

7 Traffic & Transport

Non-Technical Summary

Access to Tom na Clach Wind Farm Extension (the 'Proposed Development') would then be taken from the existing wind farm access junction on the B9007. Loads would then proceed to the Proposed Development site via new and existing wind farm access tracks.

The closest feasible port to the site that has previously accommodated onshore wind farm developments, such as the Tom nan Clach Wind Farm Operational Scheme, is Inverness Port. From Inverness, loads would travel to site via A9, A95, A938 and B9007, accessing the site from the south.

The maximum traffic impact associated with construction is predicted to occur in Month 7 of the programme. The greatest impact would occur at the site access where an additional 61 trips are included to the network.

The development traffic at the peak of construction would result in 33 HGV movements per day (17 inbound and 17 outbound) and 27 Car / LGV movements (14 inbound trips and 14 outbound trips).

No significant capacity issues are expected on any of the roads within the study area due to the additional construction traffic movements associated with the Proposed Development as background traffic movements are low, the links are of reasonable standard and appropriate mitigation is proposed.

A review of the road network has been undertaken to assess the feasibility of transporting turbines to the site and the following substantive remedial works are identified as part of the Swept Path Assessment to accommodate the predicted AIL movements at Points of Interest (POI) which are detailed in **Appendix 7.B**:

- POI 21: A95 / A938 Junction – Due to the length of the proposed loads and the orientation of the road junction it is not possible to utilise the existing junction and the mitigation used by the original Tom na Clach Wind Farm that is located in the verge. It is proposed that loads will turn left onto a new track in advance of the junction. Detailed discussions with Transport Scotland and The Highland Council should be held to confirm the proposed mitigation as a new junction will be created on both the A9 and A938.
- POI 60: Proposed Site Access, B9007 –The junction will need to be upgraded to meet manufacturer standards for the larger loads if it is used to access the proposed site.

Traffic levels during the operational phase of Proposed Development would be one or 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 may be left in situ and others broken up onsite.

An assessment of likely potential effects using IEMA guidelines has been undertaken. This determined that the construction effects are not significant.

There are no residual effects associated with the construction or operational phases of the Proposed Development.

7.1 Introduction

7.1.1 This Chapter considers the likely significant effects of Tom na Clach Wind Farm Extension (hereafter referred to as the 'Proposed Development') on receptors along the transport routes resulting from vehicle movements associated with the construction and operation of the Proposed Development. The specific objectives of the chapter are to:

- Review the relevant policy and legislative framework;
- Describe the existing access network and 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 address likely significant effects; and
- Assess the residual effects remaining following the implementation of mitigation.

7.1.2 A high-level overview of the effects of the traffic movements has been considered in accordance with Institute of Environmental Assessment (now Institute of Environmental Management and Assessment (IEMA)) Guidelines for the Environmental Assessment of Road Traffic. The document is referred to as the IEMA Guidelines in this chapter.

7.1.3 The assessment was carried out by Pell Frischmann Consultants Limited.

7.1.4 The chapter should be read in conjunction with the following technical appendices:

- **Appendix 7.A:** Transport Assessment; and
- **Appendix 7.B** Abnormal Indivisible Loads (AILs) Route Survey Report.

7.1.5 Technical appendices are referenced in the text where relevant.

7.2 Legislation, Policy and Guidance

7.2.1 An overview of relevant transport planning policies has been undertaken and is summarised below for the national and local government policies.

National

- National Planning Framework 3 (2014) – Scotland's National Planning Framework (NPF3) sets the context for development planning in Scotland and provides a framework for the spatial development of Scotland as a whole. It sets out the Scottish Government's development priorities over the next 20 to 30 years and identifies national developments which support the development strategy. Scotland's third NPF was laid in the Scottish Parliament on 23 June 2014.

- Planning Advice Note (PAN) 75 (2005) – Planning Advice Note (PAN) 75: Planning for Transport provides advice on the requirements for Transport Assessments. The document notes that:

"... transport assessment to be produced for significant travel generating developments. Transport Assessment is a tool that enables delivery of policy aiming to integrate transport and land use planning."

"All planning applications that involve the generation of person trips should provide information which covers the transport implications of the development. The level of detail will be proportionate to the complexity and scale of the impact of the proposal...For smaller developments the information on transport implications will enable local authorities to monitor potential cumulative impact and for larger developments it will form part of a scoping exercise for a full transport assessment. Development applications will therefore be assessed by relevant parties at levels of detail corresponding to their potential impact."

