Galileo 05 Limited

Lynemore Wind Farm

Environmental Impact Assessment Report (Volume 1)

Chapter 10: Traffic and Transport

663991 (00)

MARCH 2025

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10 TRAFFIC AND TRANSPORT

10.1 Introduction

10.1.1 This chapter considers the likely significant effects on receptors along the transport routes as a result of vehicle movements associated with the proposed Lynemore Wind Farm ('the Proposed Development').

10.1.2 The specific objectives of the chapter are to:

- Describe the assessment methodology and significance criteria used in the impact assessment;
- Describe the traffic and movement baseline conditions (including future baseline);
- Describe any likely impacts and effects of the Proposed Development on the receptors identified through the baseline assessment;
- Describe the mitigation measures proposed to address any likely significant adverse effects;
- Assess the residual effects remaining following the implementation of secondary mitigation; and
- Describe any likely cumulative effects of the Proposed Development combining and interacting with the residual environmental effects of committed development/s.

10.1.3 This chapter is supported by the following EIA Report Figures and Technical Appendices:

10.1.4 EIA Report Figures (**Volume 2a**):

- **Figure 10.1: Traffic Study Area;**
- **Figure 10.2: Abnormal Load Route;**
- **Figure 10.3a: Access Junction Design;**
- **Figure 10.3b: Junction Swept Path Analysis**
- **Figure 10.4: Traffic Count Locations;**
- **Figure 10.5: Personal Injury Accident Locations;** and
- **Figure 10.6: Construction Traffic Distribution.**

10.1.5 EIA Report Technical Appendices (**Volume 3**):

- **Technical Appendix 10.1: Abnormal Load Route Assessment;** and
- **Technical Appendix 10.2: Outline Construction Traffic Management Plan.**

10.1.6 The assessment has been informed by the embedded mitigation measures which form part of the Proposed Development. Please refer to **Chapter 2: Proposed Development** for further details.

10.2 Statutory and Planning Context

10.2.1 This chapter has been prepared in line with the requirements of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (EIA Regulations).

Relevant Legislation

10.2.2 There is no legislation specific to transport assessments that is required to be considered as part of this assessment.

Relevant Planning Policy

10.2.3 This assessment has been undertaken in accordance with policies outlined in the following plans:

- National Planning Framework 4 (2023); and
- Highland-wide Local Development Plan (2012).

Relevant Guidance

10.2.4 The following guidelines have been used to inform this assessment:

- Institute of Environmental Management and Assessment, Guidelines for the Environmental Assessment of Traffic and Movement (2023);
- LA104, Environmental assessment and monitoring, Design Manual for Roads and Bridges (DMRB) (Standards for Highways, 2020);
- The Highland Council, Roads and Transport Guidelines for New Developments (2013);
- Scottish Government, Transport Assessment Guidance (2012); and
- The Highland Council, Guidance on the Preparation of Transport Assessment (2014).

10.3 Consultation Undertaken

10.3.1 **Table 10.1** summarises the consultation responses regarding traffic and movement and provides information on where and/or how they have been addressed in this assessment. The following regulatory bodies made comment on traffic and movement matters during scoping discussions held in 2024:

- The Highland Council; and
- Transport Scotland.

Table 10.1: Consultation Summary

Consultee and Date	Summary of Key Issues	Action Taken
Transport Scotland 13th May 2024	<u>Access Proposals</u> Transport Scotland state that "any proposed changes to the trunk road network must be discussed and approved (via a technical approval process) by the appropriate Area Manager. For the planning application, we would ask that 1:500 scale plans of the new or modified access junction should be submitted for review including visibility splay plans. Depending on the scale of the changes, it may also be necessary for a road safety audit to be undertaken." <u>Assessment of Environmental Impacts</u> Impacts on links to be assessed based on the thresholds as indicated within the Guidelines for the Environmental Assessment of Traffic and Movement by IEMA (2023) which specify that road links should be taken forward for further assessment where the following rules are breached: Rule 1: Include road links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%) Rule 2: Include road links of high sensitivity where traffic flows have increased by 10% or more. The preliminary study area comprises the following: • A9(T) between Inverness and Aviemore. • B851 between the B851/A9(T) junction and the B862/B851 junction. • A95(T) between A95(T)/A9(T) junction at Granish and Grantown-on-Spey. • A82(T) between Lochend and A9(T) at Inverness. • A96(T) between Nairn and A9(T) at Inverness. Base traffic should be factored to the peak construction year using National Road Traffic Forecasts (NRTF) Low Growth factors. It is accepted that operation and decommissioning are scoped out of assessment.	<u>Access Proposals</u> A plan showing the proposed access arrangement with visibility splays is included at **Figure 10.3a and Figure 10.3b.**. Dialogue has taken place (2024/25) with Transport Scotland's Major Projects Team for the A9 Tomatin to Moy Dualling Project, Trunk Road Area Manager, Development Management Team and their Maintenance Contractor in regard to the access strategy. <u>Assessment of Environmental Impacts</u> The preliminary Study Area has been refined following development of the Proposed Development. The revised Study Area is set out in **Paragraph 10.4.10** below. Each of the links in the Study Area has been assessed initially based on IEMA's established rules to determine whether further assessment is required.

Consultee and Date	Summary of Key Issues	Action Taken
	<u>Abnormal Loads Assessment</u> Transport Scotland will need to be satisfied that the size of turbines proposed can negotiate the selected route and that there will be no detrimental effect on structures within the trunk road route. A full Abnormal Loads Assessment report should be provided that identifies key pinch points with swept path analysis and details provided with regard to any required changes to street furniture or structures.	Low Growth factors have been applied to base years of 2022 and 2023 to the construction year of 2030. Details of the factors applied are set out in **Paragraph 10.5.10**. <u>Abnormal Loads Assessment</u> A full Abnormal Loads Assessment Report is included in **Technical Appendix 10.1**.
The Scottish Ministers 6th August 2024	<u>Transport of Abnormal Loads</u> The applicant should discuss and agree the scope of the Abnormal Load Assessment with Transport Scotland prior to it being undertaken. <u>Construction Traffic Management Plan</u> The applicant should discuss and agree the scope of the Construction Traffic Management Plan with the Highland Council and Transport Scotland. Local Communities which will be impacted by the proposed Development's construction traffic should also be involved in such discussions.	<u>Transport of Abnormal Loads</u> A full Abnormal Load Assessment Report is included in **Technical Appendix 10.1**. <u>Construction Traffic Management Plan</u> An Outline Construction Traffic Management Plan has been prepared for the purpose of the planning application and is included in **Technical Appendix 10.2**.
WSP and Transport Scotland 17th January 2025	<u>Access</u> Consultation was undertaken with Transport Scotland and their advisors WSP (formerly Atkins Mouchel JV responsible for design of the A9 Dualling: Tomatin to Moy) in December 2024 and January 2025 in relation to access junction design	<u>Access</u> It was confirmed that requirements for the installation of a demountable vehicle restraint system within the central reserve at the Lynebeg LILO junction location have been incorporated in the A9 Dualling: Tomatin to

Consultee and Date	Summary of Key Issues	Action Taken
		Moy contract. This means that the access proposed can be accommodated in the future, subject to the satisfaction of any future requirements of the relevant parties such as Transport Scotland (including any planning conditions). A plan showing the proposed access arrangement with visibility splays is included at **Figure 10.3a and Figure 10.3b.**

10.4 Scope and Methodology

Scope of Assessment

10.4.1 The scope of this assessment has been established through an ongoing scoping process. Further information can be found in **Chapter 4: Environmental Impact Assessment Process**.

10.4.2 This section provides an update to the scope of the assessment and re-iterates/updates the evidence base for scoping out matters following further iterative assessment.

Receptors/Matters Scoped Out of Further Assessment

10.4.3 **Table 10.2** presents the receptors/matters that are scoped out of further assessment, together with appropriate justification. Where a change has occurred since EIA scoping, this is clearly stated and justified.

Table 10.2 Receptor/Matters Scoped Out of Further Assessment

Receptor/Matter	Phase	Justification	Change since EIA scoping?
Traffic associated with the Operational Phase	Operational Phase	Once operational, the level of traffic associated with the Proposed Development would be minimal. Regular monthly or weekly visits would be made to the Site for maintenance checks. The vehicles used are likely to be 4x4 vehicles and there may also be the occasional need for an HGV to access the Site for maintenance and/or repairs. It is considered that the effects of operational traffic would be negligible and therefore no detailed assessment of the operational phase of the development is proposed.	No. The Scoping Opinion agreed that this matter should be scoped out of further assessment.
Traffic associated with the Decommissioning Phase	Decommissioning Phase	The traffic generation levels associated with the decommissioning phase would be less than those associated with the construction phase as some elements such as access tracks would be left in place and would not be decommissioned. As such, the construction	No. The Scoping Opinion agreed that this matter should be scoped out of further assessment.

Receptor/Matter	Phase	Justification	Change since EIA scoping?
		phase is considered the worst case assessment from the Proposed Development. An assessment of the decommissioning phase will therefore not be undertaken, although a commitment to reviewing the impact of this phase will be made immediately prior to decommissioning works proceeding.	

