossing roads with <4,000 vehicles per day.
	Temporary diversion of a formal ATR	Routes which have fallen into disuse through past severance, or which are scarcely used because they do not currently offer a meaningful route for utility/recreational use.
	Use of open cut trenching	Roads that are unlikely to be regularly used, with alternative routes available.
Negligible	Increase in traffic	Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads / junctions.
	Formal ATR intersected by a highway link	n/a
	Temporary diversion of a formal ATR	n/a
	Use of open cut trenching	n/a

90. Sensitivity and magnitude of impact as set out within the detailed criteria have then been considered collectively to determine the effect and its significance. The collective assessment represents a 'considered assessment' by the assessor, based on the likely sensitivity of the receptor to the change

(e.g., is a receptor present which would be affected by the change), and then the magnitude of that change. Table 12-20 is used as a guide to determine the level of effect. 'Major' and 'moderate' effects are considered to be 'significant' in terms of the EIA Regulations.

Table 12-20 Matrix used for the assessment of the significance of the effect

		Magnitude of Impact				
		No Change	**Negligible**	**Low**	**Medium**	**High**
Sensitivity of Receptor	**Negligible**	Negligible	Negligible	Negligible to Minor	Negligible to Minor	Minor
	Low	Negligible	Negligible to Minor	Negligible to Minor	Minor	Minor to Moderate
	Medium	Negligible	Negligible to Minor	Minor	Moderate	Moderate to Major
	High	Negligible	Minor	Minor to Moderate	Moderate to Major	Major

91. Effects may be positive (beneficial) or negative (adverse). Where an effect is classified as major, this is considered to represent a 'significant effect' in terms of the EIA Regulations. Where an effect is classified as moderate, this may be considered to represent a 'significant effect' but should always be subject to professional judgement and interpretation, particularly where the sensitivity or impact magnitude levels are not clear or are borderline between categories or the impact is intermittent.

92. The level of effects matrix shown in Table 12-20 therefore provides a guide to decision making but is not a substitute for professional judgement. Impacts and effects can be beneficial, neutral or adverse and these would be specified where applicable. It should be noted that significant effects need not be unacceptable or irreversible.

12.10. Measures Adopted as Part of the Onshore Scheme

93. As part of the Onshore Scheme design process, a number of measures have been proposed to reduce the potential for impacts on Traffic, transport and access (see Table 12-21). These include measures which have been incorporated as part of the Onshore Scheme's design (referred to as 'designed in measures') and measures which will be implemented regardless of the impact assessment (referred to as 'tertiary mitigation'). As there is a commitment to implementing these measures, they are considered inherently part of the design of the Onshore Scheme and have therefore been considered in the assessment presented in section 12.11 (i.e. the determination of magnitude and therefore significance assumes implementation of these measures). These measures are considered standard industry practice for this type of development.

Table 12-21 Measures adopted as part of the Onshore Scheme

Mitigation Measure	Justification
Construction Traffic Management Plan (CTMP)	A CTMP will set out the traffic management measures to be implemented during construction of the Onshore Scheme and how the movement of construction traffic will be monitored. This will be agreed with NCC, but could include routeing and timing of HGVs, driver awareness training and on-site protocols to maintain safety.
Travel Plan (TP)[11]	A TP will include demand management measures to be adopted.
Public Access Management Plan (PAMP)	A Public Access Management Plan will be prepared with the aim of determining the option with the lowest practicable impact to users if diversions are needed or in the unlikely case of temporary closures. Any closures or diversions of PRoWs would be communicated to the relevant authorities in advance of the works commencing, indicating the extent, duration and mitigation opportunities present.
Design and Access Statement (DAS)	A DAS will be submitted alongside the ES as part of the planning application and will set out how access has been considered in developing the Onshore Scheme.

12.11. Assessment of Likely Significant Effects

94. An assessment of the likely significance of the effects of the Onshore Scheme on traffic, transport and access receptors caused by each identified impact is given below.

12.11.1. Potential Effects During Construction and Decommissioning

DRIVER DELAY (JUNCTION CAPACITY)

12.11.1.1. INTRODUCTION OF IMPACT

95. A screening process has been undertaken for the construction vehicle access routes to identify highway links that are likely to have sufficient changes in traffic flows in the peak hours on the highway network to be above the screening threshold and therefore require further impact assessment for driver delay.

96. The consideration of potential driver delay has been assessed across the highway network in the Study Area based on the forecast peak hour trip generation of the Onshore Scheme during the construction phase, using the worst-case assumptions set out in the maximum design scenario.

97. Based on the forecast maximum two-way peak hour traffic flows on each highway link within the Study Area (Table 12-15), the threshold for the consideration of undertaking a junction capacity assessment of 30 two-way vehicle movements is marginally breached on the C415 Spine Road approach to the Brock Lane Interchange, with 34 vehicle movements. However, the forecast average two-way peak hour traffic flow on this approach to the junction is 20. Therefore, it is considered that the forecast vehicle movements associated with the construction of the Onshore Scheme in the peak hours on the

[11] Whilst the TP is assumed tertiary mitigation, no allowance for the impact of the measures within it have been made, for a robust assessment i.e., single occupancy vehicles assumed for a robust assessment.

highway network would have a negligible impact at the junction and therefore not significant in EIA terms.

98. Given the above and since the Brock Lane Interchange does not have any existing capacity issues (as set out in paragraph 19), no further assessment of driver delay (junction capacity) has been undertaken in this Chapter.

DRIVER DELAY (TEMPORARY LANE CLOSURE)

12.11.1.2. INTRODUCTION OF IMPACT

99. The other aspect of driver delay would be as a result of the installation of the export cable across roads using open cut trenching technology (as a reasonable worst-case scenario, if such technology is selected).

