9. TRAFFIC AND TRANSPORT

9.1 Introduction

This Chapter provides an appraisal of the potential effects of the Project on traffic and transport receptors.

9.2 Appraisal Methodology

The specific methodology for the assessment of transport and traffic is based upon the likely impacts of the Project evaluated in accordance with the Institute of Environmental Assessment (now Institute of Environmental Management and Assessment, IEMA) Guidelines[1].

The objective of the assessment is to identify impacts on traffic and transport receptors resulting from the construction and operation of the Project. The traffic impacts of the project have been appraised in regard to existing road users, pedestrians, cyclists and other sensitive receptors. The following types of impacts have been assessed:

- Changes in traffic conditions and the potential for delays and congestion;
- Changes to conditions for pedestrians and cyclists;
- Severance, fear and intimidation; and
- Accidents and safety.

IEMA Guidance provides information on how the magnitude of changes in traffic flow should be determined, as shown in **Table 9.1.** This is used to assess the impacts, particularly of construction traffic, on the local highway network.

Table 9.1 Magnitude of Change

Magnitude	Change In Total Traffic	Description
Negligible	<30%	No discernible change in conditions
Minor/low	30 – 60%	Perceptible change in condition
Moderate/medium	60 – 90%	Apparent and noticeable changes to the local conditions
Major/high	>90%	Considerable change in conditions

The IEMA Guidelines advise that detailed assessment should be undertaken on:

- Highway links where traffic flows will increase by more than 30% (or the number of HGV's will increase by more than 30%); and
- Any specifically sensitive areas where the traffic flows have increased by 10% or more.

Where the predicted increase in traffic flows is lower than the thresholds, the IEMA guidelines suggest significance of effects can be stated to be low or not significant and further detailed assessments are not warranted. Peak traffic flows will be identified to assess a worst-case scenario.

9.3 Access

During the construction phase, there will be a requirement for access to, and egress from the Project by heavy goods vehicles (HGVs) and light traffic.

The majority of construction vehicles will access the Project via the A83 and turning onto a forestry track at NGR 204861 705524, utilising access for the existing An Suidhe substation, before reaching the Project site (see **Figure 1.1**). A new permanent access track would be formed off the minor access road to enable access for vehicles during construction and for ongoing operational and maintenance access to the Proposed Development.

[1] Institute of Environmental Assessment, Guidelines for the environmental assessment of Road Traffic (Guidance Note 1), 1993.

Minor roads leading to the new permanent access track may require upgrading to ensure suitability for transformer delivery. An initial routeing report has been commissioned by SSEN Transmission and can be seen in **Annex P** of this EA. However further information on routeing will be considered as part of a separate detailed assessment report once the transformer supplier and haulier are selected by SSEN Transmission. A Construction Traffic Management Plan (CTMP) will be submitted post application as part of the discharge of planning conditions. Similarly, if required, junctions will be upgraded accordingly in consultation with Argyll and Bute Council (ABC) as part of the discharge of planning conditions.

The Associated Development will result in construction of three new permanent access tracks leading to the three northern most towers: one of approximately 164 m; one of approximately 109 m; and one of approximately 14 m.

9.4 Baseline

Baseline traffic flow conditions on the construction traffic route were established using publicly available information published by the Department for Transport (DfT). The baseline traffic flows have informed the analysis to determine the impact of the Project on the road network.

The principal measurement considered in this study is the Average Annual Daily Flow (AADF)[2]. DfT data for the year 2019 has been used as the most representative case, given these are higher than the count estimate provided for the year 2020 during the Covid-19 pandemic.

Traffic count point data is available along the Project construction traffic route; the nearest being the A83 (site ref. 10765, NGR 208500, 707150). The AADF of vehicles at these points is shown in **Table 9.2** below.

