

11. Traffic, Transport and Access

11.1 Introduction

11.1.1 This chapter provides an assessment of the likely significant effects of the Proposed Development, as described in **Chapter 4: Project Description**, on receptors along the transport routes resulting from vehicle movements associated with the construction, operation and decommissioning phase.

11.1.2 The specific objectives of the chapter are to:

- review the relevant policy and legislative framework;
- describe the baseline transport conditions;
- describe the assessment methodology and significance criteria used in undertaking the assessment;
- describe the potential effects, including direct, indirect and cumulative effects;
- describe the mitigation measures proposed to avoid, reduce and offset likely potential significant adverse effects; and
- assess the significance of residual effects remaining following the implementation of mitigation.

11.1.3 The assessment has been carried out in accordance with the Institute of Sustainability and Environmental Professionals' (ISEP) (previously called the Institute of Environmental Management and Assessment (IEMA)) Guidelines for the Environmental Assessment of Traffic and Movement (2023). The document is referred to as the IEMA Guidelines in this chapter.

11.1.4 This chapter is supported by the following figures. Included within the **EIAR Volume 2** (this volume):

- **Figure 11.1:** Transport Study Area;
- **Figure 11.2:** Traffic Count Locations;
- **Figure 11.3:** Personal Injury Accident Plan;
- **Figure 11.4:** Core Path and National Cycle Network; and
- **Figure 11.5:** Abnormal Indivisible Load Route Plan.

11.1.5 This chapter should be read in conjunction with **Appendix 11.1: Transport Assessment**.

11.2 Legislation, Planning Policy and Guidance

Legislation

- 11.2.1 The assessment has been undertaken in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. There is no legislation which is specific to transport that is required to be considered as part of this assessment.

Planning Policy

- 11.2.2 The following policy has been considered in the assessment (and is detailed further in **Appendix 11.1: Transport Assessment**):

- National Planning Framework 4 (NPF4) (2023);
- Highland-wide Local Development Plan (2012); and
- The Inner Moray Firth Local Development Plan 2 (2024).

Guidance

- 11.2.3 The following guidance documents are of particular relevance to the assessment:

- Planning Advice Note (PAN) 75 (2005);
- Transport Assessment Guidance (2012);
- Onshore Wind Turbines; Online Renewables Planning Advice (2014);
- Institute of Environmental Assessment, Environmental Assessment of Traffic and Movement (2023);
- The Guidelines for the Environmental Assessment of Road Traffic (Institute of Environmental Assessment (IEA), (1993);
- Institution of Environmental Management and Assessment (IEMA) 'Guidelines for Environmental Impact Assessment' (2005);
- Roads and Transport Guidelines for New Developments (2013);
- Guidance on the Preparation of Transport Assessments (2014);
- LA104, Environmental assessment and monitoring, Design Manual for Roads and Bridges (DMRB) (Standards for Highways, 2020); and
- Table 2.2 of Volume 11, Section 2, Part 5 of the Design Manual for Roads and Bridges (DMRB) (2008).

11.3 Consultation

- 11.3.1 In undertaking the assessment, consideration has been given to the scoping responses and other consultation which has been undertaken as detailed in **Table 11.1**.

Table 11.1 Consultation Summary

Consultee and Date	Scoping / Other Consultation	Issue Raised	Response / Action Taken
The Highland Council (THC) – 16 Oct. 2024	Scoping	A Transport Assessment (TA), Construction Traffic Management Plan (CTMP) and an Abnormal Load Assessment will be required within the EIAR.	A Transport Assessment is provided in Appendix 11.1 , which includes a framework Construction Traffic Management Plan (CTMP). In addition an AIL Route survey report forms an annex to Appendix 11.1 .
		Transport Planning would expect a Transport Assessment to be submitted with any future planning application and a High National Traffic Forecast be applied	A High National Road Traffic Forecast (NRTF) has been applied to THC road network within the assessment undertaken in this Chapter.
		Identify all public roads affected by the development. In addition to transportation of all abnormal loads & vehicles (delivery of components) this should also include routes to be used by local suppliers and staff. It is expected that the developer submits a preferred access route for the development. All other access route options should be provided, having been investigated in order to establish their feasibility. This should clearly identify the pros and cons of all the route options and therefore provide a logical selection process to arrive at a preferred route.	The routes likely to be used and impacted by the Proposed Development have been included within this assessment. The proposed AIL delivery route is presented as part of the Route Survey Report (RSR) in Appendix 11.1 .
		Establish current condition of the roads. This work which should be undertaken by a consulting engineer acceptable to the Council and will involve an engineering appraisal of the routes including the following: - assessment of structural strength of carriageway including construction depths and road formation where this is likely to be significant in respect of proposed impacts, including non-destructive testing and sampling as required; - road surface condition and profile; - assessment of structures and any weight restrictions; - road widths, vertical and horizontal alignment and provision of passing places; and - details of adjacent communities.	The Applicant will undertake a condition survey prior to the commencement of the construction phase. This will form a suitably worded planning condition.
		Determine the traffic generation and distribution of the proposals throughout the construction and operation periods to provide accurate data resulting from the Proposed Development including: - nos. of light and heavy vehicles including staff travel; - abnormal loads; and - duration of works.	The relevant information in relation to traffic generation during construction is included in Appendix 11.1 .
		Current traffic flows including use by public transport services, school buses, refuse vehicles, commercial users, pedestrians, cyclists and equestrians.	Where relevant, information on current traffic flows have been obtained from the Department for Transport (DfT), TS traffic database and from Automatic Traffic Counts (ATCs).

Consultee and Date	Scoping / Other Consultation	Issue Raised	Response / Action Taken
		Impacts of proposed traffic including: • impacts on carriageway, structures, verges etc.; • impacts on other road users; • impacts on adjacent communities; • swept path and gradient analysis where it is envisaged that transportation of traffic could be problematic; and • provision of Trial Runs to be carried out in order to prove the route is achievable and/or to establish the extent of works required to facilitate transportation.	The Applicant is willing to enter into a formal Wear & Tear agreement. This will form a suitably worded planning condition. The assessment has been undertaken in line with the outlined methodology included within the Scoping Report and detailed within Section 11.5, relating to assessing potential impacts on traffic and transport. A RSR is included in Appendix 11.1, which includes an Electronic Service Delivery for Abnormal Loads (ESDAL) review in relation to structures on the proposed access route. Swept path analysis of pinch points along the proposed AIL delivery route are also provided in Appendix 11.1. A trial run will be undertaken at the appropriate time following consent and following confirmation of the selected turbine manufacturer and haulage contractor. The requirement of this can be secured via an appropriately worded planning condition.
		Cumulative impacts with other developments in progress and committed developments including other Renewable Energy projects.	A review of other consented developments is included within Appendix 11.1 and where relevant those schemes have been included within a cumulative effects assessment in Section 11.13 .
		Proposed mitigation measures to address impacts identified in 5 above, including: • carriageway strengthening; • strengthening of bridges and culverts; • carriageway widening and/or edge strengthening; • provision of passing places; • road safety measures; and • traffic management including measures to be taken to ensure that development traffic does not use routes other than the approved routes.	Proposed mitigation measures to facilitate the delivery of AILs to the Development Site are included within the RSR within Appendix 11.1. A framework CTMP is included within Section 11.11 and within Appendix 11.1. It is considered that the requirement for a full CTMP can be secured by an appropriately worded condition.
		Details of residual effects.	Details of potential residual effects are included within Section 11.12 .
		The TA should include an Abnormal Load Assessment of the roads utilised to convert abnormal loads to the Site. The assessment will need to confirm the proposed port of entry for AIL components and justify the adequacy of the route for transporting them to the Site. Early discussion with the Council's abnormal loads team (the contact is	A RSR is included in Appendix 11.1 , which includes an ESDAL review in relation to structures on the proposed access route.

Consultee and Date	Scoping / Other Consultation	Issue Raised	Response / Action Taken
		abnormal.loads@highland.gov.uk) and the Council's structures team (the contact is structures@highland.gov.uk) is recommended.	
		THC Transport Planning will require any application for planning permission associated with this proposal to submit a CTMP for the approval of the Planning Authority. A CTMP will normally detail the following issues, however this is not an exhaustive list and the CTMP should be tailored to reflect the issues pertinent to this development: • Identification of all Council maintained roads likely to be affected by the various stages of the development, • Predicted volume, type and duration of construction traffic. • Location of Site compound, staff parking and visitor parking. • Proposed measures to mitigate the impact of general construction traffic and abnormal loads on the local road network following detailed assessment of relevant roads. • Details of any traffic management signage required for the duration of the construction period. • Measures to ensure that all affected public roads are kept free of mud and debris arising from the development. • The developer may also be requested to enter into a Section 96 agreement with the Highland Council to cover any abnormal wear and tear to the Council roads. This will include a requirement for pre and post construction surveys to be undertaken and agreed with the Council and for the provision of a suitable bond. • If the development involves any abnormal loads a detailed protocol, route and delivery programme will be required and agreed with any interested parties such as Highland Council, the Police, Transport Scotland, and community representatives. The protocol shall identify any requirement for convoy working and/or escorting of vehicles and include arrangements to provide advance notice of abnormal load movements in the local media.	A framework CTMP is included within Section 11.11 and within Appendix 11.1. It is considered that the requirement for a full CTMP can be secured by an appropriately worded condition. The Applicant is willing to enter into a formal Wear & Tear agreement. This will form a suitably worded planning condition. A RSR is included in Appendix 11.1, which includes an ESDAL review in relation to structures on the proposed access route.
		Details of any new Site access should be clearly set out on dimensioned drawings related to OS data and include confirmation of geometry, construction form, drainage details to prevent water running out onto the public road and evidence that appropriate visibility splays can be achieved. Vehicle swept paths should also be provided to evidence that the proposed junction form will be suitable for its intended use. Details of reinstatement of any temporary Site access at its junction with the public road, post construction is also required. Appropriate junction arrangements and visibility splay information can be found in our published Roads and Transport Guidelines for New Developments.	Drawings for the indicative Development Site access junction are included in Appendix 11.1 .

