VOLUME 2: CHAPTER 12 – TRAFFIC AND TRANSPORT

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

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12. TRAFFIC AND TRANSPORT

12.1 Introduction

This Chapter of the Environmental Impact Assessment (EIA) Report evaluates the effects of the Proposed Development on existing traffic and transport resources. Vehicle movements to the Proposed Development site (the 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. This assessment was undertaken by ERM Limited.

12.2 Assessment Methodology and Significance Criteria

Scope of the Assessment

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

- 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.

Legislation, Policy and Guidance

The following legislation, policy and guidance outlined in **Table 12.1** below have been considered in carrying out this assessment:

Table 12.1 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.

[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 20/05/2024)

[3] The Scottish Government (2020) – Scottish National Transport Strategy 2 [Online] Available at: https://www.transport.gov.scot/publication/national-transport-strategy-2/ (Accessed 20/05/2024)

Author	Title	Policy
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.

Extent of the Study Area

The Study Area has been 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.

Access to the Proposed Development will be taken from the U3521 Strathcarnoch Road via means of two newly constructed Site access junctions to be located to the west of the Site. The proposed junctions 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 as shown in **Volume 4 Appendix 12.3** Bellmouth Designs. That notwithstanding, the existing access to the existing Loch Buidhe Substation may be utilised during the early stages of construction whilst the new access is under construction.

Two proposed abnormal load access routes for the delivery of components including transformers have been considered. The proposed port of entry for abnormal load for both options is the Port of Nigg, and these will be transported to the Site via the B9175, A9, A949 and the A836 to Lairg where a trailer interchange is carried out. The ALV will then travel back southbound on the A836 towards Bonar Bridge and turn left onto the U3521 towards the Site. For route option 2, the ALV will follow the route described above towards Achinduich, turn right onto the existing Achinduich Overhead Line (OHL) access tracks eastbound, turn right onto the existing Lairg OHL access tracks southbound towards the U3521 and then turn left onto the U3521 northbound towards the Site.

Whilst all ALVs will originate from the Port of Nigg, the origin of general construction traffic is not currently known and is likely to be distributed throughout the region, however it is anticipated that all construction traffic (in particular HGV and ALV) will approach the Site via the A9(T) corridor either from the northeast or the southwest, A949 and the U3125.

It is acknowledged that further work on the suitability of the roads for the transport of abnormal loads will be as part of the finalised route feasibility study to determine the preferred route, although it is noted the above route was used by construction traffic (including the transformer) during the construction of the existing Loch Buidhe Substation.

Consultation Undertaken to Date

Consultation undertaken is described in **Volume 2 Chapter 3** of this EIA Report. A summary of the consultation relevant to traffic and transport is presented in **Table 12.2.**

[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/2005/08/planning-advice-note-pan-75-planning-transport/documents/0016795-pdf/0016795-pdf/govscot%3Adocument. (Accessed on 20/05/2024)