Receptors/Matters Scoped In for Further Assessment

10.4.4 **Table 10.3** presents the receptors/matters that are scoped in for further assessment, together with appropriate justification. Where a change has occurred since EIA scoping, this is clearly stated and justified.

Table 10.3 Receptors/Matters Scoped In for Further Assessment

Receptor/Matter	Phase	Justification	Change since EIA scoping?
A9 and A95 road users	Construction Phase	The increase in construction traffic associated with the Proposed Development may lead to adverse effects on local road users. They are therefore included as receptors within the traffic and movement assessment.	Yes. The Scoping Report did not specify which receptors should be scoped in.
Local residents in Inverness and Aviemore	Construction Phase	The increase in construction traffic associated with the Proposed Development may lead to adverse effects on local residents. They are therefore included as receptors within the traffic and movement assessment.	Yes. The Scoping Report did not specify which receptors should be scoped in.

Baseline Methodology

Desk Study

10.4.5 The desk study included reviews and identification of the following:

- Relevant transport planning policy;

- Personal injury and accident data;
- Sensitive locations;
- Any other traffic sensitive receptors in the area (core paths, routes, communities, etc.);
- Ordnance Survey (OS) plans;
- Potential origin locations of construction staff and supply locations for construction materials to inform the extent of local area roads network to be included in the assessment; and
- Constraints to the movement of abnormal indivisible loads (AILs) through a route survey including swept path assessments. Route survey included video data collection of the transport routes to the site used in the preparation of the Abnormal Load Route Assessment.

Assessment Methodology

10.4.6 A high-level overview of the effects of traffic movements has been considered in accordance with the Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Traffic and Movement (2023) (the 'IEMA Guidelines').

10.4.7 The methodology adopted in this assessment involved the following key stages:

- Determine baseline (and future baseline) conditions;
- Review the Proposed Development to identify potential effects including any cumulative effects;
- Evaluate significance of effects on sensitive receptors;
- Identify mitigation where required; and
- Assess residual effects.

10.4.8 The use of Low National Road Traffic Forecast (NRTF) growth assumptions provides a robust future year assessment scenario to take account of trip generation that may occur as a result of future local development within the Study Area.

10.4.9 The assessment is based on the Proposed Development as described in **Chapter 2: Proposed Development**.

Study Area

10.4.10 The Study Area includes 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 other developments in the area, OS mapping and an assessment of the potential origin locations of construction staff and supply locations for construction materials. Whilst the Study Area was initially set out in the Scoping Report, this has subsequently been refined as understanding of the Proposed Development has developed. Roads forming the Study Area are shown in **Figure 10.1** and include:

- A9 approximately 4.8km north of A9/A96 junction
- A9 approximately 4km north of A9/B9154 junction and 150m east of A9/ General Wade's Military Road
- A9 approximately 1.3km north of A9/B9177 junction
- A9 approximately 400m south of Raigmore Interchange (A9/A96 junction)

- A9 between Longman Roundabout and Raigmore Interchange (A9/A96 junction)
- A95 between A95/B9152 junction and A9/A95 junction

10.4.11 The following roads were included in the Scoping Report Study Area but have subsequently been excluded following a more detailed review of anticipated material and staff origins:

- B851 between the B851/A9 junction and the B862/B851 junction;
- A95 between A95/B9152 junction at Granish and Grantown-on-Spey;
- A82 between Lochend and A9 at Inverness; and
- A96 between Nairn and A9 at Inverness.

10.4.12 The following rules, also taken from the IEMA Guidelines, were used to determine which links within the Study Area should be considered for detailed assessment:

- Rule 1 – Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles (HGV) will increase by more than 30%); and
- Rule 2 – Include highway links of high sensitivity where traffic flows have increased by 10% or more.

10.4.13 Abnormal Indivisible Loads (AILs) associated with the wind turbines will be delivered from the Port of Inverness. This route is shown in **Figure 10.2**.

Sensitivity of Receptors

10.4.14 In terms of traffic and movement impacts, the receptors are the users of the roads within the Study Area and locations through which those roads pass.

10.4.15 The IEMA Guidelines include guidance on how the sensitivity of receptors should be assessed. Using that as a base, professional judgement was used to develop a classification of sensitivity for users based on the characteristics of roads and locations. This is summarised in **Table 10.4.**

Table 10.4: Classification of Receptor Sensitivity

Receptor	Sensitivity			
	High	Medium	Low	Negligible
Users of Roads	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs. Includes roads with traffic control signals, waiting and loading restrictions, traffic calming measures.	Where the road is a local A or B class road, capable of regular use by HGV traffic. Includes roads where there is some traffic calming or traffic management measures.	Were the road is Trunk or A-road class, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures.	Where roads have no adjacent settlements. Includes new strategic trunk roads that would be little affected by additional traffic and suitable for Abnormal Loads and new strategic road junctions capable of accommodating Abnormal Loads.

Receptor	Sensitivity			
	High	Medium	Low	Negligible
Users / Residents of Locations	Where a location is a large rural settlement containing a high number of community and public facilities and services.	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.	Where a location is a small rural settlement, few community or public facilities or services.	Where a location includes individual dwellings or scattered settlements with no facilities.

10.4.16 Where a road passes through a location, users are considered subject to the highest level of sensitivity defined by either the road or location characteristics.

Magnitude of Impact (Change)

10.4.17 The IEMA Guidelines identity the key impacts that are most important when assessing the magnitude of traffic impacts from an individual development. The impacts and levels of magnitude are discussed below.

10.4.18 Based on the IEMA guidelines, the following factors have been identified as being the most discernible potential environmental impacts likely to arise from changes in traffic movements. Therefore, these are considered in the assessment which may arise from changes in traffic flows resulting from the Proposed Development:

10.4.19 **Severance of Communities** - The perceived division that can occur within a community when it becomes separated by major transport infrastructure. The term is used to describe a complex series of factors that separate people from places and other people. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by infrastructure.

10.4.20 **Road Vehicle Driver and Passenger Delay** - Traffic delays impacting non-development traffic can occur at points on the road network surrounding a development site including site entrance, roads passing a development site where there is likely to be additional traffic and the flow might be affected by additional parked cars, key intersections along a road and side roads where the availability of gaps between vehicles to circumvent delay are reduced.

10.4.21 **Non-motorised User Delay** - Changes in volume, composition or speed of traffic may affect the ability of people to cross a road. In general, increases in traffic levels are likely to lead to greater increases in delay. This is also dependent on existing level of activity, visibility and general physical conditions of the Site.

10.4.22 **Non-motorised Amenity** - Defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic.

10.4.23 **Fear and Intimidation On and By Road Users** - IEMA guidelines states that measuring the extent of fear and intimidation as a result of development traffic is dependent on the following factors:

- The total volume of traffic;

- The heavy vehicle composition;
- The speed these vehicles are passing; and
- The proximity of traffic to people – and/or the feeling of the inherent lack of protection created by factors such as a narrow pavement median, a narrow path or a constraint (such as a wall or fence) preventing people stepping further away from moving vehicles.

10.4.24 IEMA guidelines suggest defining the degree of hazard to pedestrians in three stages:

1. Fear & Intimidation (F&I) Degree of Hazard - By calculating average (a) 18hr total traffic flow, (b) 18hr heavy vehicle flow and (c) average speed (Mph). Each with suggested thresholds of traffic number flows and average vehicle speeds. These thresholds in-turn sort the assessment results into a 'degree of hazard' score of 0-30. This is calculated for baseline traffic flows and baseline + development traffic flows;
2. Levels of F&I – Levels of F&I are categorized as: 'Extreme', 'Great', 'Moderate' or 'Small' according to a total hazard score provided by combining the elements of stage 1 - (a)+(b)+(c); and
3. F&I Magnitude of Impact – The level of impact is then approximated with reference to the changes in the level of fear and intimidation from baseline conditions. Magnitude of impact is categorized according to 'change in step/traffic flows from baseline conditions as:
    - 'high' (two step changes in level);
    - 'medium' (One step change in level with >400 vehicle increase in average 18hr all traffic flow and/or >500 increase in total 18hr HGV flow);
    - 'low' (one step change in level with <400 vehicle increase in average 18hr total vehicle flow and/or <500 HGV flow increase in total 18hr HGV flow); and
    - 'negligible' (no change in step changes).

10.4.25 **Road User and Pedestrian Safety** - Consists of an approximation of the potential for road safety impacts through the calculation of collision rates (slight, serious and fatal). Collision clusters are identified by a detailed review of the baseline characteristics to determine the road safety sensitivity of discrete areas of the road network.

10.4.26 **Hazardous/Large Loads** - Some developments may involve the transportation of dangerous or hazardous loads by road. Such movements may involve specialist loads that might be involved in the construction or decommissioning phases of the development (e.g. wind turbine generator components).