Consultee and Date	Scoping / Other Consultation	Issue Raised	Response / Action Taken
Transport Scotland – 19 Sept. 2024	Scoping	Trunk Road Access Junction: Transport Scotland (TS) noted that the site will be accessed from the U1907 (a local road) via an upgraded forestry access. As this access junction is on the local road network (not directly on a trunk road), TS stated they have no comment to make on the proposed site access arrangements	Comment noted.
		Chapter 10 of the SR presents the proposed methodology for the assessment of Access, Traffic and Transport. This states that the assessment will be carried out in accordance with Transport Assessment Guidance (Transport Scotland, 2012) and the Institute of Environmental Management and Assessment (IEMA) Guidelines, entitled Environmental Assessment of Traffic and Movement (July 2023).	Comment noted. The assessment has been undertaken in line with the outlined methodology.
		These latter guidelines specify that road links should be taken forward for further detailed assessment of potential environmental effects where the following two 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.	
		Chapter 10 indicates that the proposed study area for the assessment is as follows: - The A9(T) between Nigg Roundabout and Arduillie Roundabout; - The B9176 between its junction with the A9(T) and the junction with the U1907 (Strath Rusdale Road); and - The U1907 along its length between the B9176 and the site access junction.	Comment noted. The assessment has been undertaken in line with the outlined methodology and includes relevant sections of the A9.
		While the study area is considered acceptable, Transport Scotland would like to ensure that the A9 as a road link is considered within the assessment.	
		We note that base traffic will be obtained from Automatic Traffic Count (ATC) surveys, to be undertaken at the site access junction on the U1907 and on the B9176 for one week, while data for the A9(T) will be taken from Transport Scotland's traffic database. In addition, the SR states that future traffic flows will be factored from traffic data using Low Growth factors estimated from National Road Traffic Forecasts (NRTF). This is considered acceptable.	Comment noted. Low NRTF growth factors have been applied to all trunk roads.

Consultee and Date	Scoping / Other Consultation	Issue Raised	Response / Action Taken
		It is noted that any impacts associated with the operational and decommissioning phases of the development are to be scoped out of the EIA. We would consider this to be acceptable in this instance.	Comment noted.
		The SR states that detailed swept path analysis will be undertaken for the main constraint points on the route from the port of entry through to the site access junction, to demonstrate that the turbine components can be delivered to site and to identify any temporary road works which may be necessary. This is considered appropriate, and we would add that key pinch points on the trunk road network will require to be identified, and details provided with regard to any required changes to street furniture or structures along the route.	The proposed AIL delivery route (Access Route) is presented as part of the RSR Appendix 11.1 .
Ardross Community Council – 25 Sept. 2024	Scoping	A detailed analysis of the access should be considered and remind the Scottish Government that the U1907 Strathrusdale is entirely unsuitable for construction traffic and has a weak bridge with a weight limit on it.	Comment noted. The Applicant is willing to enter into a formal Wear & Tear agreement. This will form a suitably worded planning condition. A RSR is included in Appendix 11.1, which includes an ESDAL review in relation to structures on the proposed access route. Signage noting “Weight limit 17 tonnes 6 miles ahead” is located on the U1907, alerting drivers accessing the U1907 from the B9176. The location of this weight limit is further north-west of the site access and does not affect the section of the U1907 that construction traffic will use.

11.4 Approach and Methodology

Study Area

- 11.4.1 The Study Area has been based on those roads that are expected to experience increased traffic flows associated with the construction of the Proposed Development. The geographic scope was determined through a review of the other developments in the area, Ordnance Survey (OS) plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials.
- 11.4.2 The Proposed Development will be accessed via an existing access junction on the U1907 (Strath Rusdale Road). This junction will be upgraded to accommodate both general construction traffic and Abnormal Indivisible Load (AIL) traffic.
- 11.4.3 Strategic access to the Development Site will be taken from the A9 to the southeast, with construction traffic routing through to the site via the B9176 or Ardross Road and U1907. Where feasible, local materials will be sourced which will avoid traffic impacting on local communities as far as practicable and as such, quarries within Alness may be used, resulting in materials routing via Caplich Road and Ardross Road, in addition to those roads already mentioned.
- 11.4.4 The likely Port of Entry (PoE) used for the discharging of wind turbine components will be the Port of Nigg, utilising sections of proven AIL routes used during the construction of other wind farms in the area. There will be a requirement for different turbine components to utilise different routes when exiting the A9 and travelling through to the Development Site, which are outlined in **Section 11.10** and provided in more detail within a detailed Route Survey Report which is provided in **Annex B of Appendix 11.1: Transport Assessment**.
- 11.4.5 Based on the above information, the Study Area for the assessment has been assumed to be:
- The A9, between Nigg Roundabout and Ardullie Roundabout;
 - The B9176, between its junction with the A9 and the junction with the U1907;
 - Caplich Road, east of its junction with Ardross Road;
 - Ardross Road, north of its junction with Caplich Road; and
 - The U1907, along its length between the B9176 and the proposed Development Site access junction.
- 11.4.6 Note that the Study Area chosen relates to those roads likely to be subject to the biggest increase in construction traffic i.e. those closest to the Development Site for which their users could experience significant effects and does not include all roads used in the movement of construction materials and AIL traffic.

11.4.7 Effects associated with construction traffic generated by the Proposed Development would be most pronounced in close proximity to the Development Site access junction and on the final approaches to the Development Site. As vehicles travel away from the Proposed Development, they would disperse across the wider road network, thus diluting any potential effects. It is therefore expected that the effects relating to construction traffic are unlikely to be significant beyond the study area identified above.

11.4.8 The study area is presented in **Figure 11.1**.

Methodology

Assessment Methods and Significance Criteria

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

- determine the baseline for traffic and transport;
- review and identify potential impacts related to the construction of the Proposed Development;
- evaluate significance of effects on receptors;
- identify mitigation; and
- assess residual effects.

11.4.10 The chapter also assesses cumulative effects as arising from the addition of the Proposed Development to other relevant schemes in the planning system. Further details on the schemes considered are provided within the Assessment of Cumulative Effects section.

Effects Assessed in Full

11.4.11 This assessment focusses on the effects of construction of the Proposed Development, upon those receptors identified during the review of desk-based information and field surveys (the extent of the Study Area is set out in the 'Study Area' section above).

11.4.12 The following potential effects were identified at the Scoping Stage for consideration in this assessment:

- Direct effects on road / path users during construction due to changes in traffic flows and transport of AILs in the surrounding study area; and
- Direct effects on local residents as a result of increased traffic during construction.

11.4.13 The assessment scenarios used for this topic are as follows:

- Future Baseline Flows (2028) – which are estimated by applying a combination of National Road Traffic Forecast (NRTF) Low and High growth factors to existing traffic flow information;

- Future Baseline + Development Flows (2028) – which are estimated by applying the distributed development trips to the future baseline traffic flow information; and
- Future Baseline + Development Flows (2028) + Cumulative Development Flows – which are estimated by applying the distributed development trips to the future baseline traffic flow information, in addition to the flows associated with relevant cumulative developments.

11.4.14 The scope of the assessment has been informed by consultation responses summarised in **Table 11.1** and the guidelines / policies outlined in **Section 11.2**.

Effects Scoped Out

11.4.15 On the basis of the desk based and field survey work undertaken, the professional judgement of the EIA team, experience from other relevant projects and policy guidance or standards, and feedback received from consultees, the following topic areas have been 'scoped out' of detailed assessment, as proposed in the Scoping Report (August 2024) and as adopted in the Scoping Opinion:

- Operational Phase: Once operational, it is envisaged that the level of traffic associated with the Proposed Development will be minimal. Regular visits would be made to the wind farm for maintenance checks, in the order of two per week. The vehicles used for these visits are likely to be 4x4 vehicles and there may also be the occasional need for a Heavy Goods Vehicle (HGV) to access the wind farm for specific 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. As such, the effects during the operational phase are scoped out of the assessment.
- Decommissioning Phase: The traffic effects during the decommissioning phase can only be fully assessed closer to that period, 40 years on from the completion of the Development Site. As elements of the Proposed Development are likely to remain in-situ, the traffic flows associated with the decommissioning works will be lower than those associated with the construction phase. The construction phase therefore represents a worst-case assessment and as such, no further assessment of the decommissioning phase has been considered and has been scoped out of the assessment. Furthermore, it is not possible to estimate future year baseline traffic flows for the time periods proposed for the operational life of the Proposed Development and as such no assessment can be undertaken.

Desk Study

11.4.16 To inform the baseline assessment and to establish the nature of the surrounding road and footway infrastructure, the following desktop reviews have been undertaken:

- review of relevant transport planning policy;

- consideration of potential origin locations of construction staff and potential supply locations for construction materials to inform extent of local area roads network to be considered in the assessment;
- collection of existing (baseline) traffic flow information;
- review of the relevant roads hierarchy;
- review of personal injury accident (PIA) data;
- identification of sensitive locations within study area (as defined by IEMA such as settlements, schools, tourist attractions, hospitals, places of worship etc.) using freely available online mapping;
- identification of any other traffic sensitive receptors in the area (Core Paths, routes, communities, etc.) using freely available online mapping and relevant agency websites;
- review of OS plans;
- review of cumulative development information – THC planning portal and the Scottish Government's Energy Consents Unit (ECU) portal; and
- identification of constraints to the movement of AILs through a RSR including swept path assessments – OS plans, video footage and Google Streetview.

Field Survey

11.4.17 The following field surveys were carried out to inform the assessment:

- detailed site visits were undertaken to review the proposed access route and potential constraints for both general construction traffic and AILs; and
- Automatic Traffic Count (ATC) surveys to obtain baseline traffic flows and speed information.

Assessment of Likely Effect Significance

11.4.18 The IEMA 'Guidelines for Environmental Impact Assessment' (2005) notes that the separate IEMA Guidelines should be used for characterising the environmental traffic and transport effects (offsite effects) and the assessment of significance of major new developments. More recent guidance published by the IEMA, namely 'Environmental Assessment of Traffic and Movement' (2023) provides an update to the previously used guidance, 'Guidelines for the Environmental Assessment of Road Traffic' (1993) document, which should be used to characterise the environmental traffic and transport effects (offsite effects) and the assessment of significance of major new developments. The guidelines intend to complement professional judgement and the experience of trained assessors.

11.4.19 In terms of traffic and transport impacts, the receptors are the users of the roads within the study area and the locations through which those roads pass.

11.4.20 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 11.2**.

Table 11.2 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.	Where the road is Trunk or A-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 trunk road junctions capable of accommodating Abnormal Loads.
Users / Residents of Locations	Where a location is a large rural settlement containing a high number of community and public services and facilities.	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.

11.4.21 It is acknowledged that there will be locations both in terms of users of roads or users / residents of locations that may not fit within one of the sensitivity classifications highlighted in **Table 11.2**. In these situations, professional judgement has been applied and justification for any changes provided.

