Scottish & Southern Electricity Networks

VOLUME 2: CHAPTER 11 TRAFFIC AND TRANSPORT

Figures and Visualisations (Volume 3a and 3b of this EIA Report)

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11. TRAFFIC AND TRANSPORT

11.1 Introduction

This chapter evaluates the effects of the Proposed Development on existing traffic and transport resources. Vehicle movements to the Proposed Development Site will mainly consist of abnormal load vehicles (ALV) for the delivery of the transformer, heavy goods vehicles (HGV), light goods vehicles (LGV) and cars.

Supporting documentation to this chapter is provided in **Volume 3 Figures 11.1** and **11.2** and **Volume 4 Appendix 11.1** and **11.2** and referenced accordingly throughout the text.

11.2 Legislation, Policy and Guidance

The legislation, policy and guidance described in **Table 11.1** have been considered in carrying out this assessment:

Table 11.1: Traffic and Transport Related Legislation, Policy and Guidance

Author	Title	Policy
The Scottish Government	The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017[1] ('the EIA Regulations')	This provides the legal framework for the assessment of the likely significant environmental impacts of the Proposed Development.
The Scottish Government	National Planning Framework 4 (2023)[2]	This provides a statement of the Scottish Government's policy on nationally important land use planning matters. In terms of transport, development proposals should consider the impact on road traffic and on adjacent trunk roads including construction
The Scottish Government	National Transport Strategy[3]	This document provides an overview of the Scottish National Transport Strategy 2, which discusses sustainable freight movements.
The Scottish Government	Planning Advice Note 75 (PAN 75) – Planning for Transport[4]	Provides guidance on sustainable transport planning in the context of new and existing development. The document also indicates that all planning applications that involve the generation of person trips should provide information which covers the transport implications of the development. The level of detail is to be proportionate to the complexity and scale of impact of the development.
Institute of Environmental Management and Assessment	Guidelines for the Environmental Assessment of Traffic and Movement (2023)[5]	Sets out guidelines for determining the appropriate and significance of traffic effects because of a proposed development. The document focuses on the assessment of potential environmental effects associated with road traffic.

11.3 Assessment Methodology and Significance Criteria

11.3.1 Scope of the Assessment

This assessment considers access, traffic, and transportation effects of the Proposed Development during the construction phase for the following:

[1] The Scottish Government (2017) The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 [Online] Available at: https://www.legislation.gov.uk/uksi/2017/571/contents/made (Accessed 20/05/2024)

[2] The Scottish Government (2023) National Planning Framework 4 [Online] Available at: National Planning Framework 4 (www.gov.scot) (Accessed 20/08/2024)

[3] The Scottish Government (2020) – Scottish National Transport Strategy 2 [Online] Available at: https://www.transport.gov.scot/publication/national-transport-strategy-2/ (Accessed 20/10/2024)

[4] The Scottish Executive (2005). Planning Advice Note, PAN 75, Planning for Transport. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/publication/20/08/08/planning-advice-note-pan-75-planning-transport/documents/0016795-pdf/0016795-pdf/govscot%3Adocument. (Accessed on 20/08/2024)

[5] Institute of Environmental Assessment – Guidelines for the Environmental Assessment of Traffic and Movement (2023)

- Severance of communities;
- Fear and intimidation on and by road users;
- Road user and pedestrian safety;
- Road vehicle driver and passenger delay;
- Non-motorised user amenity;
- Non-motorised delay; and
- Hazardous and large loads.

11.3.2 Extent of the Study Area

The Study Area (as shown in **Volume 3 Figure 11.1**) is defined based on those roads that are expected to experience increased traffic flows associated with the construction of the Proposed Development. The geographic scope was determined through a review of the other developments in the area, Ordnance Survey (OS) plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials.

The main access to the Proposed Development will be taken from the A9 via a newly constructed Site access junction to be located on the western edge of the Site. The proposed junction will be designed with a permanent footprint to accommodate the largest general construction vehicle anticipated which is a 16.5 metre (m) HGV with an additional temporary widening area required to accommodate ALV delivery during the construction phase. A new temporary access south of the permanent access will also be constructed and will be used for construction of the tower platforms. This access will be closed off after the construction of the Proposed Development. Detailed drawings of the proposed new Site entrances are provided in the Application Plans.

Two proposed abnormal load access routes for the delivery of components including transformers have been considered; a likely/preferred route from the north with ALVs originating from Scrabster Harbour travelling southbound towards the Site and an alternative route from the northeast, with ALVs originating from Wick Harbour, travelling southbound on the A99 and then northbound on the A9 towards the Site.

The origin of construction traffic is not currently known and is likely to be distributed throughout the region. However, it is assumed that Scrabster Harbour will also be used for standard deliveries originating overseas and will follow the preferred ALV route.

Three potential quarry sites (A & D Sutherland Quarry (Spittal Mains Quarry), John Gunn & Sons Quarry (Bower Quarry) and A & W Sinclair Quarry) have been identified approximately 8 km northeast of the Site (**Volume 3 Figure 11.2**) which may be capable of producing all aggregate and concrete required for the Proposed Development, details of which would be agreed at a later date. Spittal Quarry is accessed off the A9 whilst Bower Quarry would likely utilise the U1782 and A882 before joining the A9 at Georgemans and follow the preferred abnormal load route to Site. A & W Sinclair Quarry would likely utilise the U1308 and the B874 before joining the A9 at Roadside and also follow the preferred abnormal load route to Site. At this stage commercial agreements for the supply of aggregates and ready-mix concrete have not been reached, therefore these routes are considered as potential options only.

11.3.3 Consultation Undertaken to Date

A summary of the consultation undertaken to date, response received, and action taken is provided in **Table 11.2**.

Table 11.2: Traffic and Transport Consultation Summary

Consultee	Type and Date	Summary of Consultation Response	Response / Action taken
The Highland Council (THC)	EIA Scoping Response 09/05/24	The Transport Planning Team notes the content of the EIA Scoping Report and has no objection to the issues to be scoped out of future Environmental Impact Assessment (EIA) as detailed in **Chapter 7 - 7.4**.The precise details of the construction programme are unknown at this stage; however, the Transport Planning Team notes that the environmental impacts of construction traffic will be assessed as part of the EIA in accordance with **Chapter 7 – 7.5 & 7.6**. The Transport Planning Team has no objection to the assessment methodology proposed but confirm that the direct impact of construction traffic on local roads infrastructure should also be assessed and mitigation measures proposed, as required, as set out in the preapplication advice, ref. 23/04004/PREMAJ.	Noted. This Chapter of the EIA Report considers potential effects of increased traffic (worst case) on both trunk and Council maintained roads and adjacent communities along the delivery routes. A construction program linked to vehicle trips/type is included in **Appendix 11.2**. Mitigation measures are included in Section 11.6.9 and a Framework Construction Traffic Management Plan is also included in **Appendix 11.1**. The cumulative effect assessment is considered in **Section 11.6.8**. In terms of the transportation of abnormal indivisible loads, the assessment of physical condition of roads and structural integrity of bridges etc. is beyond the scope of the EIA. However, it is acknowledged that the Applicant is already in dialogue with the Council (and Transport Scotland) to address this particular matter separately and it is requested that any further work is undertaken post consent and is secured through an appropriately worded condition of consent.

11.3.4 Method of Baseline Data Collation

A desk study has been undertaken to obtain information on traffic and transport infrastructure within the Study Area. The following data sources were consulted:

- Relevant transport planning policies and guidance;
- Traffic Data – Department of Transport (DfT) Traffic Counts Website (Road traffic statistics (dft.gov.uk));
- Accident Data – Crashmap Website (CrashMap - UK Road Safety Map);
- Sensitive locations – Google Earth (Google Maps);
- National Road Traffic Forecasts (1997);
- Design Manual for Roads and Bridges (Standards for Highways (2013) Volume 15, Economic Assessment of Road Schemes in Scotland, DMRB); and
- Other traffic sensitive receptors including core paths – Highland Council Public Rights of Way Map (Highland Council Core Paths Map).