100. Where possible, the affected road in the Study Area (the C415 Spine Road) would be kept open with traffic management measures in place to reduce disruption to existing vehicles on the highway network. In this scenario (known as shuttle working) there would be a slight delay as a result of temporary traffic lights or manually operated 'STOP/GO' boards to keep one lane open; however, the works for crossing the road will be for a short period, no longer than 14 days. The other option is to use trenchless technology techniques such as Horizontal Directional Drilling (HDD) to install the export cable under the road, which would not result in any driver delay. The emergency services would be notified well in advance of when the planned temporary lane closure is due to occur.

12.11.1.3. MAGNITUDE OF IMPACT

101. Using Table 12-18, where there might be a temporary lane or road closure, a qualitative assessment of inconvenience has been undertaken.

102. Table 12-22 sets out the forecast maximum number of vehicles (baseline plus the forecast peak construction traffic associated with the Onshore Scheme) that would approach the potential lane closure on the C415 Spine Road, which would be eastbound traffic during the morning peak hour on the highway network (08:00 to 09:00).

Table 12-22 Forecast eastbound traffic flows on the C415 Spine Road (08:00 to 09:00)

Baseline (2023) (average per hour)	Onshore Scheme (Construction Vehicles)		Baseline plus Onshore Scheme	
	Workforce (Cars/LGVs)	HGVs	Per Hour	Per Minute (Average)
146	23	5	174	3

103. As Table 12-22 shows, the maximum number of vehicles forecast to approach the potential lane closure is unlikely to result in any large queues and therefore the potential temporary lane closure of the C415 Spine Road would result in some very minor delays to vehicles in both directions.

104. The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be Low.

12.11.1.4. SENSITIVITY OF THE RECEPTOR

105. The C415 serves the NSL Onshore Converter Station, the Port of Blyth, residential communities and access to the coastline for recreational use, and users of it would have a low sensitivity to the minor delays that would be experienced for a short period, particularly as there is an alternative route available via Brock Lane, Wembley Gardens, South View, Foster Terrace and Unity Terrace (although it is unlikely drivers would choose this option as the additional journey time could be greater than the delay experienced).

106. The main sensitivity for a temporary lane closure on the C415 Spine Road would be associated with access by the emergency services and the additional journey time using the alternative route or the ability to pass through the temporary lane closure where there might be queueing vehicles, which would vary depending on the time of day (and number of vehicles on the C415 Spine Road) and the method and application of the chosen temporary control method (temporary traffic signals or STOP/GO boards).

107. Users of the C415 Spine Road are deemed to be of medium vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Medium.

12.11.1.5. SIGNIFICANCE OF THE EFFECT

108. Overall, the magnitude of the impact is deemed to be Low, and the sensitivity of the receptor is considered to be Medium. The effect will, therefore, be of **minor adverse significance**, which is **not significant** in EIA terms.

12.11.1.6. SECONDARY MITIGATION AND RESIDUAL EFFECT

109. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms. The effect will, therefore, remain as **minor adverse significance**, which is **not significant** in EIA terms.

COMMUNITY SEVERANCE

12.11.1.7. INTRODUCTION OF IMPACT

110. In order to consider the potential for community severance, which may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself, the percentage change of the forecast maximum daily traffic associated with the construction of the Onshore Scheme from the 2023 baseline on each highway link within the Study Area has been undertaken as set out in Table 12-23.

111. There is a possibility that Brock Lane and Old Main Road will need to be utilised to access areas south of Brock Lane to construct the HDD construction compound before the temporary access road is constructed, however this is likely to be limited to approximately four low loaders and associated wagons with aggregates and would be for an approximate period of 1 month and then would not be used for any other aspect of construction.

Table 12-23 Maximum daily trip generation percentage impacts

Highway Link	Baseline (2023)		Assumed Maximum Construction Vehicles		Baseline plus Maximum Construction Vehicles		Percentage Increase (%)	
	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs
A189 (S)	40,391	1,371	270	94	40,661	1,465	0.7	6.9
A189 (N)	36,405	1,038	90	31	36,495	1,069	0.2	3.0
C415 Spine Road west of Brock Lane	2,816	96	360	126	3,176	222	12.8	131.3
C415 Spine Road between AC1 and AC3	2,816	96	360	126	3,176	222	12.8	131.3
C415 Spine Road between AC3 and AC4	2,816	96	234	82	3,050	178	8.3	85.4
C415 Spine Road between AC4 and AC5	2,816	96	234	82	3,050	178	8.3	85.4
C415 Spine Road between AC5 and AC7	2,816	96	234	82	3,050	178	8.3	85.4
C415 Spine Road east of AC7	2,816	96	200	70	3,016	166	7.1	72.9
Unity Terrace	883	14	200	70	1,083	84	22.7	500.0

112. Using the Rule 1 threshold as set out in paragraph 85, all highway links in the Study Area require assessment with the exception of the A189, as the percentage impact is less than 30% on this link. For all other highway links, the increase in the number of HGVs is greater than 30%.

12.11.1.8. MAGNITUDE OF IMPACT

113. Using Table 12-18, a change in total traffic flow of less than 10% would result in a negligible magnitude of impact on community severance. Based on the maximum daily percentage impacts set out in Table 12-23, this would apply to the C415 Spine Road between AC3 and AC4, the C415 Spine Road between AC4 and AC5, the C415 Spine Road between AC5 and AC7 and the C415 Spine Road east of AC7.

114. The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect, the C415 Spine Road between AC3 and AC4, the C415 Spine Road between AC4 and AC5, the C415 Spine Road between AC5 and AC7 and the C415 Spine Road east of AC7, directly. The magnitude is therefore considered to be negligible.