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

11.4.23 Magnitude of change has been assessed in accordance with the following rules which are outlined in the IEMA Guidelines, and are used to inform a screening exercise to determine which links within the study area are to be considered for detailed analysis in the assessment:

- Rule 1 – Include highway links where traffic flows will increase by more than 30% (or where the number of heavy goods vehicles (HGVs) is predicted to increase by more than 30%); and

- Rule 2 – Include any other specifically sensitive areas where total traffic flows are predicted to increase by 10% or more.
- 11.4.24 Examples of sensitive areas are presented in the IEMA Guidelines as hospitals, churches, schools, historical buildings and tourist attractions etc. These locations are to be assessed in relation to “Rule 2”.
- 11.4.25 The IEMA Guidelines identify 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:
- Severance – the IEMA Guidance advises that, “The Department for Transport has historically set out a range of indicators for determining the significance of severance. Changes in traffic flow of 30%, 60% and 90% are regarded as producing ‘slight’, ‘moderate’ and ‘substantial’ changes in severance respectively. Although these thresholds no longer appear in Department for Transport guidance, they have not been superseded by subsequent changes to guidance and are established through planning case law. However, caution needs to be observed when applying these thresholds as very low baseline flows are unlikely to experience severance impacts even with high percentage changes in traffic.” (Para 3.16). The Guidelines acknowledge that changes in traffic flows should be used cautiously, stating that “the assessment of severance should pay full regard to specific local conditions, e.g. sensitivity of adjacent land uses, prevalence of vulnerable people, whether or not crossing facilities are provided, traffic signal settings, etc.” (Para 3.17).
 - Driver delay – the IEMA Guidelines note that these delays are only likely to be “significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system” (Para 3.20).
 - Pedestrian delay (incorporating delay to all non-motorised users) – the IEMA Guidance advises that “pedestrian delay and severance are closely related effects and can be grouped together. Changes in the volume, composition or speed of traffic may affect the ability of people to crossroads. In general, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend on the general level of pedestrian activity, visibility and general physical conditions of the development site.” (Para 3.24). Furthermore, the guidance advises that “...it is not considered wise to set down definitive thresholds. Instead, it is recommended that the competent traffic and movement expert use their judgement to determine whether pedestrian delay constitutes a significant effect.” (Para 3.26).
 - Non-motorised user amenity - the IEMA Guidance advises that, “The 1993 Guidelines suggest that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or HGV component) is halved or doubled. Although these thresholds no longer appear in Department for Transport guidance, they

have not been superseded by subsequent changes to guidance and are established through planning case law.” (Para 3.30).

- Fear and intimidation – there are no commonly agreed thresholds for estimating levels of fear and intimidation, from known traffic and physical conditions. However, as the impact is considered to be sensitive to traffic flow, changes in traffic flow of 30%, 60% and 90% are regarded as producing minor, moderate and substantial changes respectively in the guidelines. (Para 2.19). As such, this has been used to assess the potential impacts associated with construction activities around fear and intimidation on people in close proximity to the Proposed Development.
- Road safety – professional judgement would be used to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents. In line with the IEMA Guidance, those areas of collision clusters would be subject to detailed review.
- Road safety audits – It would be proposed to undertake any necessary Road Safety Audits (RSA) post consent, and it is considered that this can be secured via a planning condition.
- Large loads – The movement of the AILs associated with the construction of the Proposed Development have been considered in full, within a separate route survey assessment (see **Annex B of Appendix 11.1: Transport Assessment**), which identifies physical mitigation measures required to accommodate the predicted loads. Additional mitigation in terms of addressing potential impacts on sensitive receptors are included as standard within the Additional Mitigation Measures section.

11.4.26 While not specifically identified, as more vulnerable road user, cyclists are considered in similar terms to pedestrians.

11.4.27 Table 3.7 of LA104 Environmental Assessment Methodology of the Design Manual for Roads and Bridges (DMRB) sets out four levels against which the magnitude of these impacts should be assessed – major, moderate, minor and negligible. The impacts and levels of magnitude are discussed below in **Table 11.3**.

Table 11.3 Magnitude of Effect

Magnitude	Description
Major	These effects are considered to be material in the decision-making process.
Moderate	These effects may be important but are not likely to be material factors in decision making. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a receptor.
Minor	These effects may be raised as local factors. They are unlikely to be critical in the decision-making process but are important in improving the subsequent design of the project.
Negligible	No effects or those that are imperceptible.

- 11.4.28 The predicted significance of the effect was determined through a standard method of assessment based on professional judgement, considering both sensitivity and magnitude of change as detailed in **Table 11.4** below.

Table 11.4 Significance Criteria

Receptor Sensitivity	Magnitude of Change			
	Major	Moderate	Minor	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

- 11.4.29 Significance is categorised as major, moderate, minor or negligible. Effects judged to be of **major** or **moderate** significance are considered to be significant in the context of the EIA Regulations.
- 11.4.30 Where an effect could be one of **major / moderate** or **moderate / minor** significance, professional judgement is used to determine which option should be applicable. Effects judged to be of minor or negligible significance are considered not significant in the context of EIA Regulations.

Assessment of Residual Effects

- 11.4.31 If likely significant effects are identified, appropriate mitigation will be implemented to remove or reduce the significance of the effects where possible.
- 11.4.32 Residual effects will be assessed following the methodology described above, taking into consideration the identified mitigation.

Assessment of Cumulative Effects

- 11.4.33 A review of THC's online planning portal¹ and Scottish Government's Energy Consents Unit (ECU) portal² was undertaken in **Appendix 11.1: Transport Assessment**.
- 11.4.34 Transport Assessment Guidance³ from the UK Government advises that only those projects with extant planning permission or local development plan allocations within an adopted or approved plan require to be included in any assessment. Those projects in scoping or at the application stage should not be included in cumulative assessments as they have yet to be determined. When considering traffic impacts specifically in relation to the construction phase of a project, the potential traffic impact is highly speculative and as such, cannot be included in the assessment.

¹ View planning applications, The Highland Council, Source: https://www.highland.gov.uk/info/180/planning_-_applications_warrants_and_certificates/143/planning_permission/4 [Accessed July 2025]

² <https://www.energyconsents.scot/ApplicationSearch.aspx?T=1> [Accessed July 2025]

³ <https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements>

- 11.4.35 Notwithstanding the above, at the request of THC, Ceislein Wind Farm has been included in the cumulative assessment, due to its proximity to the Proposed Development and the fact that it is also being promoted by the Applicant. The proposed access routes for Ceislein Wind Farm overlap with some sections of the Study Area for the Proposed Development on sections of the A9 and the B9176. As such, Ceislein Wind Farm is considered a committed development for the purposes of this assessment.
- 11.4.36 Within **Appendix 11.1: Transport Assessment** a full review of the relevant schemes was undertaken, which identified the following projects that should be considered in the cumulative development assessment within this chapter should the construction phases of the schemes and the Proposed Development overlap:
- Contullich Energy Storage Project (consented); and
 - Ceislein Wind Farm (pre-planning).
- 11.4.37 Should any other schemes be consented and constructed at the same time as the Proposed Development, the Applicant would welcome the opportunity to engage with other developers in consultation with THC to ensure appropriate traffic management measures would be implemented to minimise any cumulative impacts. In the event of all the sites being constructed at the same time it is suggested this would be mitigated through the use of an overarching Traffic Management and Monitoring Plan (TMMP) for all of the sites and by introducing a phased delivery plan which would be agreed with THC and Police Scotland.
- 11.4.38 Furthermore, it is extremely unlikely that peak traffic conditions would occur should more than one scheme be constructed at the same time, due to differences in construction programmes, material supplies and developer resources.
- 11.4.39 It should be noted that the use of NRTF Low and High growth assumptions has provided a basis for general local development growth within the study area.

Assumptions and Limitations

- 11.4.40 The following main assumptions have informed the assessment of effects in this Chapter:
- A construction programme of 24 months has been assumed.
 - Current estimates are that a total of 116,720 m³ of aggregate material will be required for the various uses across the Development Site (excluding for cement batching purposes). Whilst it is anticipated that a significant amount of the aggregate requirements will be sourced from on-site borrow pits, to allow for a suitably robust assessment, it has been assumed that 100% of the required material will be imported from local quarries to the south-east, with no material being won from the on-site borrow pits.
 - Concrete will be batched on-site meaning only raw materials to prepare the concrete (i.e. cement powder, water and sand / aggregates) will be imported.

11.4.41 Limitations to the assessment are as follows:

- The assessment is based upon average traffic flows in one month periods. During the month, activities at the Site may fluctuate between one day and another. It is not possible to fully develop a day by day traffic flow estimate as no Balance of Plant (BoP) contractor has been appointed and external factors can impact upon activities on a day by day basis (weather conditions, availability of materials, time of year, etc).
- Assumptions on the original points for materials have been made to provide a worst-case assessment scenario. Should these origin points change, the effects on the study area may alter to those presented in the assessment.
- Construction material estimates set out in **Appendix 11.1: Transport Assessment** are based on past experience of what is likely to be required for a project of this size and are considered to be appropriate for enabling a robust assessment of effects to be made.

11.4.42 It is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and assessment of likely significant environmental effects on Traffic, Transport and Access.

11.5 Baseline Conditions

Current Baseline

Active Travel Network

11.5.1 There are limited dedicated pedestrian facilities in the immediate vicinity of the Development Site, reflecting its rural setting. Further away from the Proposed Development, in the Study Area, there are pedestrian facilities within the larger settlements of Alness and Evanton, where there are footways on one or both sides of the carriageway. In addition, there are dedicated signal-controlled crossing points, drop kerbs and pedestrian refuge islands for pedestrians. The level of pedestrian infrastructure in the immediate vicinity of the Development Site is proportionate with the scale of the local settlements and their rural setting.

11.5.2 A review of the THC Core Path network map indicates that there are a number of Core Paths in the vicinity of the Development Site and wider study area. The closest of these are located in the vicinity of the Development Site access location on the U1907. These are shown in **Figure 11.4** and are as follows:

- Dublin to Ardross Mains (RC05.04) – forest track, approximately 620 m in length;
- Dam Wood (RC05.03) – forest track, approximately 1.78 km in length; and
- Tollie to Lealty Path (RC05.02) – estate track, approximately 2.40 km in length.

- 11.5.3 In addition, there is also a Core Path at the northern extents of the Development Site boundary (outwith the Main Development Area (MDA)) and as such will not be impacted by construction of the Proposed Development. For reference the path is known as Strathrusdale to Glencalvie (SU07.03), and it is a forest track, approximately 6.99 km in length.
- 11.5.4 A review of the Sustrans National Cycle Network (NCN) map indicates that NCN Route 1 is the closest NCN Route to the Development Site (see **Figure 11.4**). The NCN Route 1 is approximately 2,034 km in length and routes from Dover in the south to Tain, in the Scottish Highlands, passing through Edinburgh and Aberdeen.
- 11.5.5 The closest section of the NCN Route 1 is located to the south-east including a section of shared footway / cycleway along the western edge of the B9176 for c. 200 m connecting the B817 to the east and west. A dropped kerb is provided in this location to establish a designated crossing point. The location of NCN Route 1 in relation to the Development Site is shown in **Figure 11.4**.