Table 9.2 Average Annual Daily Flow

Site	Year	Count Method	Pedal Cycles	Two wheeled motor vehicles	Cars and Taxis	Buses and Coaches	Light Goods Vehicles	Heavy Good Vehicles	All motor vehicles
A83	2019	Automatic counter	1	20	2144	29	677	281	3151

For the purpose of the assessment, impacts are presented for HGVs and light good vehicles (LGVs). **Table 9.2** presents one-way movements. The following number of two-way baseline traffic movements are assumed i.e., half the number of one-way movements:

- HGVs: 141[3] two-way movements, comprising of HGV movements only; and
- LGVs: 1,435 two-way movements, comprising of two wheeled motor vehicles, cars and taxis, buses and coaches and light goods vehicles.

9.5 Construction Traffic

9.5.1 The Proposed Development

The Proposed Development will be constructed over a 30-month period. Forestry felling works are likely to commence several months in advance of substation earthworks / construction and have therefore been included within this assessment. No traffic movements are anticipated with regards to peat excavation on the project.

The estimated number of vehicle movements during construction, including both light and heavy vehicles, is summarised in **Table 9.3**. **Table 9.4** provides an estimate of vehicle movements per month.

[2] An AADF is the average over a full year of the number of vehicles passing a point in the road network each day.
[3] Rounded to the nearest whole number

Table 9.3 Estimate of Construction Vehicle Numbers for the Proposed Development

Construction Task	Vehicle Type	Approximate No. of Loads
HGV		
Forestry Machine Delivery	Low loader lorry	4
Forestry Operations	Fuel lorry	4
Earthworks Substation Platform	20T Tipper lorry	840
Earthworks Site Compound	20T Tipper lorry	250
Concrete for all work	Concrete wagon (6m^3 carry capacity)	228
Building & External civils deliveries (steelwork, cladding, drainage, fencing etc)	HGV Trailer	90
Electrical equipment deliveries	HGV Trailer	198
Transformer delivery	Abnormal indivisible load	1
Transformer removal	Abnormal indivisible load	1
Car/ Light Goods Vehicle (LGV)		
Personnel to and from site	Car/ Light Goods Vehicle	26,400
Total No. of HGVs and LGVs (Two-way return movements)		**28,016**

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Table 9.4 Monthly Estimate of Construction Vehicle Numbers for the Proposed Development

	Month																								Total
Task	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**Months 25 to 30**	
Forestry Machine Delivery	4																									4
Forestry Operations	4																									4
Earthworks Platform							280	280	280																	840
Earthworks Site Compound	125	125																								250
Concrete										38	38	38	38	38	38											228
Building/ Civils work										10	10	10	10	10	10	10	10	10								90
Electrical Equipment													11	11	11	11	11	11	11	11	11	11	11	11	11 per month	198
Transformer																			1					1		2
Total HGVs (Two-way return movements)	133	125					280	280	280	48	48	48	59	59	59	21	21	21	12	11	11	11	11	12	**11 per month**	**1,616**
Car/ Light Goods Vehicle	880	880	880	880	880	880	880	880	880	880	880	880	880	880	880	880	880	880	880	880	880	880	880	880	880 per month	26,400
Total Vehicles (Two-way return movements)	**1013**	**1005**	**880**	**880**	**880**	**880**	**1160**	**1160**	**1160**	**928**	**928**	**928**	**939**	**939**	**939**	**901**	**901**	**901**	**892**	**891**	**891**	**891**	**891**	**892**	**891 per month**	**28,016**

The monthly maximum two-way HGV movements during construction is 280 for a period of three months during earthworks. This equates to approximately 13 HGV movements per day (based on 22 working days per month). This represents a 9 % increase in the average number of HGVs on the A83 per day for the three months during earthworks. For the month during felling, the increase in HGV movements will be 4% and for the remaining months of construction the increase will be < 4%.

In terms of car and LGV movements construction will result in approximately 880 movements each month, assuming an even distribution across the construction period. This would result in approximately 34 two-way movements per day (assuming 26 working days per month), resulting in a 2.4% increase in the number of cars/LGVs on the A83.