115. Using Table 12-18, a change in total traffic flow between 11 and 30% would result in a low magnitude of impact on community severance. Based on the maximum daily percentage impacts set out in Table 12-23, this would apply to the C415 Spine Road west of Brock Lane, the C415 Spine Road between AC1 and AC3 and Unity Terrace.

116. The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the C415 Spine Road west of Brock Lane, the

C415 Spine Road between AC1 and AC3 and Unity Terrace directly. The magnitude is therefore considered to be Low.

12.11.1.9. SENSITIVITY OF THE RECEPTOR

117. There are residential properties located on the C415 Spine Road at Harbour View, where there are footways and suitable crossing locations; however, it is unlikely there are many regular non-motorised users associated with the local community requiring crossing the C415 Spine Road (notwithstanding users of formal ATR, which is assessed separately). Therefore, the C415 Spine Road is considered to have a Low sensitivity for the impact of community severance.

118. The local community on the C415 Spine Road (all sections) is considered to have low vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Low.

119. There are residential properties on Unity Terrace and some local facilities (i.e., the primary school on Unity Terrace), with footways and suitable crossing locations available. Therefore, the sensitivity for the impact of community severance on Unity Terrace is considered to be Medium.

120. The local community at Unity Terrace are considered to have medium vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Medium.

12.11.1.10. SIGNIFICANCE OF THE EFFECT

121. For the C415 Spine Road between AC3 and AC4, the C415 Spine Road between AC4 and AC5, the C415 Spine Road between AC5 and AC7 and the C415 Spine Road east of AC7, the magnitude of the impact is deemed to be Negligible, and the sensitivity of the receptor is considered to be Low. The effect will, therefore, be of **negligible significance**, which is **not significant** in EIA terms.

122. For the C415 Spine Road west of Brock Lane and the C415 Spine Road between AC1 and AC3, the magnitude of the impact is deemed to be Low, and the sensitivity of the receptor is considered to be Low. The effect will, therefore, be of **negligible to minor adverse significance**, which is **not significant** in EIA terms.

123. For Unity Terrace, the magnitude of the impact is deemed to be Low, and the sensitivity of the receptor is considered to be Medium. The effect will, therefore, be of **minor adverse significance**, which is **not significant** in EIA terms.

12.11.1.11. SECONDARY MITIGATION AND RESIDUAL EFFECT

124. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms. The effect will, therefore, remain as **minor adverse significance**, which is **not significant** in EIA terms.

VULNERABLE ROAD USERS AND ROAD SAFETY

12.11.1.12. INTRODUCTION OF IMPACT

125. In order to consider the likely significant effect on vulnerable road users (non-motorised users of the highway network) and road safety due to an increase in traffic associated with the construction of the Onshore Scheme, the percentage change of the forecast maximum daily traffic associated with the construction of the Onshore Scheme from the 2023 baseline on each highway link within the Study Area has been undertaken as set out in Table 12-23.

126. Using the Rule 1 threshold as set out in paragraph 85, all highway links in the Study Area require assessment with the exception of the A189, as the percentage impact is less than 30% on this link. For all other highway links, the increase in the number of HGVs is greater than 30%.

12.11.1.13. MAGNITUDE OF IMPACT

127. Using Table 12-18, for a change in total traffic flow less than 10% would result in a negligible magnitude of impact on community severance. Based on the maximum daily percentage impacts set out in Table 12-23.

128. , this would apply to the C415 Spine Road between AC1 and AC3, the C415 Spine Road between AC3 and AC4, the C415 Spine Road between AC4 and AC5, the C415 Spine Road between AC5 and AC7 and the C415 Spine Road east of AC7.

129. The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the C415 Spine Road between AC1 and AC3, the C415 Spine Road between AC3 and AC4, the C415 Spine Road between AC4 and AC5, the C415 Spine Road between AC5 and AC7 and the C415 Spine Road east of AC7, directly. The magnitude is therefore considered to be Negligible.

130. Using Table 12-18, for a change in total traffic flow greater than 10% a qualitative assessment of existing accident records and predicted increases in traffic is required to determine the magnitude of impact. Based on the maximum daily percentage impacts set out in Table 12-23.

131. , this would apply to the C415 Spine Road west of Brock Lane and the C415 Spine Road between AC1 and AC3 and Unity Terrace. Given there has only been one slight PIA on the C415 between the A189 and AC3 and none on Unity Terrace in the assessment period and since construction traffic would be managed by a CTMP, the magnitude of impact is considered to be Low.

132. The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the C415 Spine Road west of Brock Lane and the C415 Spine Road between AC1 and AC3 and Unity Terrace directly. The magnitude is therefore considered to be Low.

12.11.1.14. SENSITIVITY OF THE RECEPTOR

133. The C415 Spine Road between AC1 and AC3, the C415 Spine Road between AC3 and AC4, the C415 Spine Road between AC4 and AC5, the C415 Spine Road between AC5 and AC7 and the C415 Spine Road east of AC7 is likely to be regularly used by cyclists as it forms part of NCR 1 and is already used by HGVs. There have not been any PIAs involving non-motorised users or HGVs in the assessment period and no clusters of PIAs. Therefore, the C415 Spine Road between AC1 and AC3, the C415 Spine Road between AC3 and AC4, the C415 Spine Road between AC4 and AC5, the C415 Spine Road between AC5 and AC7 and the C415 Spine Road east of AC7 are considered to have a Low sensitivity for the impact of road safety.

134. The C415 Spine Road between AC1 and AC3, the C415 Spine Road between AC3 and AC4, the C415 Spine Road between AC4 and AC5, the C415 Spine Road between AC5 and AC7 and the C415 Spine Road east of AC7 is considered to have low vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Low.