Road Access

- 11.5.6 The A9 is the main trunk road in the area which links Perth to Scrabster. The road is operated by BEAR Scotland on behalf of Transport Scotland. The road is subject to a speed limit of 60 miles per hour (mph) within the study area, however, sections of dual carriageway are signed as 70 mph.
- 11.5.7 The B9176 (also known as Struie Road) is a single carriageway road, approximately 24 km in length, which runs from the A9 at Skiach, which is located to the southwest of Alness, to Eastern Fern on the Dornoch Firth. The road is subject to a speed limit of 60 mph within the study area, reducing to 40 mph within the small village of Dalnavie for goods vehicles in excess of 7.5 tonnes. A narrow bridge is located on the B9176, where it crosses the River Averon, and signage shows that southbound traffic should give way to oncoming northbound traffic over the bridge. The road is maintained by THC and appears to be in a generally reasonable condition.
- 11.5.8 The U1907 (also known as Strath Rusdale Road) is a minor, single track road of varying widths, approximately 8 km in length which commences at its junction with the B9176 and extends north-westerly to the access road to Braeantra. The road is subject to a speed limit of 60 mph and has passing places throughout its length. Signage along the road indicates the use of the road by horses and equestrians. The road is maintained by THC and appears to be in a generally reasonable condition.
- 11.5.9 Caplich Road is a two-way single carriageway road within Alness, approximately 800m in length, which runs from Ardross Road to Obsdale Road. The road is mainly subject to a speed limit of 20 mph, increasing to 30 mph approximately 100 m from its junction with Ardross Road. The road is maintained by THC and appears to be in a reasonable condition.
- 11.5.10 Ardross Road is a generally narrow two-way single carriageway road which passes through Alness, approximately 3.5 km in length. The road commences at its junction with the B817

and extends north-westerly to the B9176. The road is mainly subject to a speed limit of 60 mph, reducing to 30 mph and 20 mph to the south within Alness. The road is maintained by THC and appears to be in a generally reasonable condition, however there are locations where deterioration is present on the road.

General Road Suitability

- 11.5.11 The Agreed Timber Route Map⁴ has been developed by The Timber Transport Forum who are a partnership of the forestry and timber industries, local government, national government agencies, timber hauliers and road and freight associations. One of the key aims of the forum is to minimise the impact of timber transport on the public road network, on local communities and the environment and a way of achieving this is to categorise the roads leading to forest areas in terms of their capacity to sustain the likely level of timber haulage vehicles i.e. HGVs. The routes are categorised into four groups, namely; 'Agreed Routes', 'Consultation Routes', 'Severely Restricted Routes' and 'Excluded Routes'.
- 11.5.12 'Agreed Routes' are categorised as routes used for timber haulage without restriction as regulated by the Road Traffic Act 1988. A-roads are classified as 'Agreed Routes' by default unless covered by one of the other road classifications. Those links classed as 'Consultation Routes' are categorised as a route which is key to timber extraction, but which are not up to 'Agreed Route' standard. Consultation with the local authority is required, and it may be necessary to agree limits of timing, allowable tonnage etc. before the route can be used. B-roads are classified as 'Consultation Routes' by default unless covered by one of the other classifications. 'Severely Restricted Routes' are not normally to be used for timber transport in their present condition. These routes are close to being Excluded Routes. Consultation with the local authority is required prior to use. Finally, 'Excluded Routes' should not be used for timber transport in their present condition. These routes are either formally restricted, or are close to being formally restricted, to protect the network from damaging loads.
- 11.5.13 Roads within the study area form part of the route network used for the extraction of timber and are therefore regularly used by HGV traffic. This includes the A9 and B9176, which are 'Agreed Routes' and the U1907, which is a 'Consultation Route'.

Existing Traffic Conditions

- 11.5.14 In order to assess the impact of the Proposed Development construction traffic on the study area, four Automatic Traffic Counters (ATC) were deployed at the following locations:
- U1907 in the vicinity of the proposed Development Site access junction;
 - B9176 in the vicinity of its junction with the U1907;
 - Caplich Road, east of its junction with Ardross Road; and
 - Ardross Road, north of its junction with Caplich Road.

⁴ <https://timbertransportforum.org.uk/> [Accessed July 2025]

- 11.5.15 The ATCs were deployed over a 7-day period in November 2024, to collect vehicle volumes, composition and speed per direction per hour.
- 11.5.16 To compliment the ATC surveys, existing traffic count data was obtained from the Transport Scotland (TS) database, with 2024 data utilised, using available January 1st to December 31st data.
- 11.5.17 The traffic count site locations are as follows:
- A9, east of Ardullie Roundabout (TS Counter: ATC01012);
 - A9, east of the A9 / B9176 Junction (TS Counter: ATC01015); and
 - A9, west of Nigg Roundabout (TS Counter: ATC01333).
- 11.5.18 The traffic counters allowed the traffic flows to be split into vehicle classes and the data has been summarised into cars / light good vehicles (LGVs) and HGVs (all buses, goods vehicles >3.5 tonnes gross maximum weight).
- 11.5.19 The locations of the ATCs and TS count sites are shown in **Figure 11.2** while **Table 11.5** summarises the average traffic flows collected and used in this assessment.

Table 11.5 24-Hour Two Way Average Traffic Data (2025)

Survey Location	Cars & Lights	HGV	Total
U1907, within the vicinity of the Development Site access	76	22	97
B9176, at its junction with the U1907	874	275	1,141
Caplich Road, east of its junction with Ardross Road	738	102	835
Ardross Road, north of its junction with Caplich Road	713	189	896
A9, east of Ardullie Roundabout	12,503	2,767	15,270
A9, east of the A9 / B9176 Junction	9,694	2,225	11,919
A9, west of Nigg Roundabout	7,493	1,940	9,433

Please note minor variances due to rounding may occur.

- 11.5.20 The ATC and TS survey locations which provided traffic volume data were also used to obtain speed statistics. The two-way seven-day average and 85th percentile speeds observed at the count sites are summarised in **Table 11.6**.

Table 11.6 Speed Summary

Survey Location	Mean Speed (mph)	85%ile (mph)	Speed Limit
U1907, within the vicinity of the Development Site access	36.0	45.9	60
B9176, at its junction with the U1907	50.1	57.7	60
Caplich Road, east of its junction with Ardross Road	24.3	29.6	30
Ardross Road, north of its junction with Caplich Road	29.2	34.3	30
A9, east of Ardullie Roundabout	49.2	56.4	60
A9, east of the A9 / B9176 Junction	55.0	58.1	60

11.5.21 The speed survey data indicates that speed limits are generally being adhered to with the exception of the following locations, where they are marginally above the posted speed limits:

- Ardross Road, north of its junction with Caplich Road –85th percentile speeds are 4.3 mph over the posted speed limit of 30 mph; and
- A9, west of Nigg Roundabout – 85th percentile speed is 1.3 mph over the posted speed limit of 60 mph.

11.5.22 Where relevant, consideration to the above will be given within the traffic management measures employed within the study area, in particular on sections of road in close proximity to the Development Site.

Personal Injury Accident Review

11.5.23 Personal Injury Accident (PIA) data for the three-year period commencing 01 January 2021 through to the 31 December 2023 was obtained from the online resource CrashMap⁵ which uses data collected by the police about road traffic crashes occurring on British roads, where someone is injured.

11.5.24 TA Guidance requires an analysis of the accident data on the road network in the vicinity of any development to be undertaken for at least the most recent three-year period. The PIA statistics are categorised into three categories, namely:

- A “Slight” PIA, examples include a sprain, bruise or cut which is not considered to be severe, or slight shock requiring roadside attention;
- A “Serious” PIA, examples include fractures, concussion, internal injuries, crushings, severe cuts and lacerations, severe general shock requiring treatment; and
- A “Fatal” PIA, for those accidents that result in a death.

⁵ <https://www.crashmap.co.uk> [Accessed July 2025]

11.5.25 The general locations, severity of the recorded accidents and number of incidents involving an HGV within the study area are summarised in **Table 11.7**, while **Figure 11.3** shows their general locations.

Table 11.7 PIA Summary

Road Link	No. of PIAs (Total)	No. of PIAs involving an HGV	Severity		
			Slight	Serious	Fatal
A9	15	5	7	6	2
B9176	4	0	1	2	1
Caplich Road	0	0	0	0	0
Ardross Road	0	0	0	0	0
U1907	0	0	0	0	0
Total	19	5	8	8	3
<i>Percentage of total accidents</i>	<i>100%</i>	<i>26%</i>	<i>42%</i>	<i>42%</i>	<i>16%</i>

11.5.26 A summary of the PIAs recorded on road links within the study area are as follows:

A9

- There were a total of 15 accidents on the A9, seven of which were categorised as “slight” (47%), six as “serious” (40%), and two were “fatal” (13%).
- Five of the accidents recorded on the A9 involved an HGV (33%). Of these, three were categorised as being “serious”, and two resulted in fatalities.
- One of the accidents that resulted in a fatality was recorded approximately 125 m to the southwest of Obsdale Road and involved a car and an HGV;
- A fatality was recorded on the A9 which involved two HGVs and three cars approximately 360 m to the northeast of the B9176 / A9 junction:
- There were two accidents recorded at the A9 / B9176 junction. Both of these accidents were categorised as being “slight” and one involving a young driver (under 25).
- One of the recorded accidents on the A9 through Achnagarron involved a pedestrian casualty and was classified as being “serious”.
- There were a total of three accidents recorded that involved a young driver (under 25). Of these accidents, two were classified as being “serious” and one as “slight”.
- There were no recorded accidents on the A9 involving a motorcycle or cyclist.

B9176

- There were a total of four accidents on the B9176, one was classified as “slight” (25%), two as “serious” (50%), and one was recorded as a fatality (25%).

- Two of the accidents on the B9176 involved a single motorcycle (50%), both of which were classified as “serious”. One of the accidents involved a young driver (under 25).
- The accident involving a fatality resulted in four casualties, including a child casualty. It involved a single car and occurred close to a T-junction with a private access road to Fyrish Substation.
- There were no recorded accidents on the B9176 involving a cyclist or a pedestrian.
- There were no recorded accidents on the B9176 involving HGVs.

U1907, Caplich Road and Ardross Road

- There were no accidents recorded on the three roads in the study area within the most recent three-year period.

PIA Summary

- 11.5.27 The analysis indicates that there were a total of 19 accidents within the most recent five-year period. Eight recorded accidents are categorised as being “slight” (42%), with “serious” accidents also representing 42% of all accidents, and 16% were fatalities.
- 11.5.28 There were no accidents recorded within the vicinity of the proposed Development Site access.
- 11.5.29 The majority of PIAs recorded occurred at or on approach to junctions, where there is an increased interaction between vehicles and on bends.
- 11.5.30 Based on the information available, it has been established that there are no specific road safety issues within the immediate vicinity of the Proposed Development that currently require to be addressed or will be exacerbated by construction activities associated with the Proposed Development.