Considering HGV and cars/LGVs combined the maximum number of monthly two-way movements is approximately 1,160 during months 7, 8 and 9 which equates to 53 two-way movements per day (assumes 22 working days per month). This represents a 3.4 % daily increase in total vehicle movements on the A83 during months 7, 8 and 9 of construction.

9.5.2 The Associated Development

The Associated Development will be constructed in a single-phase delivery, lasting 3 months in duration between months 13 and 14 of the Project's overall construction programme. The estimated number of vehicle movements during construction, including both light and heavy vehicles, is summarised in **Table 9.5** below.

Table 9.5 Estimate of General Construction Vehicle Numbers for the Associated Development

Construction Task	Vehicle Type	Approximate No. of Loads
Earthworks Access track and Tower Compounds	20T Tipper lorry	250
Concrete for foundations	Concrete wagon (6 m^3 carry capacity)	120
Excavation plant/tower steel work/Cable drums/ equipment	HGV Trailer	120
Personnel to and from site	Car/ Light Goods Vehicle	660
Total No. of HGVs and LGVs (Two-way return movements)		**1,150**

The works are proposed during months 13 and 14 and there is no change to the maximum number of HGVs assessed in **Section 9.5.1**.

Additional car/LGV two-way movements are 12.7 per day and represent a 0.9 % increase on baseline traffic.

9.5.3 Cumulative Assessment

The Proposed Development and the Associated Development

As discussed in **Section 9.5.1,** the maximum number of monthly HGV vehicle movements would occur during months 7 to 9, with approximately 280 two-way vehicle movements a month / 13 vehicles a day. Given vehicle movements regarding the Associated Development will occur during months 13 and 14, there is no change to the worst-case scenario assessed. For cars/LGVs there will be a cumulative increase of 2.8% during peak construction.

Other Cumulative Developments

SSEN Transmission are proposing similar substations and OHL developments across Argyll that will likely run in parallel with the Project's construction period. SSEN Transmission's other substation project at Crarae (to the north west of Minard) will use the same transportation route along the A83 during construction and will pass the An Suidhe substation access point. As such, it is scoped into the cumulative assessment.

Similar to the Project, each of the maximum vehicle movements for cumulative developments will occur during months 7 to 9 of the construction schedules. During these months, An Suidhe and the Project will require a total of 560[4] HGVs and 1,760[5] cars/LGVs per month to service construction. This accumulates to 26 HGVs per day (assuming a 22 day month) and 68 LGVs per day (assuming a 26-day month). During months 7 to 9 of the construction schedule, cumulative worst case traffic movements therefore represent a 19% increase in HGVs, 5.3% increase in cars/LGVs and a 6.6% increase in total vehicles. All other months of the construction programme will experience an increased but significantly reduced level of additional traffic compared with months 7 - 9.

Other Projects that may be constructed in parallel with the substation include Earraghail and Tangy IV wind farms. The Environmental Statement for Tangy IV indicates that most construction traffic will be experienced in the south of the Mull of Kintyre [6]. Cumulative effects are unlikely. For Earraghail a maximum of 93 HGVs per day is predicted on the A83 south of Inveraray [7]. In the unlikely scenario that this maximum was to coincide with peak HGV movements for the An Suidhe and Crarae substations there would be an additional 119 HGVs on the A83 representing a worst case increase of 86%. This would result in a high magnitude cumulative impact on these medium sensitivity receptors resulting in a major impact, which may be reduced to minor with the proposed mitigation.

9.6 Mitigation

The Contractor will share a CTMP with ABC and Transport Scotland (where appropriate) identifying appropriate and safe routes for construction traffic which will include the following mitigation measures:

- The Contractor will liaise with ABC to determine appropriate traffic management arrangements for construction vehicle movements;
- The Contractor will agree appropriate and safe routes to and from the Project with ABC. All construction vehicles will be required to use approved access routes;
- Movement of abnormal loads will be restricted to take place outside peak flow hours to minimise disruption to general traffic flows;
- Measures will be implemented to minimise dust and dirt being deposited on the carriageway due to construction operations;
- Appropriate signage warning other motorists and pedestrians of the presence of construction vehicles will be implemented;
- Appropriate signage restricting vehicle speeds will be considered in discussion with ABC;
- Police escort or other escort approved by Police Scotland will accompany abnormal load vehicle movements for the delivery of transformer components or any other loads deemed necessary by the road's authorities; and
- Use of the Construction Environmental Management Plan (CEMP) to monitor and ensure that agreed mitigation measures are being implemented.