135. The C415 Spine Road west of Brock Lane and the C415 Spine Road between AC1 and AC3 may be regularly used by cyclists as it provides a connection between areas to the east of the A189 to NCR 1 and is already used by HGVs. There have not been any PIAs involving non-motorised users or HGVs in the assessment period and no clusters of PIAs. Therefore, the C415 Spine Road west of Brock Lane

and the C415 Spine Road between AC1 and AC3 are considered to have a low sensitivity for the impact of road safety.

136. The C415 Spine Road between the C415 Spine Road west of Brock Lane and the C415 Spine Road between AC1 and AC3 is considered to have low vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Low.

137. Unity Terrace is likely to be regularly used by cyclists as it forms part of NCR 1. There have been no PIAs in the assessment period. However, given very few HGVs currently use Unity Terrace it is considered to have a medium sensitivity for the impacts of road safety.

138. Unity Terrace is considered to have medium vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Medium.

12.11.1.15. SIGNIFICANCE OF THE EFFECT

139. For the C415 Spine Road between AC1 and AC3, the C415 Spine Road between AC3 and AC4, the C415 Spine Road between AC4 and AC5, the C415 Spine Road between AC5 and AC7 and the C415 Spine Road east of AC7, the magnitude of the impact is deemed to be Negligible, and the sensitivity of the receptor is considered to be Low. The effect will, therefore, be of **negligible significance**, which is **not significant** in EIA terms.

140. For the C415 Spine Road between the C415 Spine Road west of Brock Lane and the C415 Spine Road between AC1 and AC3, the magnitude of the impact is deemed to be Low, and the sensitivity of the receptor is considered to be Low. The effect will, therefore, be of **negligible to minor adverse significance**, which is **not significant** in EIA terms.

141. For Unity Terrace, the magnitude of the impact is deemed to be Low, and the sensitivity of the receptor is considered to be Medium. The effect will, therefore, be **minor adverse significance**, which is **not significant** in EIA terms.

12.11.1.16. SECONDARY MITIGATION AND RESIDUAL EFFECT

142. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms. The effect will, therefore, remain as **minor adverse significance**, which is **not significant** in EIA terms.

USERS OF FORMAL ATR (INTERACTING WITH HIGHWAY LINKS)

12.11.1.17. INTRODUCTION OF IMPACT

143. The impact on users of formal ATRs to an increase in traffic associated with the construction of the Onshore Scheme is considered where a PRoW intersects with highway links based on a traffic flow percentage increase basis.

144. For the ATR in the Study Area, the C415 Spine Road east of AC7 intersects a crossing point between PRoW 600/059 and the King Charles III England Coast Path.

12.11.1.18. MAGNITUDE OF IMPACT

145. The maximum daily percentage impacts on the C415 Spine Road east of AC7, which is the section where users between PRoW 600/059 and the King Charles III England Coast Path would cross, are forecast to be 7.1% (total traffic) and 72.9% (HGVs). Using Table 12-18, a change in HGVs between

40 and 89% would result in a medium magnitude of impact. However, as set out in Table 12-13, the actual maximum forecast increase number of two-way HGV movements would rise from 96 in the baseline scenario during the proposed 12 hour construction delivery period, which is eight per hour on average, to 166 with the HGVs associated with the construction of the Onshore Scheme, which is about 14 per hour on average) and therefore unlikely to be noticeable in the daily HGV flow fluctuations. Also, the forecast change in total vehicles at this location would change from 3.9 two-way vehicles per minute (on average) to 4.1 two-way vehicles per minute and therefore, using professional judgment in that there would be similar suitable gaps in vehicle movements compared to the baseline scenario, the magnitude of impact on the users of PRoW 600/059 and the King Charles III England Coast Path crossing the C415 Spine Road east of AC7 to be low.

146. The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect users of PRoW 600/059 and the King Charles III King Charles III England Coast Path crossing the C415 Spine Road east of AC7, directly. The magnitude is therefore considered to be Low.

12.11.1.19. SENSITIVITY OF THE RECEPTOR

147. Using the criteria in Table 12-19, and the forecast maximum daily vehicle movements on the C415 Spine Road east of AC7 (baseline plus construction vehicles associated with the Onshore Scheme) in Table 12-23 (3,016), the sensitivity can be considered to be low (less than 4,000 vehicles per day). Also, PRoW 600/059 is relatively overgrown for the majority of the route and likely to be used by local residents for dog walking, rather than by longer distance walkers as a connection to the King Charles III England Coast Path, which passes the start of PRoW 600/059 at Foster Terrace and therefore longer distance walkers would most likely remain on the King Charles III England Coast Path.

148. Users crossing the C415 Spine Road east of AC7 between PRoW 600/059 and the King Charles III England Coast Path are considered to have low vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Low.

12.11.1.20. SIGNIFICANCE OF THE EFFECT

149. The magnitude of the impact is deemed to be Low, and the sensitivity of the receptor is considered to be Low. The effect will, therefore, be of negligible to **minor adverse significance**, which is **not significant** in EIA terms.

USERS OF FORMAL ATR (TEMPORARY DIVERSIONS)

12.11.1.21. INTRODUCTION OF IMPACT

150. The impact on users of formal ATR during the construction period of the Onshore Scheme is also considered associated with disruption due to construction activity crossing a route and should a temporary closure and diversion be required, based on the additional journey length incurred.

151. PRoW 600/059 and PRoW 600/062 may be crossed by a haul road within the Study Area during construction and would be kept open with a gated crossing (and managed through measures set out in the PAMP) and when work is undertaken at that location, the PRoW would be temporarily diverted around that work area. It is anticipated that the maximum distance a PRoW would be diverted temporarily (the additional journey length) would be 100 m.