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

Table 12.2 Scoping and Consultation Responses

Consultee	Type and Date	Summary of Consultation Response	Response to Consultee
The Highland Council (THC)	EIA Scoping Response 09/05/24	The applicant will be required to provide a Transport Assessment (TA) with any future planning application. The TA will need to identify the number and type of vehicle movements that will be generated during the construction phase of the development, the Council maintained roads that will be affected and consider in detail the impact of development on these roads. Where necessary, the TA should consider and propose measures necessary to mitigate the impact of construction traffic. The operational traffic associated with the development should also be quantified in the TA.	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 **Volume 4 Appendix 12.2** of the EIA Report. Mitigation measures are included in **Section 12.8** of this Chapter and a Framework Construction Traffic Management Plan is also included in **Volume 4 Appendix 12.1** of the EIA Report.
		The cumulative transport impact of any other developments in progress or committed in the area should also be considered, especially impacts from any other renewable energy projects.	The cumulative effect assessment is considered in **Section 12.7** of this Chapter.
		The TA will also need to include an initial swept path analysis for HGVs and abnormal loads to determine the impact on roads, verges, street furniture and structures within Council control.	An initial Route Feasibility Assessment which considers the suitability of the of roads for the transport of Abnormal Load has been undertaken. It is requested that any further work is undertaken post consent is secured through an appropriately worded condition of consent.
		Any proposals for new junctions / access points onto the public road must be clearly shown on dimensioned drawings and include the details of geometry, construction and drainage as well as the required visibility splays.	A detailed and dimensioned plan of the designed access junctions including surface water drainage proposals will be included in the road opening permit application. However, details of the proposed access junctions including the visibility splay is included in **Volume 4 Appendix 12.3** of this EIA Report. It is acknowledged that the current visibility splay assessment is based on a design speed of 40 mph however, this will be confirmed after speed surveys have been completed as part of the detailed design process post consent. All amendments (if any) will be undertaken in accordance with Highland Council's Design Guide.
		It is recommended that the applicant liaises with the Council Structures Team regarding the presence of any Council maintained structures along the route that may require upgrading and / or replacing to facilitate traffic movements associated with this development.	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.

Consultee	Type and Date	Summary of Consultation Response	Response to Consultee
		A construction Traffic Management Plan (CTMP) to control and reduce the impact of construction traffic will be required prior to the commencement of development. A Framework CTMP should be included with the TA as part of the supporting information for a subsequent planning application.	A Framework Construction Traffic Management Plan is included in **Volume 4 Appendix 12.1** of this EIA Report.

Method of Baseline Data Collation

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

- Relevant transport planning policies and guidance;
- Traffic Data – Department of Transport 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).

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. 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.

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, will be assessed in line with best practice guidance, legislation, statutory designations and / or professional judgement. **Table 12.3** details the framework for determining the sensitivity of receptors.

Table 12.3 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.
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;

Sensitivity of Receptor	Definition
	• 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; • 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;

Sensitivity of Receptor	Definition
	• 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.

Determining Magnitude of Change

The magnitude of potential change is a function of the existing volumes of traffic and gas been 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 12.4**.

Table 12.4 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 66% to 90%	Change in total traffic flow of >91%
Fear and Intimidation	No change in step changes	One step change in level, with • <400 vehicle increase in average 18hr AV two-way all vehicle flow; and/or • <500 HGV increase in total 18hr HGV flow	One step change in level, but with • >400 vehicle increase in average 18hr AV two-way all vehicle flow; and/or • >500 HGV increase in total 18hr HGV flow	Two step changes in level
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.		

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. **Table 12.5** summarises guideline criteria for assessing the significance of effects.

Table 12.5 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.

Limitations and Assumptions

Impact Assessment:

A worst-case scenario has been assumed in which all traffic associated with the Proposed Development will pass each traffic count location identified in the study. 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. The effect of increased traffic on the identified route is therefore likely to be lower than estimated in this assessment.

Baseline Traffic

No traffic count data is available for the U3521 at the time of writing this report therefore the assessment of the effect of increased traffic on this route is based on professional judgement and a worst-case scenario has been assumed.

12.3 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 (**Table 12.6**) 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 12.6 Sensitive Receptors

Route	Receptor	Sensitivity	Justification
A9(T) Tain	Tain	Low	This section of the proposed delivery route passes through the settlement of Tain and has no pedestrian facilities along it. There are no direct frontages of nearby commercial and residential properties. Nonetheless, this route is a major transport corridor (trunk road) in the north of Scotland designed to accommodate significant HGV traffic and so a certain level of traffic should be expected.
A949	Residential properties on or near the delivery route	Medium	There are few residential properties located directly on the proposed delivery route that require unrestricted use of the route in order to access their property. Rural single-carriageway road with very limited pedestrian facilities along this section of the route. This is an A-class road designed to accommodate considerable HGV traffic.