10.4.27 The magnitude of impact or change has been considered according to the criteria defined in **Table 10.5**.

Table 10.5: Magnitude of Impact Assessment Criteria

Impact	Negligible	Low	Medium	High
Severance of Communities	Changes in total traffic flow of less than 30%	Changes in total traffic flow of 30%<60%	Changes in total traffic flow of 60%<90%	Change in total traffic flow over 90%
Road Vehicle Driver and Passenger Delay	< 10 % Increase in traffic	Quantitative assessment of road capacity based on existing traffic flows and predicted future levels.		

Impact	Negligible	Low	Medium	High
Non-Motorised User Delay	< 10 % Increase in traffic	An increase in total hourly traffic of approximately 30% can double the delay experienced by pedestrians attempting to cross a road. Whether or not the increase in traffic results in a significant effect should be determined using professional judgement.		
Non-Motorised Amenity	Assessment of this link is based on a desktop review of non-motorised user facilities on links used by construction traffic.			
Fear and Intimidation on and by road users	Negligible - No change in step changes.	Low - One step change in level, with • <400 vehicles increase in average 18hr all vehicle two-way all vehicle flow; and/or • <500 heavy vehicle increase in total 18hr HV flow	Medium - One step change in level, but with • >400 vehicles increase in average 18hr all vehicle two-way all vehicle flow; and/or • >500 heavy vehicle increase in total 18hr HV flow	High - Two step changes in level.
Road User and Pedestrian Safety	< 10 % Increase in traffic	Professional judgement would be used to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents. Collision cluster analysis is required. A cluster corresponds to a high concentration of accidents in a specific location (e.g. a specific junction) within the analysed time frame. In this assessment, a collision cluster is equal to 3 accidents within a 100m radius, as specific criteria for collision cluster analysis is not provided in the Council's 'Guidance on the preparation of Transport Assessments'. It should be noted a commonly used criterion is 5 accidents within a 100m radius over a five-year period).		
Hazardous/Large Loads	< 30 % increase in traffic	Quantitative assessment of road capacity based on existing traffic flows and predicted future levels.		

Determination of Significance of Effects

10.4.28 The approach to determine the significance of effects has been as follows:

- Identify the relevant receptors;
- Derive their value (sensitivity) based on the criteria set out in **Table 10.4**;
- Identify and consider the likely impacts from each activity as set out in **Paragraphs 10.4.17** to **10.4.26.10.4.18**
- Determine the magnitude of impact (change) based on the criteria identified in **Table 10.5**;
- Assess the significance of any effects. Where likely significant effects are identified, develop secondary mitigation measures to reduce effects such that they are no longer significant; and

- Assess the significance of any residual effects following the implementation of secondary mitigation measures.

10.4.29 To determine the overall significance of effects, the results from the receptor sensitivity and magnitude of impact assessments are correlated and classified using a scale set out in LA 104 Revision 1 of the Design Manual for Roads and Bridges (DMRB) and summarised in **Table 10.6**.

Table 10.6: Significance of Effect Matrix

Sensitivity	Magnitude of Impact			
	High	Medium	Low	Negligible
High	Major	Major / Moderate	Moderate / Minor	Minor
Medium	Major / Moderate	Moderate	Minor	Minor / Negligible
Low	Moderate / Minor	Minor	Minor	Minor / Negligible
Negligible	Minor	Minor	Minor / Negligible	Negligible

10.4.30 In terms of the EIA Regulations, effects are considered significant where they are assessed to be Major, Major / Moderate or Moderate. Where an effect could be one of Major / Moderate or Moderate / Minor, professional judgement is used to determine which classification should be applicable.

Potential Cumulative Effects

10.4.31 An assessment of the cumulative effect on the Study Area of all relevant developments, including local wind farms, in respect to either submitted planning applications or consented developments pending construction, which may utilise the same access routes as the Proposed Development, has been undertaken. No developments at the scoping stage or are pre-planning have not been included for the reasons set out in **Table 10.17**. No specific residential or employment developments have been included as these are generally contained within background traffic forecasting (NRTF).

Key Assumptions

10.4.32 Reasonable care has been used to identify the location of potential material suppliers that may be used during the construction of the Proposed Development and the routes that would be used by vehicles from those suppliers to the site location. In practice, selection of the supplier(s) will ultimately be determined by the main contractor employed to carry out the works, post consent. However, for the purposes of this assessment, the following routing assumptions have been applied:

Cars / LGVs

- It is assumed that 80% of light vehicles will arrive from Inverness and the remaining 20% from Aviemore (of which it is assumed that 10% will access Aviemore via the northern end (A95) and the other 10% will access Aviemore via the southern end (B9152); and

- Due to the prohibition of right-turns at the proposed site access by virtue of the A9 Moy to Tomatin dualling scheme design for the Lynebeg junction at this location, the following re-routing assumptions have been applied:
    - Southbound arrivals (i.e. from Inverness to the site) will travel south past the site access on the A9 and turn at Aviemore to head northbound on the A9 to access the site via left turn in.
    - Northbound arrivals (i.e. from Aviemore to the site) will travel northbound on the A9 and access the site via left turn in.
    - Southbound departures (i.e. from the site to Aviemore) will egress the site access with left turn to the north on the A9, turn at the junction with B9177 and travel southbound on the A9 to Aviemore.
    - Northbound departures (i.e. the site to Inverness) will egress the site access with left turn to the north on the A9 and travel northbound on the A9 to Inverness.

HGVs

- HGV trips generated by the Proposed Development will consist of the transportation of aggregate materials, timber, cables, transformers, inverters and BESS equipment.
- As a worst-case scenario, it is assumed that 50% of the required aggregate materials will be generated in the on-site borrow pit. Therefore, it has been assumed for the purposes of assessment that the remaining 50% will be imported from the David Ritchie & Sons Ltd. Quarry in Aviemore.
- The majority of HGV trips are associated with quarry materials (99% of total two-way movements), a small percentage of trips involve the transportation of goods which will likely arrive from the Port of Inverness (1% of total two-way movements). Therefore 99% of HGVs will arrive and depart to Aviemore and 1% to Inverness (excluding AILs, see below section on AIL assumptions).
- As with the Cars/LGVs associated with the Proposed Development, due to the prohibition of right-turns at the proposed site access, the following re-routing assumptions have been applied:
    - Southbound arrivals (i.e. from Inverness to the site) will travel south past the site access on the A9 and turn at Aviemore to head northbound on the A9 to access the site via left turn in.
    - Northbound arrivals (i.e. from Aviemore to the site) will travel northbound on the A9 and access the site via left turn in.
    - Southbound departures (i.e. from the site to Aviemore) will egress the site access with left turn to the north on the A9, turn at the junction with B9177 and travel southbound on the A9 to Aviemore.
    - Northbound departures (i.e. the site to Inverness) will egress the site access with left turn to the north on the A9 and travel northbound on the A9 to Inverness.

AILs

- Abnormal Indivisible Load vehicles will be required for the transportation of cranes and turbine components to the Site;
- Loads will be transported to Port of Inverness by ship and then transported to the Site via abnormal load vehicles on the A9. AILs are proposed to enter the Site via the proposed Lynebeg junction improvement in a contra-flow movement via left turn out to avoid the vehicles travelling a significant distance to the south of the Site in order to perform a u-turn; and

- Once the loads have been deposited on site, the vehicles will return to Inverness as standard HGVs.

10.4.33 The construction working hours for the Proposed Development are proposed to be 07:00 to 19:00 Mondays to Fridays and 08:00 to 13:00 on Saturdays. Therefore, the calculation of construction traffic movements used in this assessment has been based on this.

10.4.34 A detailed construction workforce schedule, i.e., employee numbers throughout the construction programme, and likely shift patterns, will not be known until the contract for building the Proposed Development has been awarded. However, the maximum number of staff likely to be onsite at any one time would be 50. The traffic calculations for cars and LGVs is based on a peak workforce of 50 staff.

10.4.35 Construction hours also generally apply to the delivery of materials to the Proposed Development. However, abnormal loads may be delivered outside these hours, when the road network is at its quietest, to reduce traffic disturbance. Delivery of the hubs/nacelles, towers and blades to the Site will require the use of abnormal sized and slow-moving load vehicles (AIL loads). These vehicles would require a police escort and the timing of these deliveries may be dictated by the police. The timing of the delivery of abnormal loads will be agreed with the relevant authorities after detailed investigation.

10.4.36 The assessment is based upon an assumed construction programme of 24 months as set out in (**Chapter 2: Proposed Development**) for the Proposed Development and is based upon average traffic flows in one-month periods. During the peak construction month there may be localised peak days where construction activity may be higher.

10.4.37 It should be noted that, in the scenario that the Proposed Development did not proceed, traffic growth on the local highway network will still occur.

10.4.38 The information presented within the assessment is sufficient to identify and assess the likely significant environmental effects of the Proposed Development on traffic and transport receptors.

Difficulties and Uncertainties

10.4.39 The assessment is based upon average traffic flows during the peak month of construction. During this month, activities at the Site may fluctuate between one day and another and it is not possible to fully develop a day-by-day traffic flow estimate as no subcontractor has been appointed. Furthermore, external factors can impact upon activities on a day-by-day basis, such as the weather conditions, availability of materials, time of year (daylight hours), etc.