152. Charles III England Coast Path would need to be temporarily closed and diverted, should open trenching technology be utilised to install the cable across the alignment of the path. It is anticipated

that the maximum distance King Charles III England Coast Path would be diverted temporarily (the additional journey length) would be 50 m.

12.11.1.22. MAGNITUDE OF IMPACT

153. Using the criteria in Table 12-18, an additional journey length of between 50 m and 250 m is considered to be a Low magnitude of impact, which is applicable to the potential temporary diversion of PRoW 600/059 and PRoW 600/062.

154. The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact would affect users of PRoW 600/059 and PRoW 600/062 directly. The magnitude is therefore considered to be Low.

155. Using the criteria in Table 12-18, an additional journey length of less than 50 m is considered to be a negligible magnitude of impact, which is applicable to the potential temporary diversion of King Charles III England Coast Path and NCR 1.

156. The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact would affect users of King Charles III England Coast Path directly. The magnitude is therefore considered to be Negligible.

12.11.1.23. SENSITIVITY OF THE RECEPTOR

157. Using the criteria in Table 12-19, the sensitivity of users of PRoW 600/059 and PRoW 600/062 can be considered medium.

158. Users of PRoW 600/059 and PRoW 600/062 are considered to have medium vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Medium.

159. Using the criteria in Table 12-19, the sensitivity of users of King Charles III England Coast Path and NCR 1 can be considered high.

160. Users of King Charles III England Coast Path and NCR 1 are considered to have high vulnerability, high recoverability and high value. The sensitivity of the receptor is therefore, considered to be High.

12.11.1.24. SIGNIFICANCE OF THE EFFECT

161. For the users of PRoW 600/059 and PRoW 600/062, the magnitude of the impact is deemed to be Low, and the sensitivity of the receptor is considered to be Medium. The effect will, therefore, be of **minor adverse significance**, which is **not significant** in EIA terms.

162. For the users of King Charles III England Coast Path, the magnitude of the impact is deemed to be Negligible, and the sensitivity of the receptor is considered to be High. The effect will, therefore, be of **minor adverse significance**, which is **not significant** in EIA terms.

12.11.2. Potential Effects During Decommissioning

163. In general, the scale and type of effects expected during the decommissioning stage could be expected to be similar to those anticipated to occur during the construction stage.

164. With regards to the buried onshore cables, it is proposed that these would be left in-situ during decommissioning, allowing the cables to remain in place is considered an acceptable option with minimal environmental impact.

165. The principal options for decommissioning of the HVDC and HVAC cables include:

- Leaving the cabled in-situ, trenched;
- Leaving the cabled in-situ and providing additional protection; and
- Remove sections of the cables.

166. For the purposes of a realistic worst-case assessment while the approach to decommissioning is developed by the applicant, it has been assumed for the purposes of this assessment that the cables would be pulled through the ducts and removed, with the ducts themselves left in situ. With regards to the Onshore Converter Station, it would be gradually dismantled with certain infrastructure removed for recycling or reuse. Following this, the area is likely to be remediated and restored.

167. Should complete removal of the HVDC and HVAC cables be required, the significance of effect is considered to result in similar impacts to those assessment as part of the construction phase of the Onshore Scheme. Complete removal of infrastructure represents the most significant adverse effects, and therefore if the other decommissioning options were to be progressed, they would have no more significant adverse effects.

168. It is anticipated that the onshore Converter Station would be gradually dismantled with certain infrastructure removed for recycling or reuse. Following this, the area is likely to be remediated and restored.

169. Specific decommissioning requirements and potential concerns with regards to traffic, transport and access would be discussed with the relevant statutory consultees at the time.

12.12. Proposed Monitoring

170. No monitoring is proposed.

12.13. Cumulative Effects Assessment

12.13.1. Methodology

171. The Cumulative Effects Assessment (CEA) takes into account the impact associated with the Onshore Scheme together with other relevant plans, developments and activities. Cumulative effects are therefore the complete set of likely significant effects arising from the Onshore Scheme together with the effects from a number of different developments, on the same receptor or resource. Please see Volume 2, Chapter 3 of the Onshore ES for detail on CEA methodology.

172. The developments selected as relevant to the CEA presented within this Chapter are based upon the results of a screening exercise and the development of a ‘long list’ of cumulative developments relevant to the Onshore Scheme (see Volume 3, Technical Appendix 3.1). Each development has been considered on a case by case basis for screening in or out of this Chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved, to create the ‘short list’ as summarised in Table 12-24. This approach was agreed during Scoping.

173. It is appropriate to consider the Landfall area in further detail in the context of the Cambois Connection Marine Scheme. The preferred base port(s) for the offshore construction of the Project is not known and would be decided post-consent. Port activity would be assessed through a panning application or assumed permitted development rights of the Port. The cumulative impacts with The Marine Scheme are therefore scoped out of the CEA.

174. The specific cumulative developments scoped into the CEA for traffic, transport and access, are outlined in Table 12-24.