Route	Receptor	Sensitivity	Justification
A949, Bonar Bridge	Bonar Bridge	Medium	There are a number of commercial and residential properties which front directly onto the route as it passes through Bonar Bridge. The village centre includes shops, services, and has pedestrian facilities along this section of the route. Users may be required to use / cross the route when accessing these services. This is an A-class road designed to accommodate considerable HGV traffic
U3521, Bonar Bridge	Bonar Bridge Primary School	High	This school is located in Bonar Bridge within the vicinity of, and directly on, the general construction traffic route. Very limited pedestrian facilities on this section of the U3521 and pupils are likely to cross the route on their journey to and from the school.
U3521, Bonar Bridge	Bonar Bridge Golf Club	Low	The golf club is located on the outskirts of Bonar Bridge off the U3521, near to the general construction traffic route. An increase in traffic could affect amenity of the golf club, and cause delays for motorists driving to the golf club.

12.4 Baseline Conditions

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 will use the A9 to access to the Site. It should be noted that all construction traffic used the A9 during the construction of the existing substation.

A949

The A949, is a traffic distributor which provides an alternative route to the northern towns of Wick and Thurso from the A9 via Bonar Bridge, Lairg and Tongue. The A949 is a single carriageway road running in an east west direction while operating at the at the national speed limit, except in the built-up areas, where speed limit reduces to 30 mph. The A949 is generally rural in nature, is unlit and has no footway provision except in built up areas where footways and / or lighting is present.

The A949 was used by construction traffic during the construction of the existing substation and all construction traffic will also use this route to access the Site.

U3521 Strathcarnoch Road

The U3521 is a single carriageway road from Bonar Bridge (A949) in the southwest to Cambusmore Lodge on the A9 in the northeast, via Loch Buidhe. The U3521 is mostly a rural single-track road with passing places and varies in width along its length except the stretch from the A940 to Migdale crossroads where the road is a two-way single carriageway road. All traffic associated with the Proposed Development will utilise this unclassified road to reach the proposed Site access point. It is acknowledged that a number of improvements including localised widening at bends in the road or strengthening of road surfaces or bridges was put in place during the construction of the existing substation. It is anticipated similar interventions will be required in order to make the road suitable to accommodate construction traffic.

B9175

The B9175 is rural single carriageway originating from the Nigg Ferry Terminal and travels north to the Nigg Roundabout with the A9. The B9175 operates at the national speed limit, except in through the settlement of Arabella where it reduces to 40 mph. The B9175 will only be utilised for the deliveries of abnormal load deliveries from the Port of Nigg. Given that general construction traffic will not use this route, no detailed assessment of the route has been undertaken in relation to traffic impacts and associated environmental impacts.

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.

Baseline Traffic Flow

Table 12.7 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 **Volume 3a Figure 12.1**.

Table 12.7 Existing Annual Average Daily Flow (AADF) 2023

Ref	Road	Location	Total (ADT)	HGV (ADT)	%HGVs
1	A9	A9, at Evelix, DfT Point ID: 8003	6,586	341	5.2%
2	A949	A949, Near Whiteface, DfT Point ID: 80006	958	50	5.2%
3	A9	A9, Near Cuthill, DfT Point ID: 80002	6,741	323	4.8%
4	A9	A9, North of Tain, DfT Point ID: 80001	8,052	522	6.5%
5	A9	A9, Near Newfield, DfT Point ID: 40721	9,222	463	5.0%

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 12.8** gives the estimated capacity of each of the roads within the Study Area.

Table 12.8 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
A949	Rural – Typical Single 6.0 m	900	1,800	43,200
U3521 (Bonar Bridge)	Rural – Poor Single 5.5 m	800	1,600	38,400
U3521 (Outside Bonar Bridge	Rural – Poor Single 4.0 m	140	280	6.720

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

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.

A total of 28 RTCs (26 on the A9 and two on the A940) were recorded within the Study Area between the dates stated above, and a breakdown of the severity of these collisions per year is shown in **Table 12.9** below, while the locations of each of the identified RTCs are noted on **Volume 3a Figure 12.2**.