- Transport Assessment Guidance (2012) – Transport Scotland's (TS) Transport Assessment Guidance was published in 2012. It aims to assist in the preparation of Transport Assessments (TA) for development proposals in Scotland such that the likely transport impacts can be identified and dealt with as early as possible in the planning process. The document sets out requirements according to the scale of development being proposed.
- The document notes that a TA will be required where a development is likely to have significant transport impacts but that the specific scope and contents of a TA will vary for developments, depending on location, scale, and type of development.

Local

Highland-wide Local Development Plan (2012) – The Highland-wide Local Development Plan (LDP) was adopted by The Highland Council (THC) in April 2012 and is the established planning policy for the Highlands. It sets out a settlement strategy and spatial framework for how the Council foresees development occurring in the forthcoming twenty-year period.

The LDP does not contain any specific policy guidance for the Proposed Development. However, Policy 56 is relevant with regards to general transport policy. The relevant transport elements from this policy are:

"Development proposals that involve travel generation must include sufficient information with the application to enable the Council to consider any likely on- and off- site transport implications of the development and should:

- *incorporate appropriate mitigation on site and/or off site, provided through developer contributions where necessary, which might include improvements and enhancements to the walking/cycling network and public transport services, road improvements and new roads; and*
- *incorporate an appropriate level of parking provision, having regard to the travel modes and services which will be available and key travel desire*

lines and to the maximum parking standards laid out in Scottish Planning Policy or those set by the Council.

When development proposals are under consideration, the Council's Local Development Strategy will be treated as a material consideration.

The Council will seek the implementation and monitoring of Green Travel Plans in support of significant travel generating developments."

Guidance on the Preparation of Transport Assessment (2014) – THC has prepared guidance on how Transport Assessments (TA) should be prepared for development sites within The Highlands. The guidance was published by THC in November 2014.

This TA has noted the guidelines and has provided the required assessment.

Policy Summary

- 7.2.2 The Proposed Development can align with the stated policy objectives and the design of the site and proposed mitigation measures will ensure compliance with national and local objectives.

7.3 Scope of Assessment

Effects Assessed in Full

- 7.3.1 The assessment has fully considered the transport and access issues arising from the construction phase of the proposed wind farm. The study has considered the following temporary effects:

- direct effects during construction on traffic flows in the surrounding study area;
- direct effects upon local road users; and
- effects upon local residents of an increase in construction traffic.

- 7.3.2 Where the effects meet the criteria set out in the IEMA guidance, a review of the effects on severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation and accidents / road safety has been undertaken.

Effects Scoped Out

Operational Effects

- 7.3.3 The traffic effects during the operational phase of the Proposed Development are likely to be insignificant as expected traffic flows will be less than two vehicle movements per week, far below the recognised thresholds for triggering a formal transport assessment. As such, the effects during the construction phase are scoped out of the assessment.

Decommissioning Effects

- 7.3.4 The traffic effects during the decommissioning phase can only be fully assessed closer to that period, 40 years on from the completion of the site. As elements of the development are likely to remain in-situ (such as cable trenches, access tracks, etc), 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, not further assessment of the

decommissioning phase has been considered at this point in time and has been scoped out of the assessment.

Consultation

7.3.5 Table 7.1 summarises the consultation responses received regarding transport and access matters and provides information on where and/or how they have been addressed in this assessment.

7.3.6 The following organisations made comment on transport matters during scoping discussion:

- THC Transport Department (as local roads agency); and
- Transport Scotland (as trunk roads agency).