11.3.5 Methodology for the Assessment of Effects

The magnitude of the change in increase in traffic flow is a function of the existing traffic volumes on routes and the percentage increase in flow as a result of the Proposed Development.

An initial screening exercise was undertaken to identify routes where an adverse effect could potentially occur. The Institute of Environmental Management and Assessment (IEMA 2023) Guidelines suggest two broad principles:

- Rule 1: include road links where traffic flows are predicted to increase by more than 30% (or where the number of heavy goods vehicles is predicted to increase by more than 30%); and

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

Where the predicted increase in traffic flow is lower than these thresholds, the significance of the effects can be considered low or not significant with no further detailed assessments warranted. Consequently, where the predicted increase in traffic flow is greater than these thresholds, the potential effects are considered to be potentially significant and are assessed in greater detail. It is noted that in line with the IEMA (2023) guidelines, further consideration should be given to road user and pedestrian safety as well as road vehicle driver and passenger delay effects even if the above thresholds are not exceeded.

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. Therefore, it should be noted that an increase in total traffic or HGV levels of more than 30% (or 10% depending on the sensitivity of the area) does not necessarily equate to a significant effect in terms of the EIA Regulations. The process for determining significance where Rules 1 or 2 are triggered is undertaken on a site-specific basis. The methodology for assessing the significance of an effect is described in detail in the sections below.

11.3.6 Determining Sensitivity of Receptors

The sensitivity of the baseline conditions, including the importance of environmental features on or near to the Site or the sensitivity of potentially affected receptors, is assessed in line with best practice guidance, legislation, statutory designations and / or professional judgement. **Table 11.3** details the framework for determining the sensitivity of receptors.

Table 11.3: Framework for Determining Sensitivity of Receptors

Sensitivity of Receptor	Definition
Very High	The receptor has no ability to absorb change without profoundly altering its present character, is of high strategic value, or of national importance. For example: • Routes with existing high traffic levels which are at or very close to exceeding capacity; • Receptors such as populated areas where existing traffic levels are high and there is no capacity to absorb additional traffic flow on adjacent routes; • Strategic nationally important routes with no capacity to absorb additional traffic flow; • At severe / fatal accident hotspots where an increase in traffic flow is likely to increase the likelihood or severity of accidents; • A route with very poor pedestrian facilities and a high traffic flow level where an increase in traffic is likely to decrease pedestrian amenity severely; • At a settlement which is bisected by a major route where a significant change in traffic flow or composition is likely to severely increase severance; • A receptor where due to the presence of noise and vibration inducing road surfaces (e.g. cattle grids or cobbles) close to a residential property or similarly sensitive receptor, a change in traffic flow or traffic composition is likely to severely affect the perception of noise and vibration due to traffic; and • At a location where pedestrian crossing facilities are informal and where a significant change in traffic flow level might induce severe pedestrian crossing delay also where children / elderly people might frequently cross an informal crossing.

Sensitivity of Receptor	Definition
High	The receptor has little ability to absorb change without fundamentally altering its present character, is of high strategic value, or of national importance. For example: • Routes with existing high traffic levels which have little additional traffic flow capacity; • Receptors such as populated areas where existing traffic levels are high and there is little capacity to absorb additional traffic flow on adjacent routes; • Strategic nationally important routes with little capacity to absorb additional traffic flow; • At severe accident hotspots where an increase in traffic flow may increase the likelihood or severity of accidents; • A route with poor pedestrian facilities and a high traffic flow level where an increase in traffic is likely to decrease pedestrian amenity significantly; • At a settlement which is bisected by a major route where a significant change in traffic flow or composition is likely to significantly increase severance; • A receptor where due to the presence of noise and vibration inducing road surfaces (e.g., cattle grids or cobbles) close to a residential property or similarly sensitive receptor, a change in traffic flow or traffic composition may significantly affect the perception of noise and vibration due to traffic; • At a location where pedestrian crossing facilities are informal and where a significant change in traffic flow level might induce significant pedestrian crossing delay also where children / elderly people might regularly cross an informal or priority crossing.
Medium	Areas where the transport network has moderate capacity to change, without significantly altering its state. For example: • Routes with existing moderate traffic levels which have some additional traffic flow capacity; • Receptors such as populated areas where existing traffic levels are moderate and there is some capacity to absorb additional traffic flow on adjacent routes; • Receptors such as rural roads where existing traffic levels are moderate and there is some capacity to absorb additional traffic flow on adjacent routes; • Strategic nationally important routes with some capacity to absorb additional traffic flow; • At slight accident hotspots where an increase in traffic flow may increase the likelihood or severity of accidents; • A route with moderate pedestrian facilities where an increase in traffic is may decrease pedestrian amenity; • At a settlement which is bisected by a major route where a significant change in traffic flow or composition is likely to moderately increase severance; • A receptor where due to the presence a road close to a residential property or similarly sensitive receptor, a change in traffic flow or traffic composition may moderately affect the perception of noise and vibration; and • At a location where pedestrian crossing facilities are informal or substandard and where a significant change in traffic flow level might induce a moderate pedestrian crossing delay.
Low	Areas where the transport network is tolerant to change without detriment to its state, for example; • Routes with existing low traffic levels which have additional traffic flow capacity; • Receptors such as populated areas where existing traffic levels are low and there is capacity to absorb additional traffic flow on adjacent routes; • Receptors such as rural roads where existing traffic levels are low and there is capacity to absorb additional traffic flow on adjacent routes; • Strategic nationally important routes with capacity to absorb additional traffic flow; • On routes with a low level of historical accident data where a change in traffic flow or composition would have a low effect on the likelihood or severity of accidents; • A route with formal pedestrian facilities where an increase in traffic would have a low effect on pedestrian amenity;

Sensitivity of Receptor	Definition
	• A settlement which is bisected by a road, but where the effect of increased traffic or change in composition would have a low effect on severance; • A receptor which is not highly sensitive to changes in noise level) or where receptors are set back from the road and therefore their sensitivity to changes in noise as a result of changes in traffic flow or composition are low; and • A location where pedestrian crossing facilities are formal but priority, or pedestrian flows are sufficiently low that changes to traffic flow or composition are unlikely to cause a significant pedestrian delay.
Negligible	Areas where the transport network is highly tolerant to change without detriment to its state, for example: • Routes with existing very low traffic levels which have a lot of additional traffic flow capacity; • Receptors such as populated areas where existing traffic levels are very low and there is a lot of capacity to absorb additional traffic flow on adjacent routes; • Receptors such as rural roads where existing traffic levels are very low and there is a lot of capacity to absorb additional traffic flow on adjacent routes; • Strategic nationally important routes with a lot of capacity to absorb additional traffic flow; • On routes with a very low level of historical accident data where a change in traffic flow or composition would have a negligible effect on the likelihood or severity of accidents; • A route with formal pedestrian facilities where an increase in traffic would have a negligible effect on pedestrian amenity; • A settlement which is not bisected by a road or where the effect of increased traffic or change in composition would have a negligible effect on severance; • A receptor which is negligibly sensitive to changes in noise level (e.g., a sports stadium) or where receptors are set very far back from the road and therefore their sensitivity to changes in noise as a result of changes in traffic flow or composition are negligible; and • A location where pedestrian crossing facilities are formal and controlled, or pedestrian flows are negligible (i.e., where there are no footways) such that changes to traffic flow would not result in a change to pedestrian delay.

11.3.7 Determining Magnitude of Change

The magnitude of potential change will be identified through consideration of the Proposed Development, the degree of change to baseline conditions predicted as a result of the Proposed Development, the duration and reversibility of an effect and professional judgement, best practice guidance (IEMA 2023) and legislation.

The criteria for assessing the magnitude of change on those receptors described above are presented in **Table 11.4**.