10.5 Existing Environment

Access

10.5.1 The site is to be accessed via a left in / left out junction arrangement with the A9 which leads onto Lynebeg Road. The left in / left out junction arrangement has been influenced by the Transport Scotland A9 dualling scheme from Moy to Tomatin for the Lynebeg Junction which will result in the prohibition of right turning traffic at the site access junction. The dualling scheme from Moy to Tomatin is scheduled to be completed in Spring 2028 which is prior to the anticipated commencement of the construction of the Proposed Development in 2030.

10.5.2 A priority junction arrangement with Lynebeg Road has been proposed which will provide access into the Site for cars, LGVs, HGVs and abnormal load vehicles. The proposed access arrangement is shown at **Figure 10.3a and Figure 10.3b**. Consultation was undertaken with Transport Scotland and their advisors WSP (formerly Atkins Mouchel JV responsible for design of the A9 Dualling: Tomatin to Moy) in December 2024 and January 2025 in relation to access junction design and it was confirmed that requirements for the installation of a demountable vehicle restraint system within the central reserve at the Lynebeg LILO junction location have been incorporated in the A9 Dualling: Tomatin to Moy contract. This means that the access proposed can be accommodated in the future, subject to the satisfaction of any future requirements of the relevant parties such as Transport Scotland (including any planning conditions).

Existing Traffic Conditions

10.5.3 All traffic generated by the Proposed Development will access the Site via the A9 junction and will travel between Inverness and Aviemore on the A9. The majority of HGVs will travel on the stretch of the A95 immediately to the north of Aviemore to connect between the quarry and the A9. Beyond the A9 and A95, traffic will be distributed across several roads which will reduce the localised impacts on these roads.

10.5.4 Due to the dualling and right turn prohibition (other than for AILs subject to agreement with Transport Scotland) predicted construction vehicle movement numbers will double on links on the A9 as southbound vehicles approaching from the north must first pass the Site to be able to turn for their journey to and from the Site.

10.5.5 The A9 is currently a single carriageway road up to a point approximately 1.2km west of the A9/General Wade's Military Road junction where it continues as a dual carriageway through Inverness to the Tore Roundabout. The A9 is subject to the national speed limit although there is a 50mph speed limit in place for HGVs. It is maintained by BEAR Scotland.

10.5.6 The A95 is a single carriageway road which runs from the A9 North of Aviemore to Keith. It is subject to the national speed limit for the section within the Study Area. The A95 is maintained by Highlands Council.

10.5.7 In order to assess the impact of the Proposed Development on sections of the A9 and A95, it has been split into separate links based on the location of Department for Transport (DfT) traffic count points.

10.5.8 Annual traffic statistics for the Study Area have been extracted from the DfT traffic count point database which uses either estimations using previous year's Annual Average Daily Traffic flows (AADT), manual counts or permanent Automatic Traffic Counters (ATCs). These are all maintained by the local and Trunk Road authorities. The use of this data was deemed suitable during Scoping with THC and Transport Scotland.

10.5.9 The locations of the DfT traffic count sites used in this assessment are illustrated in **Figure 10.4** The extracted data allows the traffic flows to be split into vehicle classes and has been summarised into light goods vehicles (LGVs) and heavy goods vehicles (HGVs).

10.5.10 To assess the likely effects during the construction period, the construction year baseline traffic flows were determined by applying a National Road Transport Forecast (NRTF) growth factor to the 2022 and 2023 flows assuming low growth.

10.5.11 Construction of the Proposed Development is anticipated to commence in 2030 if consent is granted and is anticipated to take approximately 24 months to complete.

10.5.12 **Table 10.7** summarises the AADT flows for the baseline 2022 and 2023, and year of construction 2030 with a low growth factor (1.042 from 2022; 1.036 from 2023) applied for the future baseline, for the Study Area.

Table 10.7: Baseline Traffic Data

No.	Link Description	Count Point ID	Cars & LGVs		HGVs		Total Baseline Vehicles	
			2022/23	2030	2022/23	2030	2022/23	2030
1	A9 approximately 4.8km north of A9/A96 junction	**10808**	6661	6901	1392	1442	8053	8343
2	A9 approximately 4km north of A9/B9154 junction and 150m east of A9/ General Wade's Military Road	**20726**	9234	9566	1051	1089	10285	10655
3	A9 approximately 1.3km north of A9/B9177 junction (2022)	**90024**	10653	11100	1011	1053	11664	12154
4	A9 approximately 400m south of Raigmore Interchange (A9/A96 junction)	**90025**	28934	29976	1304	1351	30238	31327
5	A9 between Longman Roundabout and Raigmore Interchange (A9/A96 junction)	**80012**	34031	35256	2262	2343	36293	37600
6	A95 between A95/B9152 junction and A9/A95 junction	**30868**	3770	3906	512	530	4282	4436

Abnormal Loads

10.5.13 The most likely port where large goods will be shipped to is the Port of Inverness. The Port is located on Longman Drive in Inverness. Longman Drive connects to the A9 via Stadium Road and the A9 / Longman Roundabout. The abnormal load movements will only be on the arrivals, they will depart the site as standard HGVs having deposited the load.

10.5.14 The port and local roads already facilitate abnormal load movements associated with other local wind farm developments and are considered suitable for the Proposed Development.

10.5.15 It is proposed for abnormal loads to enter the site via the left-out arm in a contra-flow direction to avoid the need for the abnormal loads to continue south on the A9 to find a suitable turning location. This approach, along with timings and the route, would be agreed with the police and Transport Scotland.

10.5.16 The proposed route for abnormal loads to the Site is illustrated on **Figure 10.2**.

Road User and Pedestrian Safety

10.5.17 The time period for the road traffic collision analysis includes the five-year period between 2019 and 2023 (inclusive) and is applicable to the current publicly available data from the DfT collision statistics website. ESRI ArcGIS software has been used to interrogate and map the collision locations and severity within the Study Area.

10.5.18 The extent of assessment covers the extent of the Study Area, i.e. the A9 between the A9/A82/Stadium Road roundabout in Inverness to A9/B9152 junction south of Aviemore, as well as the A95 between the A9/A95 junction and the A95/B9152 junction to the north of Aviemore. This area has been separated for analysis into 8 sections which approximately correspond with the location of traffic count points.

10.5.19 The location of collisions, including those at identified and along other sections of the route which were not identified as clusters, are illustrated in **Figure 10.5**.

10.5.20 The collision analysis is used to inform the review of the proposed construction route where any deficiencies in the road layout and condition are identified.

10.5.21 Injuries are classed under the following categories:

- 'Slight' injury – e.g. slight shock with occurrences of sprains or bruises;
- 'Serious' injury – e.g. breakages, lacerations, concussion, or hospital admittance; and
- 'Fatal' injury – e.g. resulted in a mortality / death within 30 days after the accident.

10.5.22 In the whole Study Area, there were 54 collisions recorded over the 5-year assessment period. The collision reports have been reviewed to identify collision clusters, i.e. locations where 3 or more collisions have occurred, or where fatal collisions occurred, to identify collision trends. The collision clusters, number and severity of collisions recorded in the Study Area is provided in **Table 10.8.**

Table 10.8: Number and Severity of Accidents Summary

Collision Analysis Section	Cluster Location Description	Slight	Serious	Fatal
1	4 arm roundabout connecting A9 (northbound and southbound), A82 (westbound) and Stadium Road	2	1	0

Collision Analysis Section	Cluster Location Description	Slight	Serious	Fatal
1. The first collision occurred in 2019 where a car overturned in dark, dry conditions when entering the roundabout, hitting a road sign or traffic signal. This resulted in the slight casualty of one car driver. 2. The second collision occurred in 2020 where a car was changing into the right lane and collided with the near/offside crash barrier. This resulted in the serious casualty of one car driver. 3. The third slight collision occurred in 2021 when a car entering slip round to the south-east collided with the rear of a car also on the slip round that was slowing down. This resulted in the slight casualty of one car driver.				
2	4 arm roundabout connecting A9 (northbound and southbound), A96 (eastbound) and B865 (westbound)	3	1	1
1. The first collision occurred in 2019 where upon approaching the roundabout entrance, a car collided with the rear of another car waiting to enter. This resulted in the slight casualty of one driver. 2. The second collision occurred in 2019 where a car collided with the rear of another car when both were approaching the junction. This resulted in the slight casualty of one front car passenger. 3. The third collision occurred in 2019 where a car was entering the roundabout and collided with a pedestrian who was in the centre of carriageway, crossing from the offside. This resulted in the fatal casualty of the pedestrian. 4. The fourth collision occurred in 2021 a car that was moving off and another that was waiting to enter the roundabout. This resulted in the slight casualty of both one car driver and the front passenger. 5. The fifth serious collision occurred in 2023 where a car collided with a cyclist when entering the roundabout. This resulted in the serious casualty of the cyclist.				
3	Sir Walter Scott Drive and A9 (northward) junction	2	2	0
1. The first collision occurred in 2020 where a car entering the A9 northward from the slip road skidded and hit the kerb., colliding with the front of a vehicle in the main carriageway. This resulted in the serious casualty of one driver. 2. The second collision occurred in 2021 where a motorcycle 125cc and under, entering the A9 northward from the slip road skidded. This resulted in a slight casualty of the motorcycle rider. 3. The third collision occurred in 2023 where a motorcycle 125cc and under, when going ahead at the left-hand bend, had a front collision. This resulted in a slight casualty of the motorcycle rider. The cause of this collision is unknown. 4. The fourth collision occurred in 2023 where a motorcycle over 500cc, when turning left skidded and collided with a parked vehicle. This resulted in the serious casualty of the motorcycle rider and the slight casualty of the parked car driver.				
4	B851 and A9 Junction	7	0	0