Table 12-24 List of other developments considered within the CEA for Traffic, Transport and Access

Development	Status	Distance from Study Area (km)	Description of Development	Date of Construction	Date of Operation	Overlap with the Onshore Scheme
Former Vald Birn Foundry, Cambois (23/01278/SCREEN)	Screening Opinion	c0.1	Residential development and associated infrastructure.	Unknown	Unknown	
Land To North of Spring Ville East Sleekburn (21/03723/FUL)	Application Consented	c0.1	Proposed residential development for 48 dwellings with associated access and an area of public open space.	Under construction	Unknown	
Land North of Blyth Power Station Substation, East Sleekburn (22/00879/FUL)	Application Consented	0.0	Erection of building for manufacturing of subsea cables, with ancillary offices and outdoor cable storage, together with associated development and infrastructure works including vehicular accesses off Brock Lane, landscaping and vehicular parking.	Under construction	2027	Construction phase or operation phase of development assumed to overlap with Onshore Scheme construction phase. No construction phase traffic data available for each development, therefore an overlap with the operational phase has been assumed as a worst-case.
Land At Former Power Station Site on Northern Side of Cambois (21/00818/FULES)	Application Consented	0.0	Erection of battery manufacturing plant with ancillary offices, together with associated development and infrastructure works (including site preparation works, ground modelling, drainage, landscaping, vehicular assess, cycle and pedestrian access, parking provision, substation and other associated works).	Unknown	Unknown	

12.13.2. Cumulative Effects Assessment

175. An assessment of the likely significance of the cumulative effects of the Onshore Scheme upon traffic, transport and access receptors arising from each identified impact is given below.

176. The following cumulative impacts have not been assessed:

- Driver delay (junction capacity) – no assessment was undertaken for the Onshore Scheme due to the negligible number of vehicle movements forecast in the peak hours on the highway network and the available capacity of the Brock Lane Interchange;
- The increase of vehicle movements where a highway intersects a formal ATR – there are no vehicle movements forecast on the C415 Spine Road east of AC8 associated with the cumulative developments; and
- The temporary closure and diversion of a formal ATR – not relevant to cumulative development vehicle movements on the highway network.

12.13.2.1. LIKELY SIGNIFICANT EFFECTS DURING (CONSTRUCTION)

CUMULATIVE DRIVER DELAY (TEMPORARY LANE CLOSURE)

12.13.2.1.1. INTRODUCTION OF IMPACT

177. A cumulative assessment has been undertaken to consider the scenario whereby a temporary lane closure is required to install the export cable of the Onshore Scheme across the C415 Spine Road, occurring once the developments in Table 12-24 are operational.

12.13.2.1.2. MAGNITUDE OF IMPACT

178. Table 12-25 sets out the forecast maximum number of vehicles (baseline plus the forecast peak construction traffic associated with the Onshore Scheme) that would approach the potential lane closure on the C415 Spine Road, which would be westbound traffic during the afternoon shift changeover associated with the proposed battery manufacturing facility (21/00818/FULES) during 14:00 to 15:00[12]. There would be no vehicle movements on the C415 Spine Road associated with the three other cumulative developments at the proposed crossing zone.

Table 12-25 Forecast westbound traffic flows on the C415 Spine Road (14:00 to 15:00)

Baseline (2023)	Onshore Scheme (Construction Vehicles)		Cumulative Developments (Operational Vehicles)		Baseline plus Onshore Scheme, plus Cumulative Developments	
	Workforce (Cars/LGVs)	HGVs	Workforce (Cars/LGVs)	HGVs	Per Hour	Per Minute (Average)
144	0	4	333	7	488	8

[12] Table 5.3 of the Transport Assessment for 21/00818/FULES (reduced by 33% for Phase 2).

179. As Table 12-22 shows, the maximum number of vehicles forecast to approach the potential lane closure in the cumulative scenario is substantially higher than the Onshore Scheme alone scenario, due to the Volume of vehicles leaving the battery manufacturing facility (21/00818/FULES) at the end of the morning shift. Based on an even arrival profile during the hour, around eight vehicles would approach the temporary lane closure per minute, which may result in queues forming, particularly as there is likely to be spikes in vehicle departures from the site and therefore can be considered to have a medium magnitude of impact.

180. The cumulative impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect users of the C415 Spine Road directly. The magnitude is therefore considered to be Medium.

12.13.2.1.3. SENSITIVITY OF RECEPTOR

181. The main sensitivity for a temporary lane closure on the C415 Spine Road would be associated with access by the emergency services and the additional journey time using the alternative route or the ability to pass through the temporary lane closure where there are queueing vehicles, which would vary depending on the time of day (and number of vehicles on the C415 Spine Road) and the method and application of the chosen temporary control method (temporary traffic signals or STOP/GO boards).

182. Users of the C415 Spine Road are deemed to be of medium vulnerability, high recoverability and medium value. The sensitivity of users of the C415 Spine Road is therefore, considered to be Medium.

12.13.2.1.4. SIGNIFICANCE OF EFFECT

183. Overall, the magnitude of the cumulative impact is deemed to be Medium and the sensitivity of the receptor is considered to be Medium. The cumulative effect will, therefore, be of **moderate adverse significance**, which is **significant** in EIA terms.

12.13.2.1.5. SECONDARY MITIGATION AND RESIDUAL EFFECT

184. In order to mitigate the impact for queues forming at the temporary lane closure, should it be required, the applicant is committed to the following measures:

- Require that the works are undertaken in as short a timeframe as practicable, through conditions of contract, to include night-time working if deemed acceptable by NCC;
- Adopt a co-ordinated approach with the type and operation of the temporary control measure selected, to give greater green time to the direction with the greatest flow, such as known shift change over periods or to be able to react to changes in traffic accordingly; and
- Provide a hardstrip on the edge of the carriageway (for each open lane) through the work area to allow vehicles to pull over and allow an emergency vehicle to pass though.

185. With the mitigation commitments identified above, the magnitude of the cumulative effect is deemed to be **Low** and the sensitivity of users of the C415 Spine Road is considered to be **Medium**. The cumulative effect will, therefore, be of **minor adverse significance**, which is **not significant** in EIA terms.