[4] Crarae worst-case HGV monthly construction estimate is 280 two-way movements per month.
[5] Crarae LGV worst-case monthly construction estimate is 880 two-way movements per month.
[6] https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00000673&T=5 Accessed July 2022
[7] EARRAGHAIL Renewable Energy Development, Environmental Statement, https://www.scottishpowerrenewables.com/pages/earraghail_renewable_energy_development.aspx Accessed July 2022

It is anticipated that Abnormal Indivisible Load (AIL) deliveries to the Project will be required for the delivery of the transformers. Further consultation and notification will be undertaken with relevant local authorities including ABC and Police Scotland once details have been finalised to make sure that traffic impacts on the road network are minimised and emergency access is provided at all times.

Details will include the selection of delivery times which would avoid peak times and use of police escort vehicles when required to manage the deliveries and facilitate safe interaction with other road users. Road signage will be implemented to provide advanced warning of abnormal load movements. An SSEN Transmission Community Liaison Manager will be appointed to the Project to ensure that the local community and the general public have enough information to plan their journey and avoid use of the road network during abnormal load movements if desired.

The presence of slow-moving abnormal loads on the road network may cause some short-term congestion, this would be temporary and short term.

9.7 Operational Traffic

The Project will be unmanned with regular site inspections undertaken and visits required for switchgear operation. A LGV is expected to visit the Proposed Development once per week during normal operation. In addition, it is likely that maintenance would be completed for about one week during each year. During a maintenance period four or five vehicles per day would attend the Proposed Development. Additional visits to the substation would be required in event of faults. Traffic to the associated development will be infrequent and are considered negligible.

A summary of the appraisal of traffic, after mitigation is implemented, is provided in **Table 9.6**.

Table 9.6 Appraisal of Traffic

Environmental Feature	Development Interaction	Receptor Sensitivity	Magnitude of Change	Mitigation Measures	Significance of Effect
A83. Other road users: delays, severance, limited short-term impacts, increased risk of accidents	Construction traffic, temporary	Medium	Negligible	CTMP to be provided to ABC pre-construction.	Negligible
Other road users: delays, severance, limited short-term impacts, increased risk of accidents	Operational traffic	Medium	Negligible	N/A	Negligible
The Associated Development					
A83. Other road users: delays, severance, limited short-term impacts, increased risk of accidents	Construction traffic, temporary	Medium	Negligible	CTMP to be provided to ABC pre-construction.	Negligible
Other road users: delays, severance, limited short-term impacts, increased risk of accidents	Operational traffic	Medium	Negligible	N/A	Negligible
The Proposed Development and Associated Development					
A83. Other road users: delays, severance, limited short-term impacts, increased risk of accidents	Construction traffic, temporary	Medium	Negligible	CTMP to be provided to ABC pre-construction.	Negligible
Other road users: delays, severance, limited short-term impacts, increased risk of accidents	Operational traffic	Medium	Negligible	N/A	Negligible
Other Cumulative Developments					

Environmental Feature	Development Interaction	Receptor Sensitivity	Magnitude of Change	Mitigation Measures	Significance of Effect
A83. Other road users; delays, severance, limited short-term impacts, increased risk of accidents	Construction traffic, temporary	Medium	High	CTMP to be provided to ABC pre-construction.	Minor
Other road users; delays, severance, limited short-term impacts, increased risk of accidents	Operational traffic	Medium	Negligible	N/A	Negligible

9.8 Summary of Effects

This Chapter has assessed the likely effects of the Project on traffic and transport receptors.

The conclusion is that with the implementation of the proposed mitigation the traffic and transport effects arising from the construction and operation of the Project will be minor or less.