<table>
<tr><th>Collision Analysis Section</th><th>Cluster Location Description</th><th>Slight</th><th>Serious</th><th>Fatal</th></tr>
<tr><td colspan="5">1. The first collision occurred in 2019 where a car upon entering the roundabout collided with another car entering the roundabout. This resulted in the slight casualty of both passengers and the driver of the car that it collided with.
2. The second collision occurred in 2019 where a car upon leaving the roundabout collided with a pedestrian in the central carriageway. This resulted in the slight casualty of the pedestrian.
3. The third collision occurred in 2019 when a car collided with the rear of a Heavy Goods Vehicle. This resulted in the slight casualty of the HGV driver.
4. The fourth collision occurred in 2019 when a car upon entering the roundabout collided with another car. This resulted in the slight casualty of the driver.
5. The fifth collision occurred in 2019 in the main carriageway when a car collided with another car that was waiting to go. This resulted in the slight casualty of both drivers.
6. The sixth collision occurred in 2021 when a car upon leaving the roundabout skidded and overturned. This resulted in the slight casualty of the driver.
7. The seventh collision occurred in 2023 where a car upon leaving the main carriageway skidded and overturned, colliding with the central island of the roundabout. This resulted in the slight casualty of the driver.</td></tr>
<tr><td>5</td><td>Near Layby 161</td><td>0</td><td>0</td><td>1</td></tr>
<tr><td colspan="5">1. The collision occurred in 2023 where a car collided with a HGV when going ahead at a bend, traveling in a south to north direction. This resulted in the fatal casualty of the driver of the car.</td></tr>
<tr><td>6</td><td>South of Layby 152</td><td>0</td><td>0</td><td>2</td></tr>
<tr><td colspan="5">1. The first collision occurred in 2022 between three vehicles. It happened where a car travelling in a north-west direction had a front on collision with another car travelling in a southeast direction. These cars also collided with the offside of another car on the carriageway. This resulted in the serious casualty of one of the drivers and its passenger, and the fatal casualty of the driver and both passengers in one of the vehicles.
2. The second collision occurred in 2022 where a car going ahead of another, travelling in a north-west direction, had a front nearside collision with a bus or coach (17 or more passenger seats). This resulted in the fatal casualty of the driver of the car and 14 slight casualties of coach passengers.</td></tr>
<tr><td>7</td><td>South of Layby 47</td><td>0</td><td>0</td><td>1</td></tr>
<tr><td colspan="5">1. The collision occurred in 2022 when a HGV overturned when going ahead at a left-hand bend travelling from east to west. This collided with an other HGV that was going ahead around the bend from west to east. This resulted in the fatal casualty of one of the drivers and the slight casualty of another.</td></tr>
<tr><td>8</td><td>A9/A95 T-junction</td><td>1</td><td>10</td><td>0</td></tr>
</table>

Collision Analysis Section	Cluster Location Description	Slight	Serious	Fatal
1. The first collision occurred in 2019 where a car moving off from the main carriageway towards the A95, collided with a van/good vehicle 3.5 tonnes or under that was coming from the north. This resulted in the serious casualty of one of the van/good vehicle driver. 2. The second collision occurred in 2019 where a van/good vehicle 3.5 tonnes or under was turning right and collided with another van/good vehicle 3.5 tonnes or under that was travelling along the main carriageway. This resulted in the serious casualty of the passenger of one of the vehicles. 3. The third collision occurred in 2019 where a car traveling north to south skidded and overturned on the junction approach. This resulted in the serious casualty of the passenger and the slight casualty of the driver. 4. The fourth collision occurred in 2021 where a car turning right onto the A9 collided with a HGV that was travelling north to south on the A9. This resulted in the slight casualty of both drivers. 5. The fifth collision occurred in 2021 where a car was turning right and collided with another car. This resulted in the serious casualty of the car driver and passenger of one car, and the serious casualty of the driver of the other car. 6. The sixth collision occurred in 2022 where a car turning right onto the A95, traveling from the south, collided with another car coming from the north-east mid-junction. This resulted in the serious casualty of the front-seat passenger in both cars. 7. The seventh collision occurred in 2022 where a HGV turning left off the A9 onto the A95, skidded and collided with the crash barrier. This resulted in the serious casualty of the HGV driver. 8. The eighth collision occurred in 2022 where a car turning right had a mid-junction collision with a car traveling from north to south on the main carriageway. This resulted in the slight casualty of the driver and three passengers in one car and the driver and passenger of the other car. 9. The ninth collision occurred in 2023 where a car coming from the east, turning right to head north on the A9, collided with a HGV that was on the main carriageway heading north mid-junction. This resulted in the serious casualty of the HGV driver and slight casualty of the car driver. 10. The tenth collision occurred in 2023 where an unclassified vehicle was turning right onto the A95, travelling from the south on the A9, and collided with a car travelling from the north. This collision also involved a car coming from the A95 waiting to turn right and travel north on the A9. This resulted in the serious casualty of one of the drivers. 11. The eleventh collision occurred in 2023 where a car traveling from north to south-west collided with a car turning right onto the A9. Both vehicles hit a parked vehicle as part of the collision. This resulted in the serious casualty of the driver of one of the vehicles.				
8	A9/B1952 Junction	2	2	0

Collision Analysis Section	Cluster Location Description	Slight	Serious	Fatal
1. The first collision occurred in 2019 where a car travelling south overtook another vehicle and collided with another vehicle travelling in the opposing carriage way (northbound). This collision included two cars and resulted in the slight casualty of the front seat passenger of one of the cars. 2. The second collision occurred in 2020 where a car turning right onto the A9 collided with a vehicle in the main carriage way that was overtaking whilst another vehicle was turning right off the A9. This resulted in the serious casualty of the driver and the slight casualty of the passenger in the car overtaking on the A9. 3. The third collision occurred in 2022 where a car turning right collided with a vehicle in the main carriage way. This collision also included two cars waiting to turn right. This resulted in the serious casualty of both passengers and slight casualty of the driver in one of the cars. 4. The fourth collision occurred in 2023 which involved two vans/goods vehicles (under 3.5 tonnes). This collision occurred when one of the vans overtook a static vehicle and collided with the other van which was travelling in the opposing carriageway. This resulted in the slight casualty of both drivers.				

10.5.23 The collision review has indicated that there are several collision clusters on this route and that several fatal collisions have occurred over the 5-year assessment period. The route is to be upgraded to a dual carriageway in advance of the commencement of the construction phase of the Proposed Development which is considered likely to provide a substantial improvement to safety on this route.

Pedestrian and Cyclist Networks

10.5.24 The A9 is currently a single carriageway trunk road, with some sections of dual carriageway. In the vicinity of the Site, it is currently a single carriageway road. There are no footways or cycleways on the A9.

10.5.25 The A95 is a single carriageway road with no footway or cycleways.

10.5.26 There are no core paths identified which have the potential to be impacted by Proposed Development traffic.

10.6 Assessment of Effects

Initial Screening Assessment

10.6.1 Vehicles and equipment would be delivered to Site at the commencement of the construction phase and would remain on-site until works relating to that stage are completed. Such equipment would include excavators, dump trucks, bulldozers and cranes for erecting the turbines.

10.6.2 Each vehicle travelling to the Site would generate two ‘vehicle movements’, comprising one movement to the Site and one movement away from the Site.

10.6.3 Whilst preliminary investigations indicate that the necessary aggregate material for the construction of new access tracks, upgrading of existing tracks, crane hardstandings, etc. can be obtained from an on-site the borrow pit, an assessment of a worst-case scenario has been included in the environmental assessment of traffic and movement effects, whereby it is assumed that 50% of the required aggregate is sourced from off-site locations.

Sensitive Receptors

10.6.4 A review of the potential receptors has been undertaken and a summary of receptor sensitivities based upon various criteria noted in **Table 10.4**. This summary is shown in **Table 10.9.**

Table 10.9: Summary of Sensitive Receptors in the Study Area

Receptor	Sensitivity	Justification
Users of A9	Negligible	The A9 is a major trunk road which is constructed to accommodate abnormal load vehicles.
Users of A95	Low	The A95 is a trunk road that is suitable to accommodate HGVs.
Residents in Aviemore	Medium	Aviemore is an intermediate sized settlement with some amenities. It is noted that no HGVs will route through Aviemore so the receptor will only experience the affects of cars and LGVs.
Residents in Inverness	High	Inverness is a large sized settlement with many amenities. It is noted that no HGVs will route through Inverness, other than along Stadium Road / Longman Drive to and from the Port of Inverness which typically accommodates HGVs and abnormal load vehicles. Additionally, there are no residential properties in the vicinity of the HGV routes so the receptor will only experience the affects of cars and LGVs.