Table 11.4: Framework for Determining Magnitude of Change

Type of Impact	Magnitude of Change			
	Negligible	Small	Medium	Large
Severance	Change in total traffic flow of <30%	Change in total traffic flow of 31% to 60%	Change in total traffic flow of 61% to 90%	Change in total traffic flow of >91%
Non-motorised User Amenity	Change in traffic flow (or HGV component) <50%	Change in traffic flow (or HGV component) of 51% to 100%	Change in traffic flow (or HGV component) of 101% to 150%	Change in traffic flow (or HGV component) of 151%
Non-motorised Delay (Pedestrian Delay)	Change in total traffic flow of <30%	Change in total traffic flow of 31% to 60%	Change in total traffic flow of 61% to 90%	Change in total traffic flow of >91%
Fear and Intimidation	No change in step changes	One step change in level, with	One step change in level, but with	Two step changes in level

Type of Impact	Magnitude of Change			
	Negligible	Small	Medium	Large
		<400 vehicle increase in average 18hr AV two-way all vehicle flow; and/or <500 HGV increase in total 18hr HGV flow	>400 vehicle increase in average 18hr AV two-way all vehicle flow; and/or >500 HGV increase in total 18hr HGV flow	
Road Safety	Change in total traffic flow of <30%	Magnitude of impact derived using professional judgment informed by the frequency and severity of collisions within the Study Area and the forecast increase in traffic.		
Driver Delay	Change in total traffic flow of <30%	Magnitude of impact derived using professional judgment informed by the increase in vehicle delay and whether a junction is at, or close to capacity.		

11.3.8 Significance of Effect

The sensitivity of the receptor and the magnitude of the predicted effects will be used as a guide, in addition to professional judgement, to predict the significance of the likely effects. The matrix for determining the significance of effects is then used as outlined in **Table 11.5**.

Table 11.5: Framework for Determining the Significance of Effects

Magnitude of Change	Sensitivity of Resource or Receptor				
	Very High	**High**	**Medium**	**Low**	**Negligible**
Large	**Major**	**Major**	**Moderate**	**Moderate**	Minor
Medium	**Major**	**Moderate**	**Moderate**	Minor	Negligible
Small	**Moderate**	**Moderate**	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

Effects predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA Regulations and are shaded in light grey in the above table.

11.3.9 Limitations and Assumptions

The following limitations and assumptions apply to this chapter:

- The impact assessment is based on estimated construction trip generation included in **Appendix 11.2** and based on programme information available at the time of assessment;
- Baseline traffic flows were gathered from publicly available traffic counts published by the DfT at locations on the proposed transport routes within the Study Area as shown on **Figure 11.1**. Some of the traffic count locations provide an estimated flow based upon the last manual or automatic traffic counts and the application of traffic growth factors by the DfT. It is possible that due to traffic values being estimated at locations 1, 2, 3, 5, 6 and 7, there are minor differences between the assessed and actual baseline traffic flows at these locations. This does not have any material change to the outcome of the assessment; and
- In terms of distribution, it is acknowledged that although the source of construction materials /workers is currently unknown, it is assumed that the majority of traffic will approach the Site from the south. However, based on the location of the potential quarry sites (potential routes to access the Site) and port facilities, it is not appropriate to assign 100% of traffic for the Proposed Development to each traffic count location. Whilst all HGV traffic will use the defined route to Site, no specific routes will apply for light traffic (i.e., cars and vans) and therefore their choice of route will be determined by their origin and is likely to be distributed across a variety of routes. Therefore, the following approach to the distribution of HGV traffic has been assumed:
  - 30% of HGV traffic (excluding aggregates, concrete) will pass Count Locations 1, 2, 3;

- 30% of HGV traffic (non aggregate) plus trips associated with the delivery concrete & stone will pass Count Location 4;
- 70% of HGV traffic (excluding aggregates, concrete) will pass Count Location 5;
- 30% of HGV traffic ((non aggregate) plus trips associated with the delivery concrete & stone will pass Count Location 6; and
- 30% of HGV traffic (excluding aggregates, concrete) will pass Count Locations 7.

11.4 Baseline Conditions

11.4.1 Existing Highway Network

A9

The A9 forms part of the strategic trunk road network which connects Perth to Scrabster. The road is operated on behalf of Transport Scotland by BEAR Scotland with no posted weight limits. The A9 is mostly a two-way single carriageway with sections of dual carriageway along the route. There is a varying speed limit ranging from 30 miles per hour (mph) in sections through settlements, up to the national speed limit (60 mph) in more rural sections. The A9 is unlit and has no footway provision except in instances where the route goes through towns and villages where footways and / or street lighting is present. All construction traffic including abnormal loads will use the A9 to access to the Site. It is worth noting that this section of the A9 has been well used by HGVs and ALVs for the construction of a number of wind farm developments including Bad a Cheo Wind Farm and Causeymire Wind Farm, among others.

A882

The A882 is a rural traffic distributor road which carries traffic between the A9 and the A99 trunk roads and provides an alternative route connecting the northern towns of Wick and Thurso. The A882 is a rural single carriageway road, running in an east-west direction while operating at the national speed limit, except in built up areas including Haster and Watten, where the limit reduces to 30-mph. The A882 is generally rural in nature, is unlit and has no footway provision except in built up areas where footways and / or lighting is present.

As the A882 is one of the major traffic routes in the region, it is assumed that temporary increases in HGV traffic are not uncommon and that any effects of the increase in traffic numbers due to construction of the Proposed Development will be low.

11.4.2 Sustainable Travel Provision

A review of the Highland Council's Core Path maps indicates that there are no core paths networks (including bridleways) located within and in the vicinity of the Site.

A review of the Sustrans' National Cycle Network (NCN) map indicates that there are no national cycle routes in the vicinity of the Site.

11.4.3 Baseline Traffic Flow

Table 11.6 summarises the data collected from the traffic count data at a number of locations on the proposed transport routes detailed above. Traffic count locations are shown on **Figure 11.1**.

Table 11.6: Existing Annual Average Daily Flow (AADF) 2023

Ref	Road	Location	Total (ADT)	HGV (ADT)	%HGVs
1	A9	A9, at Burnside, DfT ID: 20801	3,447	105	3.0%
2	A9	A9, Thurso, DfT Point ID 40956	13,105	249	1.9%
3	A9	A9, at Sordale, DfT Point ID: 10800	3,377	313	9.3%
4	A9	A9, near Banniskirk, DfT Point ID: 40960	1,476	96	6.5%
5	A9	A9, at Achavanich, DfT Point ID: 10959	1,539	130	8.4%

6	A882	A882, at Oldhall DfT Point ID: 30804	1,724	92	5.3%
7	A882	A882, at Haster, DfT Point ID: 91247	2,384	69	2.9%

11.4.4 Road Capacity

Typical capacity values for a variety of road types are provided within the Design Manual for Roads and Bridges (DMRB) – Volume 15[6]. It is acknowledged that this document has been withdrawn as part of the ongoing reformatting of the DMRB, however the quoted traffic flow capacities still remain valid for use within the framework of this assessment. Capacity is defined as the maximum sustainable flow of traffic passing in one hour under favourable road and traffic conditions and depends on the road type, speed limit and width. **Table 11.7** gives the estimated capacity of each of the roads within the Study Area.

Table 11.7: Theoretical Road Capacities

Road	Type	Capacity (veh/hour/direction)	Two-Way Hourly Flow (veh/hour)	Two – Way Daily Flow (veh/day)
A9	Rural – Typical Single 7.3 m	1,200	2,400	57,600
A882	Rural – Typical Single 6.0 m	900	1,800	43,200

11.4.5 Road Traffic Collision (RTC) Assessment

An analysis of the RTC data has been undertaken to establish a road safety baseline and identify any inherent road safety issues within the Study Area. This RTC analysis has been undertaken using collision data from the online resource CrashMap[7] covering the five-year period between 2018 - 2022.

Collisions are categorised according to the severity of injuries sustained by those involved. Slight RTCs are defined as a collision in which nobody is fatally or seriously injured, but at least one person is slightly injured. Serious RTCs are defined as those which result in hospitalisation of one or more of the parties involved. Fatal RTCs result in the death of one or more persons at the scene of the collision or within 30 days of the incident.

The search revealed that over the 5-year period, there has been a modest number of accidents (24 in total, with 13 noted on the A9 and 11 on the A882) recorded within the area local to the Site. A breakdown of the severity of these collisions per year is shown in **Table 11.8**, while the locations of each of the identified RTCs are noted on **Volume 3 Figure 11.2**.