Future Baseline

Future Traffic Flows

- 11.5.31 Construction of the Proposed Development is anticipated to commence in 2028 if planning permission is granted and is expected to last approximately 24 months depending on weather conditions and ecological considerations.
- 11.5.32 To assess the likely effects during the construction phase, base year traffic flows were determined by applying a combination of NRTF Low and High Growth factors to the surveyed traffic flows. An NRTF Low Growth factor of 1.015 was applied to the trunk road network, while an NRTF High Growth factor of 1.036 was applied to the local road network to estimate the 2028 Base traffic flows presented in **Table 11.8**.

Table 11.8 24-Hour Two Way Average Traffic Data (2028)

Survey Location	Cars & Lights	HGV	Total
U1907, within the vicinity of the Development Site access	78	22	101
B9176, at its junction with the U1907	905	285	1,191
Caplich Road, east of its junction with Ardross Road	765	106	871
Ardross Road, north of its junction with Caplich Road	739	196	935
A9, east of Ardullie Roundabout	12,691	2,808	15,499
A9, east of the A9 / B9176 Junction	9,840	2,258	12,098
A9, west of Nigg Roundabout	7,606	1,969	9,574

Please note minor variances due to rounding may occur.

- 11.5.33 The assessment has been undertaken on the basis of a future baseline of conditions in 2028, with growth factors applied. In the absence of the Proposed Development, it is anticipated that traffic growth will occur throughout the study area as a result of other development pressures, tourism and population flows.

Implications of Climate Change

- 11.5.34 It is considered that climate change projections will not have a discernible impact on the future conditions for road traffic within the timescales of the Proposed Development.
- 11.5.35 It is assumed that, at regional level, appropriate measures will be put in place to ensure flood risk is managed and does not have long term effects on transport infrastructure.

Summary of Sensitive Receptors

- 11.5.36 A review of sensitive receptors has been undertaken within the study area. **Table 11.9** details the receptors and their sensitivities for use within the following assessment. A justification for the sensitivity has been provided, based upon the details contained in **Table 11.2**.

Table 11.9 Receptor Sensitivity Summary

Receptor	Sensitivity	Justification
A9 Users	Low	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition.
Residents along the A9	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
B9176 Users	Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic.
Residents along B9176	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
U1907 Users	High	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs.
Residents along U1907	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Caplich Road Users	Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic.
Residents along Caplich Road	High	Where a location is a large rural settlement containing a high number of community and public services and facilities.

Receptor	Sensitivity	Justification
Residents in Alness	High	Where a location is a large rural settlement containing a high number of community and public services and facilities.
Ardross Road Users	Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic.
Residents along Ardross Road (North of Alness)	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Residents in Ardross including Ardross Castle and Distillery	Medium	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.
Core Path / Path Network Users	High	Minor paths used by walkers and cyclists, not constructed to accommodate HGV traffic flows.

11.5.37 Note, whilst Ardross would typically be classed as Low or Negligible in terms of sensitivity, given its proximity to the Proposed Development and there being a number of sensitive receptors, it has been classed as Medium.

11.5.38 Examples of sensitive areas are presented in the IEMA Guidelines as locations which include hospitals, churches, schools, historical buildings tourist attractions for example. Based on these indicators which are stated within the IEMA Guidelines, the following location within the study area has been identified as sensitive areas in this assessment:

- Alness (schools, places of worship, hospital, and tourist attractions); and
- Residents in Ardross including Ardross Castle and Distillery.

11.5.39 These locations will therefore be subject to 'Rule 2' of the IEMA Guidelines which requires a full assessment of effects if the locations are subject to an increase in 10% of traffic.

11.5.40 All other locations within the study area are subject to 'Rule 1' and are assessed if total traffic flows (or HGV flows) on highway links increase by more than 30%.

11.6 Embedded Mitigation

11.6.1 The Proposed Development layout includes the use of on-site borrow pit to provide material for the creation of the access tracks, hardstandings and compound bases etc. It is anticipated that a significant amount of the aggregate material requirements will be sourced from the on-site borrow pits.

11.6.2 Batching of concrete for use on-site is considered feasible and economic and facilities to enable this are being provided at the Proposed Development. The assessment, has, however, taken into consideration the importation of concrete batching materials, including cement, water and sand / aggregates.

11.7 Potential Significant Effects

Overview

- 11.7.1 The assessment is based upon the construction effects that may occur within the Study Area during the 24-month construction programme. To assess the effects, it is necessary to determine the likely traffic generation associated with the Proposed Development during the peak construction month.
- 11.7.2 During the 24-month construction period, the following traffic will require access to the Development site:
- Staff transport, in either cars or staff minibuses;
 - Construction equipment and materials, deliveries of machinery and supplies such as concrete materials and crushed rock;
 - Components relating to the substation, BESS and associated infrastructure;
 - AILs consisting of the wind turbine sections and heavy lift cranes; and
 - Escort vehicles for AIL deliveries.
- 11.7.3 Average monthly traffic flow data was used to establish the construction trips associated with the Proposed Development and these are detailed in the Transport Assessment provided as **Appendix 11.1: Transport Assessment**. The trip estimates have been based upon first principle estimates of traffic movements to and from the site, having established the likely volumes of construction materials, resources and components.
- 11.7.4 Except for the turbine components, most traffic will be HGVs and normal construction plant, including grading tractors, excavators, high-capacity cranes, forklifts and dumper trucks. Most will arrive at the site access junction on low loaders.
- 11.7.5 The turbines are delivered in component sections for transport and will be assembled within the turbine area. The nacelle, hub, drive train, blade, tower sections are classified as AILs due to their weight and/or length, width and height when loaded. The components can be delivered on a variety of transport platforms with typical examples illustrated in **Appendix 11.1: Transport Assessment**.
- 11.7.6 In addition to the turbine deliveries, up to two high-capacity erection cranes will be needed to offload components and erect the turbines. The cranes are likely to be mobile cranes with a capacity up to 1,000 tonnes that will be escorted by boom and ballast trucks to allow full mobilisation on-site. A smaller erector / assist crane will also be present to allow the assembly of the main cranes and to ease overall erection of the turbines.
- 11.7.7 The resulting traffic generation profile is presented in **Appendix 11.1: Transport Assessment**.

- 11.7.8 The peak of construction occurs in month 11 and 12 when there will be a total of 3,952 vehicle movements per month, which equates to approximately 182 vehicle movements per day, comprising 138 two-way HGV movements and 44 car / LGV movements.
- 11.7.9 This would equate to approximately 15 two-way total movements or approximately 12 two-way HGV movements per hour, across a typical 12-hour day, assuming a flat traffic profile, where traffic arrived and departed the site equally throughout the working day.
- 11.7.10 The vehicle movement predicted above relates to the worst-case scenario considered for traffic assessment which assumes that 100% of aggregate materials for use on the Development Site is sourced from local suppliers. However, in a more proportionate conservative scenario whereby 50% of aggregate material with the exception of that used for on-site concrete batching, is sourced from the on-site borrow pits, there would be a total of 2,882 vehicle movements per month, which equates to approximately 130 vehicle movements per day, comprising 88 two-way HGV movements and 44 car / LGV movements.
- 11.7.11 The distribution of development traffic on the network will vary depending on the types of loads being transported. All construction traffic enters the Development Site via the access junction on the U1907.
- 11.7.12 Strategic access to the Development Site will be taken from the A9 to the southeast, with construction traffic routing through to the Development Site via the B9176 or Ardross Road and U1907. The assumptions for the distribution of construction traffic during the peak month are presented in **Appendix 11.1: Transport Assessment**.

Abnormal Indivisible Loads Route

- 11.7.13 For the purposes of preparing **Appendix 11.1: Transport Assessment** and this chapter, it has been assumed that all AIL traffic will access the Development Site via the following routes (see **Figure 11.5**):
- Blade Loads
 - Loads would depart the Nigg port and join the B9175 northbound;
 - Loads would take the first exit at Nigg Roundabout to join the A9 heading south-west;
 - Loads will exit the A9 at the Obsdale Road Junction then proceed to take the next left heading southwest on Obsdale Road;
 - Loads would then turn right onto Caplich Road heading northwest;
 - Loads would then turn right onto Ardross Road heading north;
 - Loads would continue westbound on the U1907 toward the Development Site access junction.
 - Tower Loads and other components
 - Loads would depart the Nigg port and join the B9175 northbound;
 - Loads would take the first exit at Nigg Roundabout to join the A9 heading south-west;

- Tower loads would exit the A9 at the B9176 Junction heading north-east; and
- Loads would continue westbound on the U1907 toward the Development Site access junction.

11.7.14 It should be noted that the tower and the blades will have two common route sections and two independent route sections, as described below and detailed in the **Appendix 11.1: Transport Assessment**:

- Common Route Section
 - Loads would depart the Nigg port and join the B9175 northbound;
 - Loads would take the first exit at Nigg Roundabout to join the A9 heading south-west;
- Blade Loads Only
 - Blade loads will exit the A9 at the Obsdale Road Junction then proceed to take the next left heading southwest on Obsdale Road;
 - Blade loads would then turn right onto Caplich Road heading northwest;
 - Blade loads would then turn right onto Ardross Road heading north;
- Tower Loads and other components
 - Tower loads would exit the A9 at the B9176 Junction heading north-east; and
- Common Route Section
 - All loads would converge at Ardross Road / B9176 Junction, before continuing westbound on the U1907 toward the Development Site access junction.

11.7.15 The proposed common and individual component sections of the AIL route are shown in **Figure 11.5**.

Peak Construction Flows & Impacts

11.7.16 Following the distribution and assignment of traffic flows to the Study Area network, the resultant daily traffic during the peak of construction in month 11 and 12, is summarised in **Table 11.10**.

Table 11.10 Peak Two Way Construction Traffic (month 11 & 12)

Survey Location	Cars & Lights	HGV	Total
U1907, within the vicinity of the Development Site access	44	138	182
B9176, at its junction with the U1907	44	138	182
Caplich Road, east of its junction with Ardross Road	4	124	128
Ardross Road, north of its junction with Caplich Road	4	124	128
A9, east of Ardullie Roundabout	34	12	46
A9, east of the A9 / B9176 Junction	4	4	8
A9, west of Nigg Roundabout	4	4	8

Please note minor variances due to rounding may occur.

- 11.7.17 The peak months (month 11 & 12) traffic data was combined with the future year (2028) traffic data to allow a comparison between the baseline results to be made for the scenario whereby 100% of aggregate materials are imported to the Development Site. **Table 11.11** shows the increase in traffic volumes is illustrated in percentage increases for each class of vehicle compared to the 2028 baseline.