10.7 Potential Effects

Potential Construction Impacts

10.7.1 During the construction phase, the following traffic would require access to the Site:

- Staff transport, either cars or staff minibuses;
- Construction equipment and materials, deliveries of machinery and supplies such as concrete raw materials;
- Components relating to the BESS element, substation components, construction compounds and associated infrastructure;
- AILs consisting of the wind turbine sections and a heavy lift crane(s); and
- Escort vehicles for AIL deliveries.

10.7.2 Apart from the turbine components, most traffic would be normal construction plant and would include graders, excavators, high-capacity cranes, forklifts and dumper trucks. Most would arrive at the Site as a load on an articulated HGV (low loader).

10.7.3 The turbines would be delivered in component sections and assembled on-site. The nacelle, hub, drive train, blade sections and tower sections are classified as AILs due to their weight and/or length, width and height when loaded.

10.7.4 In addition to the turbine deliveries, two or more high-capacity erection cranes would be needed to offload some components and erect the turbines. The cranes are likely to be mobile cranes with a capacity up to 1,000 tonnes that would be escorted by boom and ballast trucks to allow full mobilisation on-site. Smaller erector cranes would also be present to allow the assembly of the main cranes and to facilitate overall erection of the turbines.

Construction Traffic Movements

10.7.5 The greatest number of vehicle movements are associated with the import of materials associated with construction of new access tracks, substation and BESS foundations and crane hardstandings.

10.7.6 **Technical Appendix 8.8: Borrow Pit Assessment** identified a suitable borrow pit (BP) noting that, subject to further investigations, sufficient aggregate would be won from within the Site to complete works, with some aggregate required to be imported for initial track and mobilisation works at the start of the programme. Based on the information available from an initial assessment of available stone, it is therefore likely that the majority of stone material would be obtained from the on-site borrow pit. An assessment of the predicted scenario has been included in the environmental assessment of traffic and movement effects, where it is assumed that 50% of the required aggregate is sourced from off-site locations.

10.7.7 In order to predict the number of loads required during the construction phase, the material requirements have been set out in line with the construction site design and subsequent number of vehicles required to transport the materials. **Table 10.10** sets out the construction quantities required during the construction phase.

Table 10.10: Construction Quantities (aggregates and all other materials/equipment) and Total Vehicle Movements During Construction Phase*

Infrastructure		Material Quantities		Loads per vehicle	No. Loads	Two-Way Movements
		m^3 (unless otherwise stated)	Tonnes			
Forestry Clearance		374	382	25tn	16	32
Aggregates	Cut Track	28910	57820	20tn	1446	2891
	New Floating Road	19041	38082	20tn	953	1906
	Substation and Battery Storage Compound	10500	21000	20tn	525	1050
	Construction Compound	1650	3300	20tn	83	166
	Turbine Bases – formation only	3744	7489	20tn	375	750
	Hardstanding Areas / Crane Pads / Laydown	11050	22100	20tn	553	1105

Infrastructure		Material Quantities: m³ (unless otherwise stated)	Material Quantities: Tonnes	Loads per vehicle	No. Loads	Two-Way Movements
New Floating Road	Geo-composite (2 layers)	53 rolls		20 rolls	3	6
Turbine Bases, Substations, BESS	Concrete Aggregate	2000	4000	20tn	200	400
	Blinding	577	1153	20tn	58	116
	Installation of Can/Bolts	14 no.		1	14	28
	Reinforcement		973	20tn	49	98
	Formwork	57	115	20tn	6	12
	Ducts (200mm diameter)	84 no.		20	5	10
	Ducts (75mm diameter)	84 no.		20	5	10
	Transformer Plinths	14 no.		1	14	28
	Step Plinths	14 no.		1	14	28
Electrical Connection	Sand Layer	828	1656	20tn	83	166
	Cable	2800m length of track	6 drums (500m per drum)	6 drums	1	2
BESS Equipment Delivery	53-foot ISO Containers and Inverters		12	1	12	24
Turbine Delivery, Erection and Commissioning		140 loads (3x blades, 1x nacelle, 1x drivetrain, 1x hub, 4x tower section = 10 AIL per turbine)		1	140	280
Crane Delivery		14 cranes		1	14	28
Reinstatement and Restoration		1650	3300	20	165	330
Total					4732	9468

*Please note minor variances due to rounding may occur

10.7.8 To enable comparison of the estimated future year baseline traffic movements with total volumes including predicted construction traffic, average daily two-way movements for each month assuming a 22-day working month for deliveries were determined. Traffic movements were also split by vehicle type, in line with the baseline data and the identified peak period for construction traffic. The final daily construction profile for Scenario 1 is shown in **Table 10.11**.

Table 10.11 Monthly Construction Traffic Movements (Two-Way Flows)

Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Site establishment	55	55	55																					
Forestry felling and timber export	16	16																						
Construction of new access tracks and crane hardstandings			493	493	493	493	493	493	493	493	493	493	493	493										
Turbine foundation construction				98	98	98	98	98	98	98	98	98	98	98										
Substation, energy storage and electrical works				134	134	134	134	134	134	134	134	134	134	134										
Cable trenching and installation						15	15	15	15	15	15	15	15	15	15	15								
Crane delivery											14													
Turbine delivery, erection and commissioning (AILs)												56	56	56	56	56								
Site reinstatement				16	16	16	16	16	16	16	16	16	16	16	16	16	17	17	17	17	17	17	17	17
General Site Traffic (Personnel)	660	660	1100	1100	1100	1100	1100	1100	1100	1100	1980	**1980**	**1980**	**1980**	1980	1980	1980	1100	1100	660	660	660	660	660
Monthly ALL Total	731	731	1648	1840	1840	1856	1856	1856	1856	1856	2750	**2792**	**2792**	**2792**	2067	2067	1997	1117	1117	677	677	677	677	677
Daily ALL Total	34	34	76	84	84	86	86	86	86	86	126	**128**	**128**	**128**	94	94	92	52	52	32	32	32	32	32
Monthly HGV Total	71	71	548	740	740	756	756	756	756	756	770	**812**	**812**	**812**	87	87	17	17	17	17	17	17	17	17
Daily HGV Total	4	4	26	34	34	36	36	36	36	36	36	**38**	**38**	**38**	4	4	2	2	2	2	2	2	2	2
Monthly AIL Total (included within HGV total)	0	0	0	0	0	0	0	0	0	0	14	**56**	**56**	**56**	56	56	0	0	0	0	0	0	0	0
Daily AIL Total (included within HGV total)	0	0	0	0	0	0	0	0	0	0	2	**4**	**4**	**4**	4	4	0	0	0	0	0	0	0	0

10.7.9 The maximum traffic movements associated with construction of the Proposed Development are predicted to occur in months 12, 13 and 14. The average daily movements during the peak months are summarised for HGV, LGV and AIL movements in **Table 10.12**.

Table 10.12: Peak Daily Construction Traffic Movements[1]

Cars/LGVs (two-way)	HGV (two-way)	AIL	
		To Site as AILs	From Site as HGVs
90	34	4	4

Construction Traffic Distribution

10.7.10 The origin of vehicle traffic would depend on the location of staff accommodation and the source of materials being imported. It is likely that staff would be accommodated across a wide area and the origin of car/LGV traffic would depend on the location of staff accommodation. However, for the purpose of this assessment, it is assumed that 80% of car/LGV trips will travel to and from Inverness and the remaining 20% to Aviemore and the south along the A9.

10.7.11 The highest volume of traffic would be generated by the requirement for concrete source materials for the turbine foundations and other permanent structures, and aggregate associated with the access track construction. Information on the potential sources of suitable materials near the Proposed Development is provided in **Table 10.13**.

Table 10.13: Nearby Quarries

Quarry	Location	Distance from Site	Materials
David Ritchie & Sons Ltd	East of B9152, Granish, North of Aviemore	17.7 miles	Drainage stone Gravel Concrete sand Concrete mix Building sand Topsoil

10.7.12 The choice of HGV route was based upon identifying the most suitable route between the access to the Proposed Development and the primary Trunk or A-class road network.

10.7.13 The distribution has been informed by the routing assumptions which are set out in **Paragraph 10.4.32**. In some instances, distribution percentages are over 100% which is due to traffic travelling on the same link twice as a result of the right turn prohibition at the site access.

10.7.14 The assumed distribution of construction traffic is summarised in **Table 10.14** and illustrated in **Figure 10.6**.

[1] **Assumptions:** Turbine components will be delivered on AIL vehicles. After delivery, when the AIL vehicle leaves the Site, it is classed as an HGV. Calculations take this into account.