Table 11.8: Collision Summary per Year

Year	Severity			Total
	Slight	Serious	Fatal	
2018	6	0	2	8
2019	5	0	0	5
2020	5	1	0	6
2021	2	0	0	2
2022	2	0	1	3
Total	**20**	**1**	**3**	**24**

Key observations are summarised below:

- On the A9. two of the RTCs one slight and one serious were recorded at the crossroads junction connecting the A9 with the B874 Road. Both RTCs noted at this crossroads junction has been identified as head on collisions, with the ‘Serious’ RTC occurring under wintery weather conditions;

[6] Standards for Highways (2013) Volume 15, Economic Assessment of Road Schemes in Scotland, DMRB.

[7] Study was undertaken using data compiled from www.crashmap.co.uk [Accessed 20/08/24]

- One slight RTC was also recorded at the priority junction connecting the A9 with the A882 and this involved a head on collision of two cars;
- One slight RTC was recorded on the A9 in Thurso involved a collision between a motorcycle and a car at a priority junction;
- The two fatal RTCs recorded on the A9 occurred on bends and involved single vehicles;
- On the A882, Of the 9 slight RTCs recorded on the A882, six out of the nine slight RTCs recorded were found to have been single vehicle collisions, 2 of which occurred on adverse road conditions; and
- The serious RTC recorded on the A882, was also a single vehicle collision occurring on icy road conditions and the fatal RTC occurred at night on wet road conditions.

From the analysis undertaken, it appears most collisions are attributed to driver error as they would indicate a lack of awareness of other road users and inclement weather conditions rather than the highway design. No clear trends or strongly identifiable hotspots were apparent within the data and no RTCs were identified within the vicinity of the proposed Site access junction location on the A9. The number of collisions recorded within the study period is considered to be small given the volume of traffic passing through the junctions, as such it is determined that the road network along the route is working as intended and does not suffer from any significant safety problems.

11.4.6 Future Baseline Traffic Flow

Background traffic growth will occur on the local road network irrespective of whether or not the Proposed Development is constructed. Traffic growth factors were applied to the baseline traffic flow to give the estimated traffic flow during the earliest year that construction is expected to commence; 2026. **Table 11.9** indicates the projected baseline traffic flow at each of the locations for the anticipated year of construction.

Table 11.9: Projected Baseline Traffic Flow (2026)

Ref	Road	Location	Growth Factor	Total (ADT)	HGV (ADT)	%HGVs
1	A9	A9, at Burnside, DfT ID: 20801	1.0276	3,542	108	3.0%
2	A9	A9, Thurso, DfT Point ID 40956	1.0276	13,466	256	1.9%
3	A9	A9, at Sordale, DfT Point ID: 10800	1.0276	3,470	322	9.3%
4	A9	A9, near Banniskirk, DfT Point ID: 40960	1.0276	1,517	99	6.5%
5	A9	A9, at Achavanich, DfT Point ID: 10959	1.0276	1,581	134	8.4%
6	A882	A882, at Oldhall DfT Point ID: 30804	1.0276	1,772	95	5.3%
7	A882	A882, at Haster, DfT Point ID: 91247	1.0276	2,450	71	2.9%

11.4.7 Sensitive Receptors

As per (IEMA 2023) Guidelines, particular groups of locations which may be sensitive to changes in traffic conditions should be identified. The Guidelines suggest, for example, that people, home, schools, and the elderly may be sensitive to changes in traffic conditions. A desktop exercise (see **Table 11.10**) has been undertaken to classify the sensitivity of the of receptors within the Study Area. These receptors are either located on proposed delivery routes or located within close proximity and require access through the proposed delivery routes.

Table 11.10: Sensitive Receptors

Route	Receptor	Relevant Count Location	Sensitivity	Justification
A9	Burnside	1	Medium	This section of the proposed delivery route passes through the town of Burnside, has relatively good standard pedestrian facilities along the route. Very limited or no direct frontage of nearby commercial and residential properties. This section is part of the trunk road network and provides access to Scrabster Harbour which is well used for renewables deliveries.
A9	Thurso	2	High	This section of the proposed delivery route passes through the town of Thurso. There are a number of commercial and residential properties which front directly onto the A9 as it passes through Thurso. The town centre includes shops, services, and has formal pedestrian crossing points on it. Users may be required to use/cross the route when accessing the service. However, this route is a major transport corridor (trunk road) constructed to accommodate significant HGV traffic and so a certain level of traffic should be expected.
A9	Low	3, 4 & 5	Low	This section of the proposed delivery route is a rural single-carriageway road with few junctions and very limited or no direct frontage of nearby commercial and residential properties. Very limited/restricted pedestrian facilities along this section of the route with any notable pedestrian activity. In this respect the speed environment will be a further constraint. However, this route is a major transport corridor (trunk road) in the north-east of Scotland designed to accommodate significant HGV traffic and so a certain level of traffic should be expected. It is worth nothing that this section of the A9 has been well used by HGVs and ALVs for the construction of a number of wind farm developments including Bad a Cheo Wind Farm, Causeymire Wind Farm among others.
A882	Watten	6	High	This section of the proposed delivery route passes through the town of Watten. There are commercial and residential properties which front directly onto the A882 as it passes through Watten. The town centre includes shops, primary school, public transport facilities etc, and has formal pedestrian crossing points on it. Users may be required to use/cross the route when accessing these services. However, is an A-class road designed to accommodate considerable HGV traffic.
A882	Wick	7	High	This section of the proposed delivery route passes through parts of Wick (southwest). There are commercial and residential properties which front directly onto the A882 although there are relatively good standard pedestrian facilities along the route with formal crossing facilities. Users may be required to use/cross the route when accessing the services including a school and may be sensitive to changes in HGV traffic. However, this is an A-class road designed to accommodate considerable HGV traffic.

11.5 Issues Scoped Out

As described in the Scoping Report dated November 2023 (**Volume 4 Appendix 1.1**) and accepted by THC, a number of aspects were scoped out of the traffic and transport assessment, as follows.

11.5.1 Operational Traffic

Traffic associated with operation of the Proposed Development is limited to maintenance and is expected to be insignificant in comparison to traffic generated during construction. Vehicle movements associated with the operational phase will be limited to 2 – 3 people travelling daily to the Site and during routine maintenance visits using cars or LGVs at a maximum of four times per calendar month (once per week). The effect of operational traffic is expected to be minimal and negligible in terms of existing traffic flow levels on routes within the vicinity of the Proposed Development. Assessment of operational traffic was therefore scoped out of the assessment.

11.5.2 Air Quality

The IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic advise that significant impacts to local air quality may occur if changes to LGVs are more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA) and more than 500 AADT elsewhere. For HGVs, the criteria are more than 25 AADT within or adjacent to an AQMA, and more that 100 AADT elsewhere. Based on the expected volume of construction traffic, none of the above criteria will be met or exceeded. In addition, the Proposed Development is not located within an AQMA and due to the temporary nature of the increase in vehicles using the proposed access route, any effects on local air quality will be short term and reversible and was therefore scoped out of the assessment.

11.5.3 Visual Effects

The movements of abnormally loaded vehicles could be considered visually intrusive. This effect would be short-term and would only occur during the movement of abnormal loads. The movements of HGVs are not considered visually intrusive as they are standard vehicles and not onerous and any effects will be short term, fully reversible and would only occur during construction hours. Any likely significant environmental effects relating to visual effects due to traffic generated during the construction phase of the Proposed Development is considered within the landscape and visual amenity assessment (see **Chapter 8 - Landscape Character and Visual Amenity**). The assessment of visual effects was therefore scoped out of the traffic and transport assessment.

11.5.4 Operational Noise

Impacts relating to noise and vibration due to increased HGV movements within the Study Area would be temporary during the construction phase and when the Proposed Development is operational would have a negligible impact. It should be noted that the need for an assessment of the of the noise and vibration impacts of construction traffic and operational plant (substation) noise effects is considered as part of the noise vibration assessment (see **Chapter 13 - Noise and Vibration**). The assessment of operational noise, as a result of road traffic, has therefore been scoped out of this Chapter.