Table 12.9 Collision Summary per Year

Year	Severity			Total
	Slight	Serious	Fatal	
2018	8	1	0	9
2019	7	2	0	9
2020	3	1	0	4
2021	2	2	0	4
2022	1	1	0	2
Total	**21**	**7**	**0**	**28**

A total of 26 collisions were recorded on the A9 of which 20 were classified as slight and six were classified as serious in severity. No fatal collision was recorded within the Study Area. Of the 26 collisions recorded on the A9, two clusters (21 collisions) were noted on the A9 Tain bypass stretch of the route at the Asda junction (15 consisting of 10 slight and five serious) and Lidl junctions (six slight) respectively. These two locations were known hotspots on the A9 Tain bypass, and the cause of these accidents suggests the configuration of the priority junctions off the A9 into Tain as the likely contributing factor to the cluster of accidents identified at these locations. Transport Scotland has since put in place measures to minimise the risk of accidents occurring at these locations. The measures which took effect in January 2021 includes the reduction in the speed limit to 50 mph and the introduction of mobile speed camera units on the A9 Tain bypass.

The remaining five collisions (four slight and one serious) were recorded out with the identified collision cluster between Nigg Roundabout and Evelix. A review of the factors causing these accidents suggests all the slight injury accidents recorded were as a result of driver error as they were assessed to be rear end shunt type collisions. The serious accident involved a single vehicle collision occurring during ice road surface conditions.

A total of two collisions have been recorded on the A949, of which one has been classified as slight and the other classed as serious in severity. Both collisions recorded within this area involved a single vehicle with the serious collision occurred during wet road surface conditions. No RTCs have been recorded on the U3521 recorded within the period under review.

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. It is acknowledged that it appears the configuration of the priority junctions off the A9 into Tain is likely contributing to the cluster of accidents identified at these locations, however appropriate measures have been put in place to address any safety concerns. The number of

[7] Study was undertaken using data compiled from www.crashmap.co.uk [Accessed 20/05/24]

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.

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 12.10** indicates the projected baseline traffic flow at each of the locations for the anticipated year of construction.

Table 12.10 Projected Baseline Traffic Flow (2026)

Ref	Road	Location	Growth Factor	Total (ADT)	HGV (ADT)	%HGVs
1	A9	A9, at Evelix, DfT Point ID: 8003	1.0276	6,768	350	5.2%
2	A949	A949, Near Whiteface, DfT Point ID: 80006	1.0276	984	51	5.2%
3	A9	A9, Near Cuthill, DfT Point ID: 80002	1.0276	6,927	332	4.8%
4	A9	A9, North of Tain, DfT Point ID: 80001	1.0276	8,274	536	6.5%
5	A9	A9, Near Newfield, DfT Point ID: 40721	1.0276	9,476	476	5.0%

12.5 Issues Scoped Out

As outlined in the Scoping Report, a number of effects have been scoped out of this Chapter and are summarised below.

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 only be required 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 has therefore been scoped out of this assessment.

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.

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 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 (**Volume 2 Chapter 5** Landscape and Visual Impact). The assessment of visual effects has therefore been scoped out of this Chapter.

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 will be considered as part of the noise vibration assessment (**Volume 2 Chapter 14** Noise and Vibration). The assessment of operational noise, as a result of road traffic, has therefore been scoped out of this Chapter.

12.6 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 12.2** Construction Development Programme. Construction 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 25 where 5,768 two-way vehicle movements have been estimated, comprising 4,400 car / LGV movements and 1,368 HGV movements. Assuming a 22-day working month, this would equate to a maximum of 262 two-way vehicle movements per day which would consist of 200 car / van movements and 62 HGV movements (that is 31 vehicles arriving and then the same 31 vehicles departing) per day.