Table 11.11 2028 Baseline + Construction Development – Two Way Flows and Impact

Survey Location	Cars & Lights	HGV	Total	Cars & LGV % Increase	HGV	Cars & LGV % Increase
U1907, within the vicinity of the Development Site access	122	160	283	56.2%	614.3%	180.6%
B9176, at its junction with the U1907	949	423	1,373	4.9%	48.4%	15.3%
Caplich Road, east of its junction with Ardross Road	769	230	999	0.5%	116.9%	14.7%
Ardross Road, north of its junction with Caplich Road	743	320	1,063	0.5%	63.2%	13.7%
A9, east of Ardullie Roundabout	12,725	2,820	15,545	0.3%	0.4%	0.3%
A9, east of the A9 / B9176 Junction	9,844	2,262	12,106	0.0%	0.2%	0.1%
A9, west of Nigg Roundabout	7,610	1,973	9,582	0.1%	0.2%	0.1%

Please note minor variances due to rounding may occur.

- 11.7.18 The total traffic movements are predicted to increase by a maximum of 180.6% on the U1907 within the vicinity of the Development Site access. This section of road will be used by all construction traffic accessing the Development Site. Outwith the U1907, the highest total traffic increase is 15.3%, which occurs on the B9176, at its junction with the U1907 which will be used by all vehicles accessing the Development Site, including those travelling from the quarry in Alness where aggregate materials would potentially be sourced.
- 11.7.19 **Table 11.11** shows that highest HGV traffic movements increase will occur on the U1907 within the vicinity of the Development Site access, where HGV traffic movements are estimated to increase by 614.3%. Whilst this increase is statistically high, this is due to the low level of HGVs currently using this road. To put the increase into perspective, the U1907 will see an additional 138 HGV movements per day or approximately 12 HGV movements per hour over the course of a typical 12-hour shift. This is not considered significant in terms of overall traffic flows.

- 11.7.20 The next highest HGV traffic movement increase would occur on occurs on Caplich Road, which provides access to the quarry within Alness where aggregate materials would potentially be sourced. At this location, there is estimated to be an increase of 116.9%, which equates to 124 HGV movements per day or approximately 11 per hour over the course of a typical 12-hour shift. This is not considered significant in terms of overall traffic flows.
- 11.7.21 A review of existing theoretical road capacity has been undertaken using The NESA Manual, formerly part of the Design Manual for Roads and Bridges, Volume 15, Part 5. The theoretical road capacity has been estimated for each of the road links for a 12-hour period that makes up the study area. The results are summarised in **Table 11.12**.

Table 11.12 2028 Peak Traffic Flow Capacity Review

Survey Location	2028 Baseline Flow	2028 Base + Development Flows	Theoretical Road Capacity (12hr)	Spare Road
U1907, within the vicinity of the Development Site access	101	283	3,360	91.6%
B9176, at its junction with the U1907	1,191	1,373	19,200	92.9%
Caplich Road, east of its junction with Ardross Road	871	999	19,200	94.8%
Ardross Road, north of its junction with Caplich Road	935	1,063	19,200	94.5%
A9, east of Ardullie Roundabout	15,499	15,545	28,800	46.0%
A9, east of the A9 / B9176 Junction	12,098	12,106	28,800	58.0%
A9, west of Nigg Roundabout	9,574	9,582	28,800	66.7%

Please note minor variances due to rounding may occur.

- 11.7.22 The results indicate there are no road capacity issues with the addition of construction traffic associated with the Proposed Development and significant spare capacity exists within the local and trunk road networks to accommodate all construction phase traffic.
- 11.7.23 Based on the information provided in **Table 11.11** and in accordance with the IEMA Guidelines Rules 1 and 2, the following receptors have been taken forward for detailed assessment:
- B9176 Users (Medium Sensitivity);
 - Residents along B9176 (Negligible Sensitivity);

- U1907 Users (High Sensitivity);
- Residents along U1907 (Negligible Sensitivity);
- Caplich Road Users (Medium Sensitivity);
- Residents along Caplich Road (High Sensitivity);
- Residents in Alness (High Sensitivity);
- Ardross Road Users (Medium Sensitivity);
- Residents along Ardross Road (North of Alness) (Negligible Sensitivity);
- Residents in Ardross including Ardross Castle and Distillery (Medium Sensitivity); and
- Core Path / Path Network Users (High Sensitivity).

11.7.24 The significance of the potential effects on the above receptors has been determined using the rules and thresholds previously outlined in the Criteria for Assessing Significance. **Table 11.13** summarises the significance of the effect on the receptors for the construction phase.

11.7.25 Note, for the purposes of undertaking the assessment, where both the users of a road and residents in the vicinity of the road require to be assessed, these have been done together to avoid repetition. When the higher of the two sensitivities has been used for the assessment. Professional judgement is also applied to take account of all factors at each location, which can move the classification both up and down.

Table 11.13 Overall Construction Phase Effects Assessment

Receptor	Severance	Driver Delay	Pedestrian Delay	Non-motorised User Amenities	Fear & Intimidation	Road Safety	Large Loads
B9176 Users & Residents (Medium Sensitivity)	Minor (Not Significant)	Minor (Not Significant)	Minor (Not Significant)	Moderate (Significant)	Minor (Not Significant)	Minor (Not Significant)	Major / Moderate (Significant)
U1907 Users & Residents (High Sensitivity)	Major (Significant)	Moderate / Minor (Significant)	Moderate / Minor (Significant)	Major (Significant)	Major (Significant)	Moderate / Minor (Significant)	Major (Significant)
Caplich Road Users & Residents (Medium Sensitivity)	Moderate / Minor (Significant)	Moderate / Minor (Significant)	Moderate / Minor (Significant)	Major (Significant)	Moderate / Minor (Significant)	Moderate / Minor (Significant)	N/A (Not Significant)
Ardross Road Users & Residents (North of Alness) (Medium Sensitivity)	Minor (Not Significant)	Minor (Not Significant)	Minor (Not Significant)	Moderate (Significant)	Minor (Not Significant)	Minor (Not Significant)	Major / Moderate (Significant)
Residents in Alness	Moderate / Minor	Moderate / Minor	Moderate / Minor	Major / Moderate	Moderate / Minor	Moderate / Minor	Major

Receptor	Severance	Driver Delay	Pedestrian Delay	Non-motorised User Amenities	Fear & Intimidation	Road Safety	Large Loads
(High Sensitivity)	(Significant)	(Significant)	(Significant)	(Significant)	(Significant)	(Significant)	(Significant)
Residents in Ardross including Ardross Castle and Distillery (Medium Sensitivity)	Major / Moderate (Significant)	Minor (Not Significant)	Minor (Not Significant)	Major / Moderate (Significant)	Moderate (Significant)	Minor (Not Significant)	Major / Moderate (Significant)
Core Path / Path Network Users (High Sensitivity)	Major (Significant)	Moderate / Minor (Not Significant)	Moderate / Minor (Significant)	Major (Significant)	Major (Significant)	Moderate / Minor (Significant)	Major (Significant)

11.7.26 The assessment of significance suggests that the following receptors are considered likely to experience significant effects in accordance with the EIA Regulations, prior to the application of mitigation measures:

- B9176 Users and Residents;
- U1907 Users and Residents;
- Caplich Road Users and Residents;
- Ardross Road Users and Residents (North of Alness);
- Residents in Alness;
- Residents in Ardross including Ardross Castle and Distillery; and
- Core Path / Path Network Users.

11.7.27 It should be noted that the impacts relate solely to the peak of construction activities which are relatively short lived and the effects are temporary in nature. Whilst it is acknowledged that other months within the construction programme may cause significant effects, these would be less than those assessed and for which mitigation measures have been proposed.

11.7.28 Furthermore, there are no road capacity issues with the addition of construction traffic associated with the Proposed Development and significant spare capacity exists within the local and trunk road networks to accommodate all construction phase traffic.

11.8 Additional Mitigation Measures

Construction Traffic Management Plan (CTMP)

11.8.1 The following measures will be implemented during the construction phase through the CTMP, secured via a deemed planning permission condition:

- Agree AIL route modifications and improvements with THC and TS. Works which will be required to facilitate turbine deliveries are outlined in the RSR, which is presented in Annex B of **Appendix 11.1: Transport Assessment**;
- Where possible, the detailed design process will minimise the volume of material to be imported to Development Site to help reduce HGV numbers;
- A Staff Travel Plan, including transport modes to and from the worksite (including pick up and drop off times);
- A Transport Management Plan for AIL deliveries;
- 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;
- Wheel cleaning facilities may be established at the Development Site entrance, depending on the views of THC;
- Normal Development Site working hours will be limited to between 0700 and 1900 Monday to Friday and 0700 and 1600 on Saturdays though component delivery and turbine erection may take place outside these hours i.e. depending on when police escort is available;
- Appropriate traffic management measures will be put in place on the U1907, B9176 and other local roads leading through to the Development Site, to avoid conflict with general traffic, subject to the agreement of THC. Typical measures will include HGV turning and crossing signs and / or banksmen at the Development Site access and warning signs;
- Provide construction updates on the project website, social media feeds and a newsletter to be distributed to residents within an agreed distance of the Development Site;
- Adoption of a voluntary reduced speed limits, for example on the U1907 and B9176 and at other locations to be agreed with THC;
- All drivers will be required to attend an induction to include:
 - A toolbox talk safety briefing;

- The need for appropriate care and speed control;
- A briefing on driver speed reduction agreements (to slow site traffic at sensitive locations through the villages); and
- Identification of the required access routes and the controls to ensure no departure from these routes.

Off-site Mitigation

- 11.8.2 As part of the CTMP which will be provided post consent and secured by condition, an agreement to cover the cost of abnormal wear on the local road network will be required by THC. Video footage of the pre-construction phase condition of the abnormal loads access route and the construction vehicles route will be recorded to provide a baseline of the condition of the road prior to any construction work commencing. This baseline will inform any change in the road condition during the construction phase. Any necessary repairs will be coordinated with THC's roads team. Any damage caused by traffic associated with the Proposed Development during the construction phase that would be hazardous to public traffic will be repaired immediately.
- 11.8.3 Damage to road infrastructure caused directly by construction traffic will be repaired and street furniture that is removed on a temporary basis will be fully reinstated.
- 11.8.4 There will be a regular road review, and any debris and mud will be removed from the carriageway using an on-site road sweeper to ensure road safety for all road users.