11.6 Assessment of Potential Effects

The potential impacts arising from the construction of the Proposed Development have been assessed. The identification of the traffic and transport environmental effects requires an assessment of the amount of traffic associated with construction activities and the significance of this additional traffic. The traffic associated with the construction phase of the Proposed Development will comprise construction workers, HGVs / LGVs carrying construction materials, personnel and plant, and ALVs carrying large electrical components.

An indicative programme of anticipated construction traffic during the construction phase is provided in **Volume 4 Appendix 11.2: Construction Development Programme**. Construction and commissioning is expected to run for a total of 60 months. The peak month from a traffic perspective was identified and used to predict the

traffic increase along the construction traffic route. A worst-case scenario was assumed in which all predicted traffic passes each location within the Study Area.

From inspection, the peak month for construction traffic is expected to occur in Month 20 where 12,522 two-way vehicle movements have been estimated, comprising 7,040 car / LGV movements and 5,482 HGV movements. Assuming a 22-day working month, this would equate to a maximum of 570 two-way vehicle movements per day which would consist of 320 car / van movements and 250 HGV movements (that is 125 vehicles arriving and then the same 125 vehicles departing) per day.

Table 11.11 details the anticipated vehicle flow in the peak month of construction and the percentage increase above the projected baseline at each point within the Study Area.

Table 11.11: Predicted Peak Average Daily Traffic

Traffic Count Location/Link ID	Total Vehicle Movements			HGV Movements Only		
	2026 Baseline	Baseline + Development	Increase (%)	2026 Baseline	Baseline + Development	Increase (%)
1. A9, at Burnside, DfT ID: 20801	3,542	3,913	10%	108	159	47%
2. A9, Thurso, Princess St Bridge, DfT Point ID 40956	13,466	13,837	3%	256	307	20%
3. A9, at Sordale, DfT Point ID: 10800	3,470	3,841	11%	322	373	16%
4. A9, Near Banniskirk, DfT Point ID: 40960	1,517	1,968	30%	99	230	133%
5. A9, at Achavanich, DfT Point ID: 10959	1,581	2,020	28%	134	253	89%
6. A882, at Oldhall DfT Point ID: 30804	1,772	2,223	25%	95	226	139%
7. A882, at Haster, DfT Point ID: 91247	2,450	2,821	15%	71	122	72%

As detailed in the assessment methodology, a screening exercise was undertaken to determine which locations warrant detailed assessment of effects in relation to an increase in traffic flows associated with the construction of the Proposed Development.

The lower threshold (Rule 2) of significance was considered appropriate for those locations identified as having high sensitivity receptors, i.e., count locations 2, 6 and 7 with the upper threshold of significance (Rule 1) is considered appropriate for other locations within the Study Area, which applies to count locations 1, 3, 4, and 5.

Table 11.11 indicates that the daily percentage increases in total traffic and HGV from the temporary construction traffic exceeds the Rule 1 or 2 threshold, therefore a full assessment of effects is required for all count locations in accordance with the IEMA Guidelines.

11.6.1 Severance

The IEMA guidance identifies severance as the "*perceived division that can occur within a community when it becomes separated by major transport traffic artery*". As an example, a road that passes through a community such as a town or village, where amenities may be located on one side of the road and residential properties are located on the other side, causes severance to the movements between those places. Severance may be caused by a physical barrier created by a development or by the difficulty of crossing roads due to an increase in traffic flow. Both the A9 and the A882 pass through settlements and therefore have the potential to be affected by severance.

With respect to Count Location 1, guidance set out in **Table 11.4** of this Chapter identifies that increases in total traffic volumes of less than 30% could result in a negligible impact upon severance. It is acknowledged that the

HGV traffic at this location is predicted to increase between 31% and 60% and could result in a small impact upon severance. Therefore, when considering the link sensitivity and magnitude of impact, the effect of construction on severance results in a small magnitude of change on a receptor of medium sensitivity. Thus, the effect of increased traffic on severance for Count Location 1 is **minor** and therefore **not significant**.

With respect to Count Location 2, guidance set out in **Table 11.4** of this Chapter identifies that increases in total traffic volumes of less than 30% could result in a negligible impact upon severance. Therefore, when considering the link sensitivity and magnitude of impact, the effect of construction on severance results in a **negligible** magnitude of change on a receptor of high sensitivity. Thus, the effect of increased traffic on severance for Count Location 2 is **minor** and therefore **not significant**.

In terms of the other locations on the A9 (Count Locations 3,4 and 5), it is acknowledged while there are isolated settlements along the route, there is no presence of continuous footways or local facilities that need to be accessed in the vicinity and therefore no potential to be affected by severance. That notwithstanding, in order to sufficiently minimise any adverse effect on severance on the A9(T), a number of measures are proposed in Section 11.6.9 as part the outline Construction Traffic Management Plan (CTMP) which would be adopted in a full version post consent.

With respect to Count Location 6, residents in Watten have the potential to be affected by severance. Guidance set out in **Table 11.4** of this Chapter identifies that increases in total traffic volumes of less than 30% could result in a negligible impact upon severance. It is acknowledged that HGV traffic at this location (which presents the worst case) is predicted to increase over 90% (large) resulting in a **major** magnitude of change and therefore may be considered as significant, however, professional judgment must be applied. The increase is primarily due to the low baseline traffic flow on the A882 (circa 95 HGVs per day, and the magnitude of increase is also low, 131 HGVs per day). Secondly, this magnitude of increase would only occur if A & W Sinclair Ltd is contracted to supply aggregate/concrete for the Proposed Development.

Given the above, the magnitude of change can be reduced to **medium** on a receptor of high sensitivity, thus, the effect of increased traffic on severance at this location is **moderate** and **significant**. In accordance with the EIA Regulations, **Section 11.8.1** of this Chapter details mitigation measures which are to be adopted to reduce the significance of this effect.

With respect to Count Location 7, residents in Wick (southwest) have the potential to be affected by severance. Guidance set out in **Table 11.4** of this Chapter identifies that increases in total traffic volumes of less than 30% could result in a negligible impact upon severance. It is acknowledged that HGV traffic at this location is predicted to increase between 61% and 90% (medium) resulting in a **moderate** magnitude of change and therefore may be considered as significant, however, professional judgment must be applied. The increase is primarily due to the low baseline traffic flow on the A882 (circa 71 HGVs per day, and the magnitude of increase is also low, 51 HGVs per day).

Given the extremely low baseline flows, the magnitude of change can be reduced to a small magnitude of change on a receptor of high sensitivity, thus, the effect of increased traffic on severance at this location is **moderate** and **significant**. In accordance with the EIA Regulations, Section 11.8.1 of this Chapter details mitigation measures which are to be adopted to reduce the significance of this effect.

11.6.2 Non-motorised User Amenity

Pedestrian amenity is broadly defined as the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition, pavement width and separation between vehicles and pedestrian cyclists. Guidance set out in **Table 11.4** of this chapter identifies that doubling or halving of the total traffic or HGV traffic volumes could lead to perceptible change upon pedestrian or cyclist amenity.

With respect to Locations 1 and 2, it is evident that the change in total traffic (or HGV component) associated with construction is below 50%. Therefore, when considering the sensitivity of the receptor and magnitude of change, the effect of construction on non-motorised amenity results in a **negligible** magnitude of change on a receptor of medium to high sensitivity. Thus, the effect of increased traffic on non-motorised user amenity is **negligible to minor** and **not significant** in terms of the EIA Regulations.

With respect to the other locations on the A9 (Count Locations 3,4 & 5), it is acknowledged whilst there are isolated settlements along the route, there is no presence of continuous footways or local facilities to generate any notable demand or activity.

Therefore, when considering the sensitivity of the receptor and magnitude of change, the effect of construction on pedestrian amenity results in a **negligible to medium** magnitude of change on a receptor of low sensitivity. Thus, the effect of increased traffic on non-motorised user amenity is **negligible to minor** and **not significant** in terms of the EIA Regulations.