Table 12.11 below 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 12.11 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 Evelix, DfT Point ID: 8003	6,768	7,030	4%	350	412	18%
2 - A949, Near Whiteface, DfT Point ID: 80006	984	1,246	27%	51	113	121%
3 - A9, Near Cuthill, DfT Point ID: 80002	6,927	7,189	4%	332	394	19%

Traffic Count Location/Link ID	Total Vehicle Movements			HGV Movements Only		
	2026 Baseline	Baseline + Development	Increase (%)	2026 Baseline	Baseline + Development	Increase (%)
4 - A9, North of Tain, DfT Point ID: 80001	8,274	8,536	3%	536	598	12%
6 - A9, Near Newfield, DfT Point ID: 40721	9,476	9,738	3%	476	538	13%

As detailed in the assessment methodology, IEMA Guidelines Rules 1 and 2 are used as thresholds to determine the requirement for a detailed assessment of effects in relation to an increase in traffic flows associated with the construction of the Proposed Development. The upper threshold of significance (30%) was considered appropriate for the count locations in the Study Area.

Table 12.11 demonstrates that along the A9(T), total traffic levels are predicted to increase by 3%-4% and HGV levels are predicted to increase by 12%-19% in the worst-case scenario during the peak month of construction, therefore no further assessment of effects is required for these road links. In accordance with IEMA Guidelines, further consideration should be given to road user and pedestrian safety as well as driver delay effects even if the Rule 1 threshold is not exceeded and this is considered in the subsequent sections.

With respect to the A949, it can be seen that the peak increase in total daily traffic in this worst-case scenario is 27% at count location 2 and this is below the 30% threshold of significance and therefore negligible, however the increase in HGV traffic is above the 30% threshold (121%) and therefore further assessment is required.

With respect to the U3521, it is acknowledged that count information for the U3521 between Bonar Bridge and the Site was not available, however it is expected that the percentage increase in traffic will be higher on this road due to a lower baseline flow level and therefore further assessment is required.

Severance

The IEMA guidance identified 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.

With respect to the A949, guidance set out in **Table 12.4** identifies that increases in total traffic volumes of less than the 30% threshold of significance (27%) could result in a negligible impact upon severance. It is acknowledged that the change in HGV traffic on the A949 is greater than 90% (large) which may result in a moderate effect (significant), however professional judgment must be applied. These increases are primarily due to the low number of existing HGVs using the A949 and, as detailed in Table 12.8, this road would operate well within their theoretical link capacity with the additional vehicle movements during construction. It is worth nothing that the A940 in Bonar Bridge is subject to a 30 mph speed limit with crossing facilities available to enable people to cross the road. Given the low baseline flows and the availability of crossing facilities, the magnitude of change can be reduced to a small magnitude of change on a receptor of medium sensitivity, thus, the effect of increased traffic on severance on locations of the A949 is minor and **not significant** in terms of the EIA Regulations.

With respect to the U3521 Bonar Bridge, when considering increases in traffic on roads with a low baseline traffic flow, it is important to consider the overall and residual capacity of the road in question. Although there is

no traffic count information available, existing levels are expected to be lower than that on the A949, and therefore the effect of the Proposed Development will be well below the predicted daily capacity of 6,720 vehicles (worse case). The magnitude of the predicted increase is low in absolute terms (262 vehicles per day, 200 cars / vans and 62 HGVs), and it can be seen that there is significant residual capacity on this route to accommodate the temporary increase in traffic.

It is noted that the section of the U3521 in Bonar Bridge is subject to a 30 mph speed restriction with crossing facilities available to enable people to cross the road, and besides, most of the facilities that are likely to generate notable pedestrian demand are located on the A949 where crossing points are present. It is considered that the magnitude of the increase in overall traffic flow or HGV composition is not sufficient to effect a change in severance on this link.

Therefore, when considering the link sensitivity and magnitude of impact, the effect of construction on severance on the U3521 (Bonar Bridge) results in a negligible magnitude of change on receptors of high sensitivity. Thus, the effect of increased traffic on severance is minor and **not significant** in terms of the EIA Regulations.