Specific AIL Mitigation

- 11.8.5 There are a number of traffic management measures that can help reduce the effect of abnormal load convoys. All AIL deliveries will be undertaken at appropriate times (to be discussed and agreed with THC, TS, and Police Scotland) with the aim to minimise the effect on the local road network. It is likely that the abnormal load convoys would travel in the early morning periods, before peak times while general construction traffic would generally avoid the morning and evening peak periods.
- 11.8.6 The majority of potential conflicts between construction traffic and other road users will occur with abnormal load traffic. General construction traffic is not likely to come into conflict with other road users as the vehicles are smaller and road users are generally more accustomed to them.
- 11.8.7 Potential conflicts between the abnormal loads and other road users can occur at a variety of locations and circumstances:
- On sections of single carriageway road or narrow road sections, for example on the U1907, B9176, Ardross Road and Caplich Road;
 - At locations where there are significant changes in the horizontal alignment of the carriageway, requiring the loads to use the full carriageway width;

- Where traffic turns at a road junctions, requiring other traffic to be restrained on other approach arms; and
 - In locations where high speeds of general traffic are predicted.
- 11.8.8 Advance warning signs will be installed on the approaches to the affected road network. Information signage could 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).
- 11.8.9 The location and numbers of signs will be agreed post consent and would form part of the wider traffic management proposals for the Proposed Development.
- 11.8.10 Information on the wind turbine convoys will be provided to local media outlets such as local papers and local radio to help assist the public. Information will relate to expected vehicle movements from the port of entry through to the Development Site access. This will assist residents becoming aware of the convoy movements and may help reduce any potential conflicts.

AIL Transport Management Plan

- 11.8.11 An AIL Transport Management Plan will be prepared to cater for all movements to and from the Development Site. This will 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 local events;
 - 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 construction 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.

Public Information

- 11.8.12 Information on the wind turbine convoys will be provided to local media outlets such as local papers and local radio to help assist the public.
- 11.8.13 Information will relate to expected vehicle movements from the PoE through to the Development Site access junction. This will assist residents in understanding the timing of the convoy movements and may help reduce any potential conflicts.

- 11.8.14 The Applicant will also ensure information is distributed through its communication team via the project website, local newsletters, and social media.

Convoy System

- 11.8.15 A police escort will be required to facilitate the delivery of the predicted AILs. The police escort will be further supplemented by a civilian pilot car to assist with the escort duty. It is proposed that an advance escort will warn oncoming vehicles ahead of the convoy, with one escort staying with the convoy at all times. The escorts and convoy will remain in radio contact at all times where possible.
- 11.8.16 The AIL convoys will be no more than three AILs 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.
- 11.8.17 The times in which the convoys will travel will be agreed with Police Scotland who have sole discretion on when loads can be transported.

Staff Travel Plan

- 11.8.18 A Staff Travel Plan will be deployed where necessary, to manage the arrival and departure profile of staff and to encourage sustainable modes of transport, especially car-sharing. A package of measures could include:
- Appointment of a Travel Plan Coordinator (TPC);
 - Provision of public transport information;
 - Mini-bus service for transport of Site staff;
 - Promotion of a car sharing scheme;
 - Car parking management; and
 - Restrictions on parking, for example on the public road network and verges in the vicinity of the Development Site entrance.

Outdoor Access Management Plan (OAMP)

- 11.8.19 Within the Development Site, consideration has been given to pedestrians and cyclists alike due to potential interactions between construction traffic and users of Core Paths / paths, cycle routes and public roads. An Outdoor Access Management Plan (OAMP) will be developed and secured via a planning condition if deemed necessary.
- 11.8.20 Users of the Core Paths / paths etc. will be separated from construction traffic wherever possible. Crossing points will be provided where required, with path users having right of way and temporary diversions will be provided where necessary. Appropriate Traffic Signs Manual Chapter 8 compliant temporary road signage will be provided to assist at these crossings for the benefit of all users.

- 11.8.21 The principal contractor will ensure that speed limits are always adhered to by their drivers and associated subcontractors. This is particularly important within close proximity to the forest paths and at crossing points. Advisory speed limit signage will also be installed on approaches to areas where path users may interact with construction traffic.
- 11.8.22 Signage will be installed on the Development Site exits that makes drivers aware of local speed limits and reminding drivers of the potential presence of pedestrians and cyclists in the area. This will also be emphasised in the weekly toolbox talks.
- 11.8.23 No scoping response has been received from The British Horse Society, however measures implemented on similar schemes will be given consideration as part of the Proposed Development. These measures are predominantly focused around the interactions between HGV traffic and horses. Horses are normally nervous of large vehicles, particularly when they do not often meet them. Horses are flight animals and will run away in panic if really frightened. Riders will do all they can to prevent this but, should it happen, it could cause a serious accident for other road users, as well as for the horse and rider.
- 11.8.24 The main factors causing fear in horses in this situation are:
- something approaching them, which is unfamiliar and intimidating;
 - a large moving object, especially if it is noisy;
 - lack of space between the horse and the vehicle;
 - the sound of air brakes; and
 - anxiety on the part of the rider.
- 11.8.25 The British Horse Society has previously recommended the following actions that will be included in the site training for all HGV staff:
- on seeing riders approaching, drivers must slow down and stop, minimising the sound of air brakes, if possible;
 - if the horse still shows signs of nervousness while approaching the vehicle, the engine should be shut down (if it is safe to do so);
 - the vehicle should not move off until the riders are well clear of the back of the HGV;
 - if drivers are wishing to overtake riders, please approach slowly or even stop in order to give riders time to find a gateway or lay by where they can take refuge and create sufficient space between the horse and the vehicle. Because of the position of their eyes, horses are very aware of things coming up behind them; and
 - all drivers delivering to the Site must be patient. Riders will be doing their best to reassure their horses while often feeling a high degree of anxiety themselves.

11.9 Residual Effects

- 11.9.1 This section considers the assessment of traffic impacts following the incorporation of the additional mitigation measures. An evaluation of the potential effects of the increase in traffic on the study area roads used for construction traffic was undertaken. The summary of this assessment is provided in **Table 11.14**, with the maximum receptor significance shown.
- 11.9.2 Following the implementation of a comprehensive CTMP, together with on-site route signage and an OAMP, all effects will be **minor** and not significant. The traffic effects are transitory in nature and appropriate mitigation measures are proposed to reduce the potential impacts. No long-term detrimental transport or access issues are associated with the construction phase of the Proposed Development.

Table 11.14 Summary of Potential Significant Effects of the Proposed Development

Phase	Predicted Impacts	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation Measures	Residual Effect
B9176 Users & Residents						
Construction	Severance	Medium	Minor	Minor	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Minor – Not Significant
	Driver delay	Medium	Minor	Minor		
	Pedestrian delay	Medium	Minor	Minor		
	Non-motorised user delay	Medium	Moderate	Moderate		
	Fear and intimidation	Medium	Minor	Minor		
	Road safety	Medium	Minor	Minor		
	Movement of large loads	Medium	Major	Major / Moderate		
U1907 Users & Residents						
Construction	Severance	High	Major	Major	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Minor – Not Significant
	Driver delay	High	Negligible	Moderate / Minor		
	Pedestrian delay	High	Negligible	Moderate / Minor		
	Non-motorised user delay	High	Major	Major		
	Fear and intimidation	High	Major	Major		
	Road safety	High	Negligible	Moderate / Minor		
	Movement of large loads	High	Major	Major		
Caplich Road Users & Residents						
Construction	Severance	High	Minor	Moderate / Minor	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Minor – Not Significant
	Driver delay	High	Minor	Moderate / Minor		
	Pedestrian delay	High	Minor	Moderate / Minor		
	Non-motorised user delay	High	Major	Major		
	Fear and intimidation	High	Minor	Moderate / Minor		
	Road safety	High	Minor	Moderate / Minor		

Phase	Predicted Impacts	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation Measures	Residual Effect
Ardross Road Users & Residents (North of Alness)						
Construction	Severance	Medium	Minor	Minor	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Minor – Not Significant
	Driver delay	Medium	Minor	Minor		
	Pedestrian delay	Medium	Minor	Minor		
	Non-motorised user delay	Medium	Moderate	Moderate		
	Fear and intimidation	Medium	Minor	Minor		
	Road safety	Medium	Minor	Minor		
	Movement of large loads	Medium	Major	Major / Moderate		
Residents in Alness						
Construction	Severance	High	Minor	Moderate / Minor	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Minor – Not Significant
	Driver delay	High	Minor	Moderate / Minor		
	Pedestrian delay	High	Minor	Moderate / Minor		
	Non-motorised user delay	High	Moderate	Major / Moderate		
	Fear and intimidation	High	Minor	Moderate / Minor		
	Road safety	High	Minor	Moderate / Minor		
	Movement of large loads	High	Major	Major		
Residents in Ardross including Ardross Castle and Distillery						
Construction	Severance	Medium	Major	Major / Moderate	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and implementation of an OAMP.	Minor – Not Significant
	Driver delay	Medium	Minor	Minor		
	Pedestrian delay	Medium	Minor	Minor		
	Non-motorised user delay	Medium	Major	Major / Moderate		
	Fear and intimidation	Medium	Minor	Moderate		
	Road safety	Medium	Minor	Minor		
	Movement of large loads	Medium	Major	Major / Moderate		

Phase	Predicted Impacts	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation Measures	Residual Effect
Core Path / Path Network Users						
Construction	Severance	High	Major	Major	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and implementation of an OAMP.	Minor – Not Significant
	Driver delay	High	Minor	Moderate / Minor		
	Pedestrian delay	High	Minor	Moderate / Minor		
	Non-motorised user delay	High	Major	Major		
	Fear and intimidation	High	Major	Major		
	Road safety	High	Minor	Moderate / Minor		
	Movement of large loads	High	Major	Major		

11.10 Cumulative Effects

11.10.1 As detailed in **Appendix 11.1: Transport Assessment** and Section 11.5, there are two developments, which could potentially impact the roads within the study area in addition to the Proposed Development, namely:

- Contullich Energy Storage Project; and
- Ceislein Wind Farm.

11.10.2 The peak traffic flows for the Contullich Energy Storage schemes was obtained from the planning application documents. In the case of Ceislein Wind Farm, the information was provided by the Applicant and then compared to the future baseline (2028). **Table 11.15** to **Table 11.17** provides the combined sensitivity review for the schemes, should they be constructed concurrently.

Table 11.15 Combined Scheme Sensitivity Review Peak Traffic Summary

Survey Location	Proposed Development		Ceislein Wind Farm		Contullich Energy Storage	
	Cars & Lights	HGV	Cars & Lights	HGV	Cars & Lights	HGV
U1907, within the vicinity of the Development Site access	44	138	0	0	0	0
B9176, at its junction with the U1907	44	138	34	148	50	30
Caplich Road, east of its junction with Ardross Road	4	124	0	0	0	0
Ardross Road, north of its junction with Caplich Road	4	124	0	0	0	0
A9, east of Ardullie Roundabout	34	12	28	12	50	30
A9, east of the A9 / B9176 Junction	4	4	4	136	0	0
A9, west of Nigg Roundabout	4	4	4	136	0	0

Please note minor variances due to rounding may occur.