With respect to Count Location 6, it is evident that the change in total traffic (or HGV component) associated with construction is predicted to increase between 101% and 150% (medium) resulting in a **moderate** magnitude of change and therefore may be considered as significant, however, professional judgment must be applied. The increase is primarily due to the low baseline traffic flow on the A882 (circa 91 HGVs per day, and the magnitude of increase is also low, 131 HGVs per day). Secondly, this section of the A882 is subject to a 30mph speed restriction with relatively good standard continuous footways and crossing facilities available to enable people to cross the road. Given the above, the magnitude of change can be reduced to a small magnitude of change on a receptor of high sensitivity, thus, the effect of increased traffic on non-motorised user amenity at this location is **moderate** and **significant**.

Therefore, in accordance with the EIA Regulations, **Section 11.8.1** details mitigation measures which are to be adopted to reduce the significance of this effect.

With respect to Count Location 7, it is evident that the change in total traffic (or HGV component) associated with construction is predicted to increase between 51% and 100% (small) resulting in a moderate magnitude of change and therefore may be considered as significant, however, professional judgment must be applied. The increase is primarily due to the low baseline traffic flow on the A882 (circa 71 HGVs per day, and the magnitude of increase is also low, 51 HGVs per day). Secondly, this section of the A882 at this location is subject to a 30mph speed restriction with relatively good standard continuous footways and crossing facilities available to enable people to cross the road.

Given the above, the magnitude of change can be reduced to a negligible magnitude of change on a receptor of high sensitivity, thus, the effect of increased traffic on non-motorised user amenity at this location is **minor** and **not significant**.

11.6.3 Non-motorised User Delay (Pedestrian Delay)

IEMA (2023) notes that "*the assessment of pedestrian delay serves as a proxy for the delay that other modes of non-motorised users may experience when crossing roads*".

Pedestrian delay and severance are closely related effects and changes in the volume, composition or speed of traffic may affect the ability of people to cross existing roads. In general, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend on the general level of pedestrian activity, visibility, and general physical conditions of the development site.

With respect to Count Location 1, guidance set out in **Table 11.4** identifies that increases in total traffic volumes of less than 30% could result in a negligible impact upon pedestrian delay. It is acknowledged that the HGV traffic at this location is predicted to increase between 31% and 60% and could result in a small impact upon pedestrian delay. Therefore, when considering the link sensitivity and magnitude of impact, the effect of construction on pedestrian delay results in a small magnitude of change on a receptor of medium sensitivity. Thus, the effect of increased traffic on non-motorised user delay for Count Location 1 is **minor** and **not significant**.

With respect to Count Location 2, guidance set out in **Table 11.4** identifies that increases in total traffic volumes of less than 30% could result in a negligible impact upon pedestrian delay. Therefore, when considering the link sensitivity and magnitude of impact, the effect of construction on non-motorised results in a negligible magnitude of change on a receptor of high sensitivity. Thus, the effect of increased traffic on pedestrian delay for Count Location 2 is **minor** and **not significant**.

In terms of the other locations on the A9 (Count Locations 3,4 & 5), it is acknowledged while there are isolated settlements along the route there is no presence of continuous footways or local facilities that need to be accessed in the vicinity and therefore no potential to be affected by pedestrian delay. That notwithstanding, in order to sufficiently minimise any adverse effect on pedestrian delay on the A9(T), a number of measures are proposed in Section 11.6.9 as part the outline CTMP which would be adopted in a full version post consent.

With respect to Count Location 6, guidance set out in **Table 11.4** identifies that increases in total traffic volumes of less than 30% could result in a negligible impact upon non-motorised user delay. It is acknowledged that HGV traffic at this location (which presents the worst case) is predicted to increase over 90% (large) resulting in a major magnitude of change and therefore may be considered as significant, however, professional judgment must be applied. The increase is primarily due to the low baseline traffic flow on the A882 (circa 95 HGVs per day, and the magnitude of increase is also low, 131 HGVs per day). Secondly, this magnitude of increase would only occur if A & W Sinclair Ltd is contracted to supply aggregate/concrete for the development. Given the above, the magnitude of change can be reduced to a medium magnitude of change on a receptor of high sensitivity, thus, the effect of increased traffic on non-motorised user delay at this location is **moderate** and **significant**.

Therefore, in accordance with the EIA Regulations, **Section 11.8.1** details mitigation measures which are to be adopted to reduce the significance of this effect.

With respect to Count Location 7, guidance set out in **Table 11.4** identifies that increases in total traffic volumes of less than 30% could result in a negligible impact upon pedestrian delay. It is acknowledged that HGV traffic at this location is predicted to increase between 61% and 90% (medium) resulting in a moderate magnitude of change and therefore may be considered as significant, however, professional judgment must be applied. The increase is primarily due to the low baseline traffic flow on the A882 (circa 71 HGVs per day, and the magnitude of increase is also low, at 51 HGVs per day).

Given the extremely low baseline flows, the magnitude of change can be reduced to a small magnitude of change on a receptor of high sensitivity, thus, the effect of increased traffic on non-motorised delay at this location is **moderate** and **significant**.

Therefore, in accordance with the EIA Regulations, **Section 11.8.1** details mitigation measures which are to be adopted to reduce the significance of this effect.

11.6.4 Fear and Intimidation

IEMA (2023) Guidelines note that '"*the extent of fear and intimidation is dependent on the total volume of traffic, the heavy vehicle composition, speed these vehicles are passing, proximity of traffic to people – and / or the feeling of the inherent lack of protection created by factors such as a narrow pavement median, and a narrow path or a constraint (such as a wall or fence) preventing people stepping further away from moving vehicles*".

The environmental impact of fear and intimidation can be quantified by using the weighting system provided in the IEMA (2023) Guidelines, whereby the degree of hazard to pedestrians is assessed with reference to the established thresholds, and a score provided for each combination on a highway link under consideration.

With respect to the locations on the A9 (Count Locations 1, 2, 3, & 4), no change in the level of fear and intimidation from baseline conditions has been identified. Guidance set out in **Table 11.4** identifies that no step change results in a negligible impact upon fear and intimidation. Therefore, when considering the sensitivity of the receptor and magnitude of change, the effect of construction on fear and intimidation results in a negligible magnitude of change on a receptor of low to high sensitivity. Thus, the effect of increased traffic on fear and intimidation for locations on the A9 is **negligible to minor** and **not significant**.

With respect to location 5 on the A9, a one-step change in the level of fear and intimidation from baseline conditions is noted. Guidance set out in **Table 11.4** identifies that a step change in level combined with a <500 HGV increase results in a small impact upon fear and intimidation. Therefore, when considering the sensitivity of the receptor and magnitude of change, the effect of construction on fear and intimidation results in a small magnitude of change on a receptor of high sensitivity. Thus, the effect of increased traffic on fear and intimidation for Count Location 5 on the A9 is **negligible** and **not significant**.

With respect to Count Location 6, a one-step change in the level of fear and intimidation from baseline conditions is noted. Guidance set out in **Table 11.4** identifies that a step change in level combined with a <500 HGV increase results in a small impact upon fear and intimidation. Therefore, when considering the sensitivity of the receptor and magnitude of change, the effect of construction on fear and intimidation results in a small magnitude of change on a receptor of high sensitivity. Thus, the effect of increased traffic on fear and intimidation for location 6 is **negligible to moderate** and **not significant**.

With respect to Count Location 7, no change in the level of fear and intimidation from baseline conditions has been identified. Guidance set out in **Table 11.4** identifies that no step change results in a negligible impact upon fear and intimidation. Therefore, when considering the sensitivity of the receptor and magnitude of change, the effect of construction on fear and intimidation results in a negligible magnitude of change on a receptor of high sensitivity. Thus, the effect of increased traffic on fear and intimidation for Count Location 7 is **minor** and **not significant**.

11.6.5 Road Vehicle and Passenger Delay

Delays mostly occur at junctions that operate close to capacity due to increase in traffic flows particularly during peak periods or the passage of slower moving vehicles such as HGVs. No sensitive junctions in terms of capacity constraints or areas of significant congestion have been identified and referring to the theoretical road capacities given in **Table 11.8**, even with the additional construction traffic all roads on the route to Site remain well within capacity.