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 12.4** 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 the A949, it is evident that the increase in total traffic (or HGV component) associated with construction is predicted to increase between 101% and 150% and therefore results in a medium magnitude of change. Whilst the overall effect would result in a moderate effect (significant), there is a need for professional judgement to be applied. These increases are primarily due to the low number of existing HGVs using the A949 and as detailed in Table 12.8, this road would operate well within their theoretical link capacity with the additional vehicle movements during construction. It is worth nothing that the A940 in Bonar Bridge is subject to a 30 mph speed limit with crossing facilities available to enable people to cross the road. Given the low baseline flows and the availability of crossing facilities, the magnitude of change can be reduced to a small magnitude of change on a receptor of medium sensitivity. thus, the effect of increased traffic on non-motorised user amenity on the A949 is minor and **not significant** in terms of the EIA Regulations.

With respect to the U3251 (Bonar Bridge), it is acknowledged that count information for the U3521 between Bonar Bridge and the Site was not available. Traffic levels including HGV traffic are predicted to increase above the relevant thresholds of significance throughout construction on sensitive receptors along this link. A number of the identified sensitive receptors are located at the outskirts of the village including, in particular, Bonar Bridge Primary School where the quality of the footway diminishes (very narrow) as you approach the location of school from the village centre. The footway is only present on the eastern section of the road and there are no formal pedestrian crossing facilities at this location.

Considering the above, the magnitude of change in traffic levels on non-motorised user amenity is anticipated to be high based on the nature of road (low baseline flow, in particular HGVs) and results in a likely significance of effects which is classed as major / moderate and **significant** in terms of EIA Regulations. Mitigation measures are, however, identified that would reduce this effect. As discussed below, the effect of these mitigations would be a residual effect that is no longer significant.

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 the A949, guidance set out in **Table 12.4** of this Chapter 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 be more than 90% (large) which may result in a moderate effect (significant), however professional judgment must be applied. It is worth noting that the A949 would operate well within its theoretical link capacity with the additional vehicle movements associated during the construction phase and given there is suitable pedestrian infrastructure, and the number of HGVs is infrequent (circa 3 additional movements per direction per hour), the magnitude of change can be reduced to a small magnitude of change on a receptor of medium sensitivity, thus, the effect of increased traffic on severance on locations of the A949 is minor and **not significant** in terms of the EIA Regulations.

With respect to the U3521 Bonar Bridge, reference should be made to the non-motorised user amenity assessment undertaken in this Chapter. The magnitude of change in traffic levels on pedestrian delay is anticipated to be high based on the nature of road (low baseline flow, in particular HGVs) and results in a likely significance of effects which is classed as major / moderate and **significant** in terms of EIA Regulations. Mitigation measures are, however, identified that would reduce this effect. As discussed below, the effect of these mitigations would be a residual effect that is no longer significant. .

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 A949, guidance set out in **Table 12.4** of this Chapter 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 medium sensitivity. Thus, the effect of increased traffic on feat and intimidation for Count Location 2 is negligible and **not significant** in terms of the EIA Regulations.

With respect to Link 3 (U3521 at Bonar Bridge), reference should be made to the non-motorised user amenity assessment undertaken in this chapter. The magnitude of change in traffic levels on fear and intimidation is anticipated to be high based on the nature of road (low baseline flow, in particular HGVs) and results in a likely significance of effects which is classed as major / moderate and **significant** in terms of EIA Regulations. Mitigation measures are, however, identified that would reduce this effect. As discussed below, the effect of these mitigations would be a residual effect that is no longer significant.

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 12.8**, 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 262 two-way movements per day made up of 200 car / LGV movements and 62 HGV movements per day. Assuming a 10-hour delivery window (typically 12 hours), the additional HGV movements is estimated to be a maximum of 3 additional movements per direction per hour. 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** in terms of EIA regulation.

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** in terms of EIA Regulations.

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 12.4** of this Chapter, a total 28 accidents were recorded in the last five years on road links with the Study Area, with 21 of them recorded on the A9 Tain bypass. Appropriate measures have since been put in place to reduce the occurrences of these collisions. Two collisions were recorded on the A949 with none recorded on the U3521.

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 the Proposed Development 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** in terms of EIA Regulations.