Table 11.16 2028 Future Baseline Combined Scheme – Traffic Impact Summary

Survey Location	Cars & Lights	HGV	Total	Cars & LGV % Increase	HGV	Cars & LGV % Increase
U1907, within the vicinity of the Development Site access	122	160	283	56.2%	614.3%	180.6%
B9176, at its junction with the U1907	1,033	601	1,635	14.1%	110.8%	37.3%
Caplich Road, east of its junction with Ardross Road	769	230	999	0.5%	116.9%	14.7%
Ardross Road, north of its junction with Caplich Road	743	320	1,063	0.5%	63.2%	13.7%
A9, east of Ardullie Roundabout	12,803	2,862	15,665	0.9%	1.9%	1.1%
A9, east of the A9 / B9176 Junction	9,848	2,398	12,246	0.1%	6.2%	1.2%
A9, west of Nigg Roundabout	7,614	2,109	9,722	0.1%	7.1%	1.5%

Please note minor variances due to rounding may occur.

Table 11.17 2028 Daily Traffic (12hr) Capacity Review Summary

Survey Location	2028 Baseline Flow	2028 Base + Cumulative Development + Proposed Development Flows	Theoretical Road Capacity (12hr)	Spare Road Capacity (%)
U1907, within the vicinity of the Development Site access	101	283	3,360	91.6%
B9176, at its junction with the U1907	1,191	1,635	19,200	91.5%
Caplich Road, east of its junction with Ardross Road	871	999	19,200	94.8%
Ardross Road, north of its junction with Caplich Road	935	1,063	19,200	94.5%
A9, east of Ardullie Roundabout	15,499	15,665	28,800	45.6%
A9, east of the A9 / B9176 Junction	12,098	12,246	28,800	57.5%
A9, west of Nigg Roundabout	9,574	9,722	28,800	66.2%

Please note minor variances due to rounding may occur.

- 11.10.3 **Table 11.16** shows that there are increases in total and HGV flows when considering all schemes being constructed concurrently compared to the percentage increases associated with the Proposed Development being constructed alone (see **Table 11.11**).
- 11.10.4 Based on the road capacity results shown in **Table 11.16** and comparing these to the capacity results for the Proposed Development only in **Table 11.12**, there would still be no road capacity issues should the Proposed Development and other schemes be constructed at the same time, with ample spare capacity within the study area road network to accommodate construction phase traffic.
- 11.10.5 Should the two other schemes be constructed at the same time as the Proposed Development, the cumulative traffic will dilute the impact of the Proposed Development traffic on the Study Area, due to the baseline traffic flows being higher with the additional traffic. As such, there would be no increase in the significance of effect is anticipated. Furthermore, it is not predicted that the potential traffic flow increases could ever occur within the Study Area for the following reasons:
- It is extremely unlikely that the peak traffic conditions would occur at the same time due to differences in construction programmes, material supplies, and developer resources; and
 - AIL deliveries are highly unlikely to occur on sites on the same day due to restrictions on the numbers of loads moving on the network at the same time set by Police Scotland.
- 11.10.6 Should the above or any other schemes be consented and constructed at the same time as the Proposed Development, the Applicant would welcome the opportunity to engage with other developers in consultation with THC to ensure appropriate traffic management measures would be implemented to minimise any cumulative impacts. In the unlikely event of all the sites being constructed at the same time it is suggested this would be mitigated through the use of an overarching TMMP for all of the schemes and by introducing a phased delivery plan which would be agreed with THC and Police Scotland.
- 11.10.7 Furthermore, it is not predicted that the potential traffic flow increases would ever occur on the study area, as it is extremely unlikely that the peak traffic conditions will occur at the same time due to differences in construction programmes, material supplies and developer resources. In addition, those schemes already consented will likely begin construction prior to the Proposed Development gaining planning consent.

11.12 Summary and Conclusion

- 11.12.1 The Proposed Development will lead to increased traffic volumes on a number of roads in the vicinity of the Development Site during the construction phase. These will be of a temporary timescale and transitory in nature.
- 11.12.2 The Proposed Development will be accessed via an existing access junction on the U1907 (Strath Rusdale Road), which will be upgraded to accommodate both general construction traffic and AIL traffic.
- 11.12.3 The peak of construction occurs in month 11 and month 12 when there will be a total of 3,952 vehicle movements per month, which equates to approximately 180 vehicle movements per day, comprising 138 two-way HGV movements and 44 car / LGV movements.
- 11.12.4 This would equate to approximately 15 two-way total movements or approximately 12 two-way HGV movements per hour, across a typical 12-hour day, assuming a flat traffic profile, where traffic arrived and departed the site equally throughout the working day.
- 11.12.5 As previously advised, this is in the scenario whereby 100% of aggregate materials for use on the Development Site is sourced from local suppliers. In the scenario whereby 50% of aggregate material with the exception of that used for on-site concrete batching, is sourced from the on-site borrow pits, which is considered to be a more realistic scenario, there would be a total of 2,882 vehicle movements per month, which equates to approximately 130 vehicle movements per day, comprising 88 two-way HGV movements and 44 car / LGV movements.
- 11.12.6 In addition, a review of the theoretical road capacity was undertaken for the study area which showed that with the addition of construction traffic associated with the Proposed Development, there was significant spare capacity within the road network.
- 11.12.7 With the implementation of appropriate mitigation, **no Significant** residual effects are anticipated in respect of traffic and transport issues. The residual effects are all assessed to be minor and will occur during the construction phase only, they are temporary and reversible.
- 11.12.8 Traffic levels during the operational phase of Proposed Development will be up to two vehicles per week for maintenance purposes. Traffic levels during the decommissioning of the Proposed Development are expected to be lower than during the construction phase as some elements are likely be left in situ and others broken up on-site.
- 11.12.9 The movement of AIL traffic will require small scale and temporary remedial works at a number of locations along identified delivery route.
- 11.12.10 As required by any future consent or to address consultation responses to the EIA Report, the Applicant is committed to engaging with the relevant stakeholders to minimise disruption, and to explore delivery routes, timescales and means of delivery of AIL to the Proposed Development.

Table 11.18 Summary of Effects

Receptor	Potential Impact	Embedded Mitigation	Significance of Effect	Additional Mitigation / Monitoring Proposed & Means of Implementation	Residual Effect
B9176 Users & Residents					
Construction	Severance	Sourcing aggregate materials from the on-site borrow pits and undertaking on-site batching of concrete.	Minor	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Minor – Not Significant
	Driver delay		Minor		
	Pedestrian delay		Minor		
	Non-motorised user delay		Moderate		
	Fear and intimidation		Minor		
	Road safety		Minor		
	Movement of large loads		Major / Moderate		
Operation	The level of traffic associated with operation of the Proposed Development will be minimal.	N/A	No Change (Scoped Out)	N/A	No Change
U1907 Users & Residents					
Construction	Severance	Sourcing aggregate materials from the on-site borrow pits and undertaking on-site batching of concrete.	Major	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Minor – Not Significant
	Driver delay		Moderate / Minor		
	Pedestrian delay		Moderate / Minor		
	Non-motorised user delay		Major		
	Fear and intimidation		Major		
	Road safety		Moderate / Minor		
	Movement of large loads		Major		
Operation	The level of traffic associated with operation of the Proposed Development will be minimal.	N/A	No Change (Scoped Out)	N/A	No Change
Caplich Road Users & Residents					
Construction	Severance	Sourcing aggregate materials from the on-site borrow pits and undertaking on-site batching of concrete.	Moderate / Minor	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Minor – Not Significant
	Driver delay		Moderate / Minor		
	Pedestrian delay		Moderate / Minor		

Receptor	Potential Impact	Embedded Mitigation	Significance of Effect	Additional Mitigation / Monitoring Proposed & Means of Implementation	Residual Effect
	Non-motorised user delay		Major		
	Fear and intimidation		Moderate / Minor		
	Road safety		Moderate / Minor		
	Movement of large loads		Moderate / Minor		
Operation	The level of traffic associated with operation of the Proposed Development will be minimal.	N/A	No Change (Scoped Out)	N/A	No Change
Ardross Road Users & Residents (North of Alness)					
Construction	Severance	Sourcing aggregate materials from the on-site borrow pits and undertaking on-site batching of concrete.	Minor	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Minor – Not Significant
	Driver delay		Minor		
	Pedestrian delay		Minor		
	Non-motorised user delay		Moderate		
	Fear and intimidation		Minor		
	Road safety		Minor		
	Movement of large loads		Major / Moderate		
Operation	The level of traffic associated with operation of the Proposed Development will be minimal.	N/A	No Change (Scoped Out)	N/A	No Change
Residents in Alness					
Construction	Severance	Sourcing aggregate materials from the on-site borrow pits and undertaking on-site batching of concrete.	Moderate / Minor	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Minor – Not Significant
	Driver delay		Moderate / Minor		
	Pedestrian delay		Moderate / Minor		
	Non-motorised user delay		Major / Moderate		
	Fear and intimidation		Moderate / Minor		
	Road safety		Moderate / Minor		
	Movement of large loads		Major		

Receptor	Potential Impact	Embedded Mitigation	Significance of Effect	Additional Mitigation / Monitoring Proposed & Means of Implementation	Residual Effect
Operation	The level of traffic associated with operation of the Proposed Development will be minimal.	N/A	No Change (Scoped Out)	N/A	No Change
Residents in Ardross including Ardross Castle and Distillery					
Construction	Severance	Sourcing aggregate materials from the on-site borrow pits and undertaking on-site batching of concrete.	Major / Moderate	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and implementation of an OAMP.	Minor – Not Significant
	Driver delay		Minor		
	Pedestrian delay		Minor		
	Non-motorised user delay		Major / Moderate		
	Fear and intimidation		Moderate		
	Road safety		Minor		
	Movement of large loads		Major / Moderate		
Operation	The level of traffic associated with operation of the Proposed Development will be minimal.	N/A	No Change (Scoped Out)	N/A	No Change
Core Path / Path Network Users					
Construction	Severance	Sourcing aggregate materials from the on-site borrow pits and undertaking on-site batching of concrete.	Major	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and implementation of an OAMP.	Minor – Not Significant
	Driver delay		Moderate / Minor		
	Pedestrian delay		Moderate / Minor		
	Non-motorised user delay		Major		
	Fear and intimidation		Major		
	Road safety		Moderate / Minor		
	Movement of large loads		Major		
Operation	The level of traffic associated with operation of the Proposed Development will be minimal.	N/A	No Change (Scoped Out)	N/A	No Change

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