Furthermore, it is noted that the peak number of construction trips is predicted to be low, at around 570 two-way movements per day made up of 320 car / LGV movements and 250 HGV movements per day. Assuming a 10-hour delivery window (typically 12 hours), the additional HGV movements (worst case) is equivalent to around 25 two-way movements (12 inbound and 13 outbound) per hour. This volume of temporary construction traffic generated by the Proposed Development during the peak month of construction will be insufficient to create or cause any major congestion based on the routes within the Study Area. These trips would be planned and typically be scheduled throughout the day to avoid peak movements. Staff will be encouraged to car share through the use of minibuses or LGVs, so it is anticipated that the figure for car or van movements is likely to be considerably reduced. Therefore, the effect of increase in traffic on road vehicle and passenger delay results in a negligible magnitude of impact on road links of low to high sensitivity. Thus, the effect of increased traffic on driver delay is **negligible to minor** and **not significant**.

Some driver delay can be expected to occur on the delivery route due to the slow movement of ALVs between the port of delivery and the Site. However, due to the overall limited number of loads across the construction programme and the short-term nature of this phase of works, which will be managed in communication with the local community which is to form part of the CTMP as best practice, the anticipated effect of ALVs on driver delay results in a negligible magnitude of change on a road links of low to high sensitivity within the Study Area. Thus, the effect of ALVs on driver delay is **negligible to minor** and **not significant**.

11.6.6 Road User and Pedestrian Safety

Highway safety is assessed by the frequency and severity of injury accidents that are attended by the police and recorded in official accident statistics. Intensification of use or changes in the composition of traffic has the potential to have an effect on accident rates and for the assessment of effects on accidents and safety, the receptor is the safety of the road network.

As detailed in **Section 11.4.5**, a total 24 accidents were recorded in the last five years on road links with the Study Area, with 13 of them recorded on the A9 with the remaining 11 recorded on the A882.

Given the volume of traffic passing through the Study Area, particularly the A9, the number of collisions occurring is considered to be low and the magnitude of the temporary increase in overall traffic flow or HGV composition for the duration of the construction of the Proposed Development is not sufficient to effect a change in safe operation of the road network. It was also determined that as any ALV movements will be carried out under escort and outside of peak hours, the risk of RTCs during these movements would be negligible, hence the overall magnitude is low. Therefore, when considering the sensitivity of the receptor and magnitude of

impact, the effect of construction on road user and pedestrian safety results in a negligible magnitude of impact on road links of low to high sensitivity. Thus, the effect of increased traffic on road user and pedestrian safety is **negligible to minor** and **not significant**.

11.6.7 Hazardous and Large Loads

It is estimated from **Volume 4 Appendix 11.2** that a total of twenty abnormal loads (six for the substation and fourteen for the high voltage direct cable link building) will be delivered to the Site in month 30 of the construction programme and this equates to on average five loads per week. Therefore, the effect of abnormal loads results in a negligible magnitude of impact on road links of low to high sensitivity. Thus, the effect of abnormal loads is **negligible to minor** and **not significant**.

Fuel will be regularly transported to the Site over the duration of construction period. All fuel will be transported by suitably qualified contractors, and all regulations for the transportation and storage of hazardous substances will be observed. No other hazardous substances in significant quantities are expected to be transported to Site. Therefore, the effect of the transportation of hazardous substances is considered to result in a negligible magnitude of change on road links of low to high sensitivity. Thus, the effect of hazardous load is **negligible to minor** and **not significant.**

11.7 Cumulative Effects Assessment

A cumulative effects assessment has been made based on existing and proposed developments in the Study Area. Cumulative traffic effects can only occur where the construction phase of a nearby development, which shares a common route to site for construction traffic, overlaps with that of the Proposed Development. Areas beyond this range are unlikely to experience any measurable change. As such, only plans or projects with potential to overlap spatially or temporally will be included in the cumulative assessment. Proposed developments which have the potential to result in cumulative traffic and transport effects are provided in **Table 11.12**.

Table 11.12: Cumulative Development Information

Development	Status	Comments
Proposed Spittal to Peterhead High Voltage Direct Current (HVDC) Link Project	Proposed – In Planning	Has not been considered further in this assessment, because the application is in the early stages and limited data is available to enable a quantitative assessment of any likely cumulative impacts.
Cable connecting Banniskirk to existing Spittal Substation	Falls under Permitted Development rights	No Transport Statement or trip information available. Assumed that trips are accounted for in the growth factors.
Proposed Spittal – Loch Buidhe – Beauly 400 kV Connection	Proposed – In Planning	General construction traffic will use the A9 approach route, common with the Proposed Development. Has not been considered further in this assessment, because the application is in the early stages and limited data is available to enable a quantitative assessment of any likely cumulative impacts. It is assumed that a full cumulative assessment will be undertaken as part of the EIA Report to support the proposed Spittal – Loch Buidhe – Beauly 400 kV Connection project at the time of submission.
West of Orkney Wind Farm Grid Connection Project	Approved	General construction traffic will use the A9 approach route, common with the Proposed Development. West of Orkney Wind Farm Grid Connection Project may share a similar route for abnormal load vehicles however, this will likely be limited to the A9 from Scrabster Harbour. The delivery of abnormal loads requires police approval and escort which such deliveries would not be permitted to occur at the same time. Therefore, there is no scope for a cumulative effect of abnormal load movements.

Development	Status	Comments
		A review of the Transport Assessment submitted in support of its application has been undertaken to obtain the peak traffic flow of 851 daily movements (632 HGV movement and 219 car/van movements) and the corresponding traffic assignment to inform the cumulative assessment.
Ayre Wind Farm Grid Connection Project	Proposed – In Planning	General construction traffic will use the A9, A882 approach route, common with the Proposed Development. Has not been considered further in this assessment, because the application is in the early stages and limited data is available to enable a quantitative assessment of any likely cumulative impacts It is anticipated that a full cumulative assessment will be undertaken as part of the EIA Report to support the Ayre Wind Farm Grid Connection Project at the time of submission.
Watten Wind Farn	Proposed – In planning	General construction traffic will use the A9, A882 approach route, common with the Proposed Development. A review of the Transport Assessment submitted in support of its application has been undertaken to obtain the peak traffic flow of 120 daily movements (80 HGV movement and 40 car/van movements) and the corresponding traffic assignment to inform the cumulative assessment.

As described in **Table 11.12** above, only two developments have been considered further, and the potential cumulative effects of the traffic generated by the construction of these developments along with the Proposed Development are provided in **Table 11.13**. The table indicates the worst-case traffic effect if both developments were to be constructed over the same period and the peak traffic generating months occurred at the same time.

Table 11.13: Cumulative Traffic Effects Assessment

Traffic Count Location/Link ID	Total Vehicle Movements			HGV Movements Only		
	2026 Baseline	Baseline + Development	Increase (%)	2026 Baseline	Baseline + Development	Increase (%)
2. A9, Thurso, Princess St Bridge, DfT Point ID 40956	13,466	14,485	8%	256	736	188%
3. A9, at Sordale, DfT Point ID: 10800	3,470	4,489	29%	322	802	149%
4. A9, Near Banniskirk, DfT Point ID: 40960	1,517	2,909	92%	99	922	834%
5. A9, at Achavanich, DfT Point ID: 10959	1,581	2,140	35%	134	334	150%
6. A882, at Oldhall DfT Point ID: 30804	1,772	2,313	31%	95	286	202%
7. A882, at Haster, DfT Point ID: 91247	2,450	2,821	15%	71	122	72%

As indicated in **Table 11.13**, the addition of all construction traffic from the identified cumulative developments results in a worst-case increase of 92% for overall flow and 834% for HGV traffic at traffic count locations on the A9 with a higher impact recorded on links with lower baseline flows. The link sensitivity at Count Location 4 is

classed as low and whilst the overall effect at this location could result in a moderate effect (significant), professional judgement must be applied.

In reality, it is unlikely that the peak construction period associated with nearby development in the area would overlap with the peak construction period of the Proposed Development as the applications are at different stages in the planning process and each development has varying lengths of construction period.

The high traffic generating activities, such as the importation of stone and concrete, only occur over a few months of the whole construction period for each development. It is unlikely that the local capacity for concrete and stone production could supply several developments at once, therefore, high traffic generating activities would naturally be staggered.