Table 10.14: Distribution of Construction Traffic

No.	Link Description	Count Point ID	Cars/ LGVs		HGVs		AILs	
			Arrival	Depart	Arrival	Depart	To site as AILs	Away from site as HGVs
1	A9 approximately 4.8km north of A9/A96 junction	**10808**	101%	180%	180%	20%	0%	0%
2	A9 approximately 4km north of A9/B9154 junction and 150m east of A9/ General Wade's Military Road	**20726**	1%	100%	80%	120%	100%	100%
3	A9 approximately 1.3km north of A9/B9177 junction	**90024**	1%	100%	80%	80%	100%	100%
4	A9 approximately 400m south of Raigmore Interchange (A9/A96 junction)	**90025**	1%	1%	80%	80%	100%	100%
5	A9 between Longman Roundabout and Raigmore Interchange (A9/A96 junction)	**80012**	1%	1%	80%	80%	100%	100%
6	A95 between A95/B9152 junction and A9/A95 junction	**30868**	99%	99%	10%	10%	0%	0%

Predicted Construction Effects

10.7.15 To estimate the total trips on the road network within the Study Area during the construction phase, daily construction traffic flows were combined with the future year baseline traffic data. The resulting figures were compared with the weekday future year baseline traffic.

10.7.16 **Table 10.15** shows the increase in total traffic over future year baseline traffic, because of the predicted construction traffic.

Table 10.15: Increase in Total Traffic Generation (Daily Average Two-Way Flows)

Link Description			2030 Baseline		2030 Baseline + Development Traffic		Percentage Increase	
No.	**Link Description**	**Count Point ID**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**
1	A9 approximately 4.8km north of A9/A96 junction	**10808**	1442	8343	1476	8467	2.36%	1.49%
2	A9 approximately 4km north of A9/B9154 junction and 150m east of A9/ General Wade's Military Road	**20726**	1089	10655	1112	10768	2.13%	1.06%
3	A9 approximately 1.3km north of A9/B9177 junction	**90024**	1053	12154	1077	12249	2.20%	0.78%
4	A9 approximately 400m south of Raigmore Interchange (A9/A96 junction)	**90025**	1351	31327	1357	31405	0.47%	0.25%
5	A9 between Longman Roundabout and Raigmore Interchange (A9/A96 junction)	**80012**	2343	37600	2350	37678	0.27%	0.21%
6	A95 between A95/B9152 junction and A9/A95 junction	**30868**	530	4436	564	4479	6.35%	0.96%

10.7.17 As is demonstrated in **Table 10.15** there are no locations which are subject to ‘Rule 1’ or ‘Rule 2’ of the IEMA Guidelines, which require a full assessment of potential effects.

10.7.18 The highest impact is on the A95 where a 6.4% increase in HGVs is anticipated to occur. This is substantially below the 30% increase which would be likely to result in effects on the link.

10.7.19 This demonstrates that the road network local to the Site, on which traffic associated with the Proposed Development will route to and from the Site, is suitable to accommodate the vehicle types and numbers of the Proposed Development during the construction phase.

10.7.20 **Table 10.16** provides a summary of the anticipated effects during the construction phase on the receptors scoped in based on the anticipated increase in total traffic generation.

Table 10.16: Construction Phase Effects Assessments Summary

Receptor	Receptor Sensitivity	Potential Effect	Magnitude	Significance of Effect	Notes
Users of A9 (links 1 to 5)	Negligible	• Severance • Driver Delay • Pedestrian Delay • Non-Motorised User Amenity • Fear & Intimidation • Road Safety • Hazardous and Large Loads	Negligible	Negligible (not significant)	No further assessment is required as no links in the Study Area exceed either Rule 1 or Rule 2 thresholds of the IEMA Guidelines. No significant effects are anticipated.
Users of A95 (link 6)	Low	• Severance • Driver Delay • Pedestrian Delay • Non-Motorised User Amenity • Fear & Intimidation • Road Safety	Negligible	Minor / Negligible (not significant)	
Residents in Aviemore (link 6)	Medium		Negligible	Minor / Negligible (not significant)	
Residents in Inverness (links 3 to 5)	High		Negligible	Minor (not significant)	

Cumulative Effects Assessment

10.7.21 The assessment of cumulative traffic and movement effects only considers wind farms and other major developments that are consented but not yet under construction, and submitted as planning applications but pending decision or at appeal. No developments at the scoping stage or are pre-planning have not been included for the reasons set out in **Table 10.18**. There is no potential for significant cumulative effects to occur from those wind farms which are operational due to the minimal vehicle trips attributed to the operational phase of a wind farm development.

10.7.22 This assessment has identified the following potential cumulative developments identified for the Landscape and Visual Impact Assessment (LVIA) (see **Chapter 5: Landscape and Visual Impact Assessment**), summarised in **Table 10.17**.

10.7.23 A review of THC planning portal and Scottish Government's Energy Consents Unit (ECU) portal was undertaken to identify any developments within the vicinity of the Proposed Development which would generate significant traffic. Details of the estimated construction vehicle trip generation, the affected road links and construction programmes were extracted for each development from the relevant EIA Report chapter.

10.7.24 A number of identified cumulative developments are consented, but the construction programme would result in construction of these developments completing prior to the timescales of the Proposed Development. These developments have therefore been excluded from the cumulative assessment.

10.7.25 Only developments which would impact on the same Study Area (road network) as the Proposed Development have been included in the cumulative assessment.

10.7.26 One consented but not yet built development with the potential for producing cumulative effects was identified during this process. Details of the estimated peak construction vehicle trip generation and affected road links were extracted for the Tom na Clach Wind Farm Extension from the relevant EIA Report chapter from the ECU online portal.

10.7.27 Combining these with the respective link flows from the Assessment of Effects provides the following cumulative assessment, summarised in **Table 10.18.**

Table 10.17: Cumulative Developments

Cumulative Development	Planning reference	Development details	Approximate Distance from Proposed Development	Application Stage	Comments
Developments that are in planning / consented and are included in the Cumulative Assessment					
Tom na Clach Extension	22/01732/S36	On shore 4,500kw wind farm	11km	Approved	Construction phase anticipated to overlap with Proposed Development. Anticipated routing to utilise the A9 and A95.
Developments that are in planning / consented and are not included in the Cumulative Assessment					
Corriegarth 2	21/00101/S36	On shore 3,750kw wind farm	25km	Approved	Construction anticipated to be completed prior to commencement of Proposed Development construction phase (2030).
Cairn Duhie	21/01521/S36	On shore 4,200kw wind farm	25km	Approved	Construction anticipated to be completed prior to commencement of Proposed Development construction phase (2030).
Clash Gour	18/01591/S36	On shore 50mw wind farm	31km	Approved	Construction anticipated to be completed prior to commencement of Proposed Development construction phase (2030).
Cloiche	20/01796/S36	On shore 5,500kw wind farm	33km	Approved	Cumulative development not anticipated to generate trips within Proposed Development Study Area.
Dell	14/02879/FUL	On shore 3,000kw wind farm	34km	Approved	Construction anticipated to be completed prior to commencement of Proposed Development construction phase (2030).
Bhlaraidh Extension	21/04080/S36	On shore 5,600kw wind farm	35km	Approved	Cumulative development not anticipated to generate trips within Proposed Development Study Area.

Cumulative Development	Planning reference	Development details	Approximate Distance from Proposed Development	Application Stage	Comments
Berry Burn Extension	ECU00000718	On shore 50mw wind farm	35km	Approved	Cumulative development not anticipated to generate trips within Proposed Development Study Area.
Paul's Hill II	18/00523/S36	On shore 23.8mw wind farm	37km	Approved	Construction anticipated to be completed prior to commencement of Proposed Development construction phase (2030).
Strathrory	22/02442/FUL	On shore 5,142kw wind farm	45km	Approved	Cumulative development not anticipated to generate trips within Proposed Development Study Area.
Ourack	22/05289/S36	On shore 5,833kw wind farm	29km	Application	Construction anticipated to be completed prior to commencement of Proposed Development construction phase (2030).
Loch Liath	23/02462/S36	On shore 6,600kw wind farm	35km	Application	Construction anticipated to be completed prior to commencement of Proposed Development construction phase (2030).
Abhainn Dubh	23/02754/S36	On shore 4,500kw wind farm	37km	Application	Cumulative development not anticipated to generate trips within Proposed Development Study Area.
Chrathaich	21/02152/SCOP	On shore 5,000kw wind farm	37km	Application	Cumulative development not anticipated to generate trips within Proposed Development Study Area.
Kellas Drum	ECU00003441	On shore 60mw wind farm	45km	Application	Construction anticipated to be completed prior to commencement of Proposed Development construction phase (2030).
Developments in Screening/Scoping that are not included in the Cumulative Assessment					
Kyllachy	24/03494/SCOP	On shore 20mw wind farm	8km	Scoping/Screening	No traffic generation data available. Construction anticipated to be completed prior to commencement of Proposed Development construction phase (2030).