Hazardous and Large Loads

It is estimated from **Volume 4 Appendix 12.2** that a total of six abnormal loads will be delivered to the Site in month 26 of the construction programme and this equates to on average one load 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** in terms of EIA Regulations.

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** in terms of EIA Regulations.

12.7 Assessment of Cumulative Effects

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 Development. A review of Developments within the vicinity of the Site was undertaken and it has been identified that the following developments have the potential to result in cumulative traffic and transport effects on the A949 and the U3125 in particular:

- Proposed Balblair Wind Farm on land 695 m northwest of Coirshellach Airdens Bonar Bridge; and
- Proposed Spittal – Loch Buidhe – Beauly Overhead Line Project.

However, at the time of finalising this Chapter, there is currently insufficient information (Transport Assessments / Statements) on the Highland Council's Planning Portal on these developments and as such, a quantitative cumulative impact assessment has not been undertaken.

That notwithstanding, it is unlikely that the peak construction period associated with these developments would overlap with the peak construction period of the Proposed Development as the applications are at different stages and each development has varying lengths of construction period. Therefore, the potential for cumulative effects would be suitably controlled by the respective CTMPs and continued engagement with neighbouring developments where there may be spatial and temporal overlap with the Proposed Development's construction activities.

In the 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 minimise disruption on the surrounding road network.

12.8 Mitigation and Residual Effects

Mitigation

Significant effects as a result of increased HGV were identified in **Section 12.6** in relation to non-motorised user amenity, pedestrian delay as well as fear and intimidation on and by road users at sensitive receptors on the U3521 at Bonar Bridge including Bonar Bridge Primary School. To address these potential significant effects, a number of mitigation measures are proposed which are recommended for adoption through development and implementation of a Construction Traffic Management Plan (CTMP) which would be agreed in consultation with Transport Scotland and the Highland Council (**Volume 2 Chapter 16** TT1) 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 the school and other amenities within the village;
- Drivers to be reminded of the presence of 20 mph temporary speed restrictions on the main road outside of the school 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;

- 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.

The Council may require that a road condition survey to 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.

An initial route feasibility has been undertaken to identify areas where remedial works will be required to permit the safe transportation of abnormal loads to the Site. However, a final Abnormal Load Route Assessment will be undertaken in advance of deliveries commencing.

In addition to the above, upgrades to the U3521 may be required in specific areas. Upgrades are likely to take the form of additional passing places, verge strengthening, carriageway widening etc. to ensure the safe movement of light vehicle traffic and reduce conflict with existing road users. These would be agreed with the Highland Council prior to construction and be delivered through a road opening permit for temporary construction with works restored following the construction of the Proposed Development.

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.

12.9 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 AILVs carrying larger electrical equipment.

Access to the Proposed Development would be taken from the A90(T) via the means of a newly constructed access junction located to the west of the Onshore Development Area. Construction HGV traffic and staff would route to and from the Onshore Development via the A90(T), A949 and the U3521.

An indicative 60-month construction program established that the Proposed Development would generate at most, 62 two-way HGV trip and 200 two-way staff car/LGV trips per day during the peak traffic generating months of the construction phase (month 25). It is noted that during the remainder of the construction phase (particularly months 31 to 60), HGV movements would be averaging at around 16 two-way movements per day.

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 U3521 at Bonar Bridge. Mitigation measures were identified in **Section 12.8** of this Chapter 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 12.12 provides a summary of the predicted effects detailed within this Chapter.

Table 12.12 Summary of Effects

Receptor	Potential Effects	Significance of Effect	Mitigation Proposals	Residual Effects
Settlements along the route	Severance	Minor	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.	Minor / Negligible, Not Significant

Receptor	Potential Effects	Significance of Effect	Mitigation Proposals	Residual Effects
			Where necessary, construction traffic movements will be reduced during periods of increased baseline traffic.	
Road Network	Road User and Pedestrian Safety	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.	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. All abnormal load movements will be fully escorted to warn on-coming vehicles and advise other road users.	Minor / Negligible, Not Significant