CUMULATIVE COMMUNITY SEVERANCE

12.13.2.1.6. INTRODUCTION OF IMPACT

186. In order to consider the potential impact of cumulative community severance, which may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself, the percentage change of the forecast maximum daily traffic associated with the construction of the Onshore Scheme and the cumulative developments listed in Table 12-24 from the 2023 baseline, on each highway link within the Study Area has been undertaken, as set out in Table 12-26.

187. The traffic data for the cumulative developments informing this assessment have been taken from the following respective planning application submission documents, with assumptions applied where suitable data was not available:

- Residential development (220 dwellings), former Vald Birn Foundry, Cambois (23/01278/SCREEN) – Transport Assessment Scoping Note (peak hour trip generation in Table 2 factored to an estimated 24-hour flow using proportion between peak hour and 24-hour flow at ATC 3, distributed using Figure 2);
- Residential development (48 dwellings), land to North of Spring Ville, East Sleekburn (21/03723/FUL) – Transport Statement (peak hour trip generation in Table 4.3, factored to an estimated 24-hour flow using proportion between peak hour and 24-hour flow at ATC 3, distributed as per 23/01278/SCREEN, as no distribution provided);
- Subsea cable manufacturing facility, land north of Blyth Power Station Substation, East Sleekburn (22/00879/FUL) – Transport Assessment (daily staff movements in Table 8, mode split in Table 10, HGV movements in Paragraph 5.30 and distribution in Table 11); and
- Battery manufacturing facility, land at former Power Station site on Northern Side of Cambois (21/00818/FULES) – Transport Assessment (Daily trip generation in Table 5.3, HGV assumptions in Paragraph 5.2.7, flows reduced by 33% as Phase 2 more likely to coincide with the peak period of construction for the Onshore Scheme, distribution in Figure 6.4).

188. There would be no vehicle movements associated with the cumulative developments in Table 12-24 on the C415 east of AC7 and Unity Terrace.

Table 12-26 Maximum daily trip generation percentage impacts (cumulative, total traffic)

Highway Link	Baseline (2023) Plus Maximum Onshore Scheme	Cumulative Developments	Baseline Plus Maximum Onshore Scheme Plus Cumulative Developments	Percentage Impact (%)
A189 (S)	40,661	1,708	42,369	4.9
A189 (N)	36,495	342	36,837	1.2
C415 Spine Road west of Brock Lane	3,176	1,233	4,409	56.6
C415 Spine Road between AC1 and AC3	3,176	927	4,103	45.7
C415 Spine Road between AC3 and AC4	3,050	927	3,977	41.2
C415 Spine Road between AC4 and AC5	3,050	927	3,977	41.2
C415 Spine Road between AC5 and AC7	3,050	927	3,977	41.2

189. Using the Rule 1 threshold as set out in paragraph 85, all highway links in Table 12-26 require assessment with the exception of the A189, as the percentage impact is less than 30% on this link. For all other highway links, the increase in total traffic is greater than 30%.

12.13.2.1.7. MAGNITUDE OF IMPACT

190. Using Table 12-18, for a change in total traffic flow between 31 and 60% would result in a medium magnitude of impact on community severance. Based on the cumulative daily percentage impacts set out in Table 12-23, this would apply to the C415 Spine Road (all sections).

191. The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the C415 Spine Road directly. The magnitude is therefore considered to be Medium.

12.13.2.1.8. SENSITIVITY OF THE RECEPTOR

192. The majority of the C415 Spine Road is unpopulated with little reason for the local community to need to cross the road. There are residential properties located on the C415 Spine Road at Harbour View, where there are footways and suitable crossing locations; however, it is unlikely there are many regular non-motorised users associated with the local community requiring crossing the road. Therefore, the C415 Spine Road is considered to have a low sensitivity for the impact of community severance.

193. The local community on the C415 Spine Road (all sections) is considered to have low vulnerability, high recoverability and medium value. The sensitivity of the C415 Spine Road (all sections) is therefore, considered to be Low.

12.13.2.1.9. SIGNIFICANCE OF THE EFFECT

194. For the C415 Spine Road, the magnitude of the cumulative effect is deemed to be Low, and the sensitivity of the receptor is considered to be Medium. The cumulative effect will, therefore, be of **minor adverse significance**, which is **not significant** in EIA terms.

12.13.2.2. SECONDARY MITIGATION AND RESIDUAL EFFECT

195. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms. The cumulative effect will, therefore, remain as **minor adverse significance**, which is **not significant** in EIA terms.

CUMULATIVE ROAD SAFETY

12.13.2.2.1. INTRODUCTION OF IMPACT

196. In order to consider the impact on road safety due to an increase in traffic associated with the construction of the Onshore Scheme and the cumulative developments listed in Table 12-24, the percentage change from the 2023 baseline on each highway link within the Study Area has been undertaken as set out in Table 12-23. Using the Rule 1 threshold as set out in paragraph 85, all highway links in Table 12-26 require assessment with the exception of the A189, as the percentage impact is less than 30% on this link. For all other highway links, the increase in total traffic is greater than 30%.

12.13.2.2.2. MAGNITUDE OF IMPACT

197. Using Table 12-18, for a change in total traffic flow greater than 10% a qualitative assessment of existing accident records and predicted increases in traffic is required to determine the magnitude of impact which applies to Brock Lane and the C415 Spine Road (all sections).

198. Given the very low number of PIAs on the C415 Spine Road (four PIAs) in the assessment period and since the C415 Spine Road (all sections) are capable of accommodating the cumulative developments and Onshore Scheme construction traffic with no identified capacity issues, the magnitude of impact is considered to be low.

199. The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the C415 (all sections) directly, the magnitude is therefore considered to be Low.