Cumulative Development	Planning reference	Development details	Approximate Distance from Proposed Development	Application Stage	Comments
Carn na Saobhaidh	ECU0000519 1	On shore 209mw wind farm	11km	Pre-application	No traffic generation data or anticipated timescales available.
Clune	24/00690/SC OP	On shore 7,200kw wind farm	9km	Scoping/Screening	No traffic generation data or anticipated timescales available.
Balnespick	ECU0000490 4	On shore 65.8mw wind farm	10km	Scoping/Screening	No traffic generation data or anticipated timescales available.
Highland	24/01107/SC OP	On shore wind farm	16km	Scoping/Screening	No traffic generation data or anticipated timescales available.
Fiodhag	19/05046/SC OP	On shore 5,000kw wind farm	37km	Scoping/Screening	Cumulative development not anticipated to generate trips within Proposed Development Study Area.
Balmore	23/02340/SC OP	On shore 7,200kw wind farm	20km	Scoping/Screening	No traffic generation data available. Construction anticipated to be completed prior to commencement of Proposed Development construction phase (2030).

Table 10.18: Cumulative Construction Trip Assessment

No.	Link		Baseline 2030		Proposed Development		Tom Nan Clach Wind Farm		Cumulative 2030		% Change	
	Count ID	Description	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGV	Total	HGV
1	10808	A9 approximately 4.8km north of A9/A96 junction	8343	1442	124	34	0	0	8467	1476	1%	2.4%
2	20726	A9 approximately 4km north of A9/B9154 junction and 150m east of General Wade's Military Road	10655	1089	113	19	49	33	10817	1141	2%	4.8%
3	90024	A9 approximately 1.3km north of A9/B9177 junction	12154	1053	95	19	49	33	12298	1106	1%	5.0%
4	90025	A9 approximately 400m south of Raigmore Interchange (A9/A96 junction)	31327	1351	78	2	49	33	31454	1386	0%	2.6%
5	80012	A9 between Longman Roundabout and Raigmore Interchange (A9/A96 junction)	37600	2343	78	2	49	33	37727	2379	0%	1.5%
6	30868	A95 between A95/B9152 junction and A9/A95 junction	4436	530	43	34	55	33	4534	597	2%	12.6%

10.7.28 When considering the cumulative construction phase, both the total traffic and HGV traffic flows assessment results indicate a small increase on all links (except for link 1) within the Study Area. However, the highest impact is on link 6 (the A95) which is predicted to experience a 13.3% increase in HGV traffic which is substantially below the 30% threshold.

10.7.29 It should be noted that the construction period of a renewable development is transitory in nature and all impacts are short lived and temporary. Should the construction of committed developments take place at the same time as the Proposed Development, it would be mitigated through the use of an overarching Traffic Management Plan (TMP) for all of the sites and by introducing a phased delivery plan which would be agreed with the relevant road authority, Police Scotland and other relevant stakeholders.

10.8 Mitigation

Construction Phase Mitigation

10.8.1 A Construction Traffic Management Plan (CTMP) would be in place during the construction period to actively mitigate the effects as discussed above. An outline CTMP has been prepared as part of the Planning Application which identifies the mitigation measures proposed during the construction stage. This is provided as **Technical Appendix 10.2**.

10.8.2 The following measures would be implemented through a CTMP during the construction phase. The CTMP would be agreed with the Council prior to construction works commencing:

- Where possible, further detailed design processes would minimise the volume of material to be imported to Site to help reduce HGV numbers;
- A Site worker transport and travel arrangement plan, including transport modes to and from the Site (including pick up and drop off times);
- A Traffic Management Plan to control the operation of the access junctions;
- All materials delivery lorries (dry materials) should be sheeted to reduce dust and stop spillage on public roads;
- Specific training and disciplinary measures should be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- Should there be evidence of this following this commencement of construction, suitable measures would be implemented within the Site to ensure deleterious materials are not transferred onto the highway;
- Road cleaning would take place, if required, to remove any deleterious materials that are carried from the Site;
- Normal Site working hours would be limited to between 07:00 - 19:00 Monday to Friday and 08:00 – 13:00 on Saturdays, unless otherwise agreed with the Council, though component delivery and turbine erection may take place outside these hours;
- Provide construction updates on the project website and/or a newsletter to be distributed to residents within an agreed distance of the Site; and
- All drivers would be required to attend a detailed induction prior to undertaking any works on the Site.

10.8.3 Advance warning signs would be installed on the approaches to the affected road network. Information signage would be installed to help improve driver information and allow other road users to consider alternative routes or times for their journey (where such options exist).

10.8.4 The location and numbers of signs would be agreed post-consent and would form part of the wider traffic management proposals for the Proposed Development.

10.8.5 The Applicant would also ensure information would be distributed through its communication team via project website, local newsletters and social media.

10.8.6 Post-consent, the Applicant would establish a Community Liaison Forum, in collaboration with the Council and local Community Councils. The forum would allow the community to be kept up to date with project progress and allow communication on the provision of transport-related mitigation and publicise the timings of turbine component deliveries. The Community Liaison Forum would be maintained until construction is complete and the Proposed Development is operational.

10.8.7 The Applicant would enter into a Section 96 (wear and tear) Agreement or a suitable alternative for the local adopted roads / routes to be used by construction vehicles. A pre-construction works inspection of the roads would be carried out with both parties in attendance with their condition recorded. Following completion of construction of the Proposed Development, a further inspection would be carried out by both parties with repairs being agreed to return the roads to their pre-construction condition, to be carried out in a timely manner for approval by the Council. Notwithstanding this, the Applicant would carry out regular monitoring of the carriageway condition during the construction of the Proposed Development. Necessary repair works would be carried out in a timely manner to prevent further deterioration of the carriageway during the works. Priority would be given to any damage which would be dangerous to users of the road affected.

Abnormal Load Transport Management Plan

10.8.8 An Abnormal Load Transport Management Plan (ATMP) would be prepared in advance of construction to cater for all AIL movements to and from the Site. This would include:

- Procedures for liaising with the emergency services to ensure that police, fire and ambulance vehicles are not impeded by the loads. This is normally undertaken by informing the emergency services of delivery times and dates and agreeing communication protocols and lay over areas to allow overtaking;
- A diary of proposed delivery movements to liaise with the communities to avoid key dates such as popular local events, etc;
- A protocol for working with local businesses to ensure the construction traffic does not interfere with deliveries or normal business traffic; and
- Proposals to establish a Community Liaison Group to ensure the smooth management of the project / public interface with the Applicant, the construction contractors, the local community and, if appropriate, the police forming the committee. This committee would form a means of communicating and updating on forthcoming activities and dealing with any potential issues arising.

10.8.9 A police escort would be required to facilitate the delivery of the AILs. The police escort would be further supplemented by a civilian pilot car to assist with the escort duty. It is proposed that an advance escort would warn oncoming vehicles ahead of the convoy, with one escort staying with the convoy at all times. The escorts and convoy would remain in radio contact at all times, where possible.

10.8.10 The AIL convoys would be no more than three vehicles long, or as advised by the police, to permit safe transit along the delivery route and to allow limited overtaking opportunities for following traffic where it is safe to do so.

10.8.11 The times in which the convoys would travel would need to be agreed with Police Scotland who have sole discretion on when loads can be moved.

Residual Effects

10.8.12 Given the temporary nature of the construction programmes and with the implementation of mitigation measures through a CTMP and ATMP, all effects can be effectively managed and no significant residual effects remain.

10.9 Summary of Effects

10.9.1 **Table 10.19** provides a summary comparing the significance of the effects during the construction period after the proposed mitigation.

Table 10.19: Summary of Traffic and Movement Effects

<table>
<tr><th>Potential Effect</th><th>Significance of Effect Pre Mitigation</th><th>Proposed Mitigation</th><th>Significance of Effect Post Mitigation</th></tr>
<tr><td>Severance</td><td rowspan="5">Users of A9:
Negligible (not significant)

Users of A95:
Minor / Negligible (not significant)

Residents in Aviemore:
Minor / Negligible (not significant)

Residents in Inverness:
Minor (not significant)</td><td rowspan="5">Construction Traffic Management Plan</td><td rowspan="5">Users of A9:
Negligible (not significant)

Users of A95:
Minor / Negligible (not significant)

Residents in Aviemore:
Minor / Negligible (not significant)

Residents in Inverness:
Minor (not significant)</td></tr>
<tr><td>Driver Delay</td></tr>
<tr><td>Pedestrian Delay</td></tr>
<tr><td>Non-motorised User Amenity</td></tr>
<tr><td>Road Safety</td></tr>
<tr><td>Large Loads</td><td>Users of A9:
Negligible (not significant)</td><td>Abnormal Load Traffic Management Plan</td><td>Users of A9:
Negligible (not significant)</td></tr>
</table>

10.10 References

Institute of Environmental Management and Assessment, Guidelines for the Environmental Assessment of Traffic and Movement (2023)

LA104, Environmental assessment and monitoring, Design Manual for Roads and Bridges (DMRB) (Standards for Highways, 2020)

The Highland Council, Roads and Transport Guidelines for New Developments (2013)

Scottish Government, Transport Assessment Guidance (2012)

The Highland Council, Guidance on the Preparation of Transport Assessment (2014)

The Highland Council, Highland-wide Local Development Plan (2012)

Scottish Government, National Planning Framework 4 (2023)