In the unlikely event that the identified developments are scheduled to be constructed simultaneously, it is anticipated that in line with good practice and the application of standard planning conditions, the implementation of a CTMP for each development would ensure that there are open lines of communication with the Highland Council, Transport Scotland, and developers of nearby developments. This would monitor the progress of the construction phases and ensure that adequate steps are taken to minimise and potential disruption on the surrounding road network. For these reasons the impact is expected to be significantly lower than stated in **Table 11.13**.

It should be noted that the A9 (where the greatest overlap of traffic increase could occur) is a good standard trunk road with a high level of residual capacity (**Table 11.7**) which is unlikely to be exceeded. The A9 is currently well used by HGVs, and it is considered that these roads can suitably accommodate short term and temporary increases in traffic flow.

Considering the above, the impact on traffic and transport due to cumulative effects is therefore considered to be **minor** and **not significant** as per the EIA Regulations.

11.8 Mitigation and Residual Effects

11.8.1 Mitigation

Significant effects as a result of increased HGV movements were identified in **Section 11.6.2** in relation to non-motorised user amenity, non-motorised delay as well as fear and intimidation on and by road users at sensitive receptors on the A882 in Watten and Wick (Count Locations 6 and 7). It should be noted that the high percentage increase in HGV levels along this road links is due to the low baseline traffic levels. Nevertheless, in accordance with the EIA Regulations, mitigation is required to address these potential significant effects.

In addition to this, although no significant effects on the A9 have been identified as a result of construction of the Proposed Development, mitigation measures are proposed in relation to non-motorised user amenity and severance in order to ensure disruption to these effects is sufficiently minimised particularly on sections of the A9 outside of Thurso.

A number of mitigation measures are proposed which are recommended for adoption in a CTMP which would be agreed in consultation with Transport Scotland and the Highland Council as follows:

- As far as reasonably possible, deliveries should be scheduled outside of school opening and closing times. Drivers of all delivery vehicles to be made aware during induction of the presence of schools and other amenities within the settlement along the routes within the Study Area;
- Drivers to be reminded of the presence of 20 mph temporary speed restrictions on the main road outside of schools and that a strict adherence to these speed limits is expected;
- Delivery times will be scheduled to ensure that deliveries do not arrive in a convoy;
- Timing of the deliveries will be outlined within the CTMP to ensure construction vehicles avoid potentially congested networks at peak hours;
- Where it is reasonably practicable, HGV deliveries to the Proposed Development will be suspended during local community events where increased traffic or parking requirements may be reasonably anticipated;

- Consideration of installation of a temporary pedestrian crossing on the A9 at Spital to minimise any non-motorised amenity and severance effects;
- Temporary construction phase signage would be erected on the approved route to Site to warn people of construction activities and associated construction vehicles. Road user safety (including non-motorised users) will be enhanced via the installation of signage and the maintenance of sight lines; and
- Appropriate parking facilities will be provided for construction workers. Under no circumstances will HGVs be allowed to lay-up in surrounding roads.

A road condition survey will be undertaken on the access routes used during the construction phase as a condition of granting consent to the Proposed Development. This will be undertaken prior to the start of the construction phase to record the existing road conditions. The survey area and methodology will be agreed with the Highland Council following confirmation of the construction access routes. Any deterioration in road condition, which is agreed as attributable to construction traffic associated with the Proposed Development, will be restored to at least the same standard upon completion of construction. This process will ensure that there are no significant residual adverse effects on the condition of the local road network as a result of the movement of construction vehicles.

11.8.2 Residual Effects

It is considered that if the above mitigation measures are implemented through the CTMP for the duration of construction, the effect on increased traffic on non-motorised user amenity, pedestrian delay as well as fear and intimidation on and by road users at the sensitive receptors identified will be reduced to **minor** and therefore considered as **not significant** in terms of the EIA Regulations.

11.9 Summary

This chapter has considered the potential traffic and transport effects associated with the construction of the Proposed Development on the surrounding public road network and sensitive receptors. Impacts from the operation and maintenance of the Proposed Development were scoped out of the assessment as the amount of traffic generated would be minimal (significantly less than the construction phase) and will relate to monitoring and maintenance only. Effects during decommissioning are anticipated to be similar to those during construction, however, further work would be undertaken at the time of decommissioning, when baseline environment (including traffic levels) for that time can be more accurately defined.

The construction traffic associated with the Proposed Development would comprise construction staff in private cars and LGVs, HGVs carrying construction materials and plant equipment and ALVs carrying larger electrical equipment.

The main access to the Proposed Development would be taken from the A9 via the means of a newly constructed access junction located to the west of the Proposed Development. A new temporary access is south of the permanent access to be used for construction of the tower platforms will also be constructed.

An indicative 60-month construction program established that the Proposed Development would generate, at most, 250 two-way HGV trips and 320 two-way staff car/LGV trips per day during the peak traffic generating months of the construction phase (Month 20). It is noted that during the remainder of the construction phase (particularly months 24 to 60), HGV movements would be averaging at around 30 two-way movements per day (15 inbound and 15 outbound).

An assessment of the construction effects was carried out for the Proposed Development based on the significance criteria outlined earlier in this chapter. Effects are considered to be significant for the purposes of the EIA Regulations where the effect is classified as being of ‘Major’ or ‘Moderate’ significance. A moderate effect was identified for non-motorised user amenity and delay, fear and intimidation on and by road users at sensitive receptors on the A882. Mitigation measures were identified in **Section 11.8.1** and the residual effects following implementation of these mitigation measures are predicted to be **minor** and thus **not significant** in terms of the EIA regulations.

In addition to that, a number of impact avoidance measures included in the CTMP would be implemented to minimise the overall traffic impacts during the construction of the Proposed Development.

Table 11.14 provides a summary of the predicted effects detailed within this Chapter.

Table 11.14: Summary of Effects

Receptor	Potential Effects	Significance of Effect	Mitigation Proposals	Residual Effects
Settlements along the route	Severance	Minor / Moderate	The CTMP will set out a phasing, timing, and routing strategy for construction traffic movements. Where necessary, construction traffic movements will be reduced during periods of increased baseline traffic.	Minor, Not Significant
Non-motorised Users	Non-motorised User Amenity	Major / Moderate	The CTMP, which would be agreed in consultation with THC and finalised post consent, will set out a phasing and timing strategy for construction traffic movements. Where necessary, construction traffic movements will be reduced during periods of increased non-motorised users' activity.	Minor, Not Significant
Non-motorised Users	Non-motorised User Delay (Pedestrian Delay)	Major / Moderate	The CTMP, which would be agreed in consultation with THC and finalised post consent, will set out a phasing and timing strategy for construction traffic movements. Where necessary, construction traffic movements will be reduced during periods of increased non-motorised users' activity.	Minor, Not Significant
Non-motorised Users	Fear and Intimidation	Major / Moderate	The CTMP, which would be agreed in consultation with THC and finalised post consent, will set out a phasing and timing strategy for construction traffic movements. Where necessary, construction traffic movements will be reduced during periods of increased pedestrian activity e.g. school opening and closing times.	Minor, Not Significant
Road Network	Road Vehicle Driver and Passenger Delay	Minor / Negligible	The CTMP will set out a phasing, timing, and routing strategy for construction traffic movements. Where necessary, construction traffic movements will be reduced during periods of increased baseline traffic.	Minor / Negligible, Not Significant
Road Network	Road User and Pedestrian Safety	Minor / Negligible	The CTMP, which would be agreed in consultation with THC and finalised post consent, will include measures to enhance existing road safety conditions during the construction phase.	Minor / Negligible, Not Significant
Road Users and Settlement along route (Abnormal load Movements)	Combined effect of the above	Minor / Negligible	Advance warning signs will be posted prior to abnormal load movements. Abnormal load movements will be scheduled to avoid periods of increased baseline traffic as well as school opening and closing periods.	Minor / Negligible, Not Significant

Receptor	Potential Effects	Significance of Effect	Mitigation Proposals	Residual Effects
			All abnormal load movements will be fully escorted to warn on-coming vehicles and advise other road users.	