12.13.2.2.3. SENSITIVITY OF THE RECEPTOR

200. The C415 Spine Road between AC3 and AC4, the C415 Spine Road between AC4 and AC5, the C415 Spine Road between AC5 and AC7 and the C415 Spine Road east of AC7 are likely to be regularly used by cyclists as it forms part of NCR 1 and is already used by HGVs. There have not been any PIAs involving non-motorised users or HGVs in the assessment period and no clusters of PIAs. Therefore, the C415 Spine Road between AC3 and AC4, the C415 Spine Road between AC4 and AC5, the C415 Spine Road between AC5 and AC7 and the C415 Spine Road east of AC7 is considered to have a low sensitivity for the impact on road safety.

201. The C415 Spine Road between AC3 and AC4, the C415 Spine Road between AC4 and AC5, the C415 Spine Road between AC5 and AC7 and the C415 Spine Road east of AC7 is considered to have low vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Low.

202. The C415 Spine Road west of Brock Lane and the C415 between AC1 and AC3 may be regularly used by cyclists as it provides a connection between areas to the east of the A189 to NCR 1 and is already used by HGVs. There have not been any PIAs involving non-motorised users or HGVs in the assessment period and no clusters of PIAs. Therefore, the C415 Spine Road west of Brock Lane and the C415 between AC1 and AC3 is considered to have a low sensitivity for the impact on road safety.

203. The C415 Spine Road west of Brock Lane and the C415 between AC1 and AC3 is considered to have low vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Low.

12.13.2.2.4. SIGNIFICANCE OF THE EFFECT

204. For the C415 Spine Road (all sections), the magnitude of the cumulative impact is deemed to be Low, and the sensitivity of the receptor is considered to be Low. The cumulative effect will, therefore, be of **negligible to minor adverse significance**, which is **not significant** in EIA terms.

12.13.2.2.5. PROPOSED MONITORING

205. No monitoring to test the predictions made within the assessment of likely cumulative significant effects on traffic, transport and access receptors is considered necessary.

12.14. Inter-Related Effects

206. Inter-related effects are the effects of multiple impacts, affecting one receptor or a group of receptors. Inter-related effects include interactions between the impacts of the different stages of the Onshore Scheme (i.e., interaction of impacts across construction, operation and maintenance and decommissioning), as well as the interaction between impacts on a receptor within an Onshore Scheme stage. A description of the likely inter-related effects arising from the Onshore Scheme on traffic, transport and access receptors is provided below.

207. The effects of community severance and an increase in vehicles a crossings of ATRs could impact the same person wishing to cross the C415 Spine Road; however given these are the same effect and resulting impact, with one focused on a specific location, these are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each impact. Therefore, these inter-related effects would not be significant in EIA terms.

12.15. Summary of Impacts, Mitigation Measures, Likely Significant Effects and Monitoring

208. Information on traffic, transport and access within the Study Area was collected through desktop review of existing data, site survey and new traffic data collected). Table 12-27 presents a summary of the potential impacts, mitigation measures and the conclusion of likely significant effects in EIA terms in respect to traffic, transport and access receptors.

209. The impacts assessed include:

- Driver delay (junction capacity);
- Driver delay (temporary lane closure to install the export cable across the road using open trenching technology);
- Community severance;
- Vulnerable road users and road safety;

- Increase in vehicles at crossings between ATRs; and
- Temporary closure / diversion of ATRs

210. Overall, it is concluded that there will be no likely significant effects arising from the Onshore Scheme during the construction, operation and maintenance or decommissioning phases.

211. Table 12-28 presents a summary of the potential cumulative impacts, mitigation measures and the conclusion of likely significant effects on traffic, transport and access receptors in EIA terms. The cumulative effects assessed include:

- Driver delay (temporary lane closure to install the export cable across the road using open trenching technology)
- Community severance; and
- Vulnerable road users and road safety

212. Overall, it is concluded that there will be no likely significant cumulative effects from the Onshore Scheme alongside other developments / plans.

Table 12-27 Summary of likely significant environmental effects, mitigation and monitoring

Description of Impact	Phase			Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Secondary Mitigation	Residual Effect	Proposed Monitoring[13]
	C/I	O	D						
Driver delay (temporary lane closure)	✓	×	✓	Low	Medium	Minor adverse	n/a	Minor adverse	None
Community severance	✓	×	✓	Negligible - Low	Low - Medium	Negligible – Minor adverse to Minor adverse	n/a	Negligible – Minor adverse to Minor adverse	None
Vulnerable road users and road safety;	✓	×	✓	Negligible - Low	Low - Medium	Negligible – Minor adverse to Minor adverse	n/a	Negligible – Minor adverse to Minor adverse	None
Increase in vehicles at crossings between active travel routes	✓	×	✓	Low	Low	Negligible – Minor adverse	n/a	Negligible – Minor adverse	None
Temporary closure/diversion of active travel routes	✓	×	✓	Negligible - Low	Medium - High	Minor adverse	n/a	Minor adverse	None

[13] Potential monitoring of the peak hour vehicle movements during the construction of the Onshore Scheme, not specially related to the impacts assessed.

Table 12-28 Summary of likely significant cumulative environment effects, mitigation and monitoring

Description of Impact	Phase			Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Secondary Mitigation	Residual Effect	Proposed Monitoring
	C/I	O	D						
Driver delay (temporary lane closure)	✓	×	✓	Medium	Medium	Moderate adverse	Limiting duration of works as far as practicable; co-ordinated approach to traffic control; and emergency hardstrip. See section 12.13.2.1.5.	Minor adverse	None
Community severance	✓	×	✓	Low – Medium	Low	Negligible – Minor adverse to Minor adverse	n/a	None	None
Vulnerable road users and road safety;	✓	×	✓	Low	Low - Medium	Negligible – Minor adverse to Minor adverse	n/a	None	None

12.16. References

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