7.3.7 Further comments from the British Horse Society and ScotWays were received during Scoping Opinion and are presented in Table 7.1

Table 7.1 Consultation Responses

Consultee	Date	Stage	Summary of Response	How Response has been addressed
The Highland Council – Transport Planning Team	14 May 2021	Scoping	Transport advise should be sought from Transport Scotland on their requirements for the public road they manage.	Transport Scotland has been consulted as part of the Scoping Opinion.
			THC require a submission of a Construction Traffic Management Plan (CTMP) for the approval of the Planning Authority.	Noted. A detailed CTMP will be submitted post consent and secured by planning condition. Details of information which will be contained within the CTMP is provided in the Mitigation section of this chapter.
			THC would generally expect a Transport Assessment (TA) to be submitted with any future planning application and a High National Traffic Forecast to be applied. It considers the proposed methodology acceptable.	The Transport Assessment is provided in Appendix 7.A . High National Traffic Forecasts growth factors have been applied to future year flows.
			The TA should: 1. Identify all public road affected by the development; 2. Establish current condition of the roads; 3. Determine the traffic generation and distribution of the proposals throughout the construction and operation periods to	The Transport Assessment is provided in Appendix 7.A and provides information on points 1, 3, 6 and 7. Point 2 – A before and after road survey would be undertaken prior to the start of construction works, with THC officers in attendance.

Consultee	Date	Stage	Summary of Response	How Response has been addressed
			<p>provide accurate data resulting from the Proposed Development;</p> <p>4. Outline current traffic flows including by public transport services, refuse vehicles, commercial users, pedestrians, cyclists and equestrians;</p> <p>5. Outline the impacts of the proposed traffic on the route, road users, adjacent communities, swept path assessments on pinch points and provision of trial points;</p> <p>6. Detail Cumulative impacts with other developments in progress and committed developments;</p> <p>7. Propose mitigation measures to address impacts of the Proposed Development; and</p> <p>8. Details of residual effects.</p>	<p>Point 4 – Existing active travel links are reviewed and traffic flows are provided in this Chapter.</p> <p>Point 5 is addressed in The AIL Route Survey Report presented in Appendix 7.B.</p> <p>Point 8 is addressed in this chapter in Table 7.9.</p>
British Horse Society	20 April 2021	Scoping Opinion Response	Infrastructure like gates, bridges, cattle grids and slippery surfaces should all be installed with equestrians in mind. Access control must always be the least restrictive option.	Noted.
ScotWays	27 April 2021	Scoping Opinion Response	ScotWays notes that the National Catalogue of Rights of Way (CROW) does not record any rights of way that cross or are close to the application site.	Noted.
Transport Scotland	26 April 2021	Scoping Opinion Response	Transport Scotland considers this approach to assess the environmental impacts detailed in the Scoping Report appropriate.	Noted.
			Transport Scotland is satisfied with obtaining traffic flow data from the UK Department for Transport (DfT) database and notes Transport Scotland's National Traffic Data System as an alternative source.	Noted. Details of the sources which were used to obtain the traffic information is provided in the Baseline Traffic Flows section of this chapter and in Appendix 7.A.
			Transport Scotland is satisfied with the approach to use "Low" NRTF factors, and that the assessment will consider the temporary change in traffic flows and the resultant, temporary effects on the study network during the construction phase.	Noted. THC has requested that "High" NRTF factors are applied and therefore "High" factors have been used in the assessment.

Consultee	Date	Stage	Summary of Response	How Response has been addressed
			Transport Scotland considers it appropriate that the abnormal loads route will be assessed through swept path analysis to determine where any upgrades will be required to accommodate the delivery of the turbine components.	The AIL Route Survey Report presented in Appendix 7.B outlines where upgrades are required to accommodate the delivery of the turbine components.
			Transport Scotland requests that a full Abnormal Loads Assessment report should be provided with the Environmental Impact Assessment Report (EIAR) that identifies key pinch points on the trunk road network, contains swept paths and details of any required mitigation.	The AIL Route Survey Report presented in Appendix 7.B .

7.4 Baseline Characterisation

Study Area

7.4.1 The highway links assessed as part of this assessment are identified below:

- A9, between Daviot and Granish;
- A95, between Granish and Dulnain Bridge;
- A938, to the east of Duthil; and
- B9007, between Duthil and the site access.

7.4.2 The extent of the study area is shown in **Appendix 7.A**.

Desk Study

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

- Relevant transport policy;
- Accident data;
- Sensitive location;
- Any other traffic sensitive receptors in the area (core paths, routes, communities, etc.);
- Ordnance Survey (OS) plans;
- Potential origin locations of construction staff and supply locations for construction material to inform extent of local area roads network to be included in the assessment; and
- Constraints to the movement of the Abnormal Indivisible Loads (AILs) through a Route Survey including swept path assessments.

7.4.4 The methodology adopted within this assessment has been developed from guidance given in the Institute of Highways and Transportation (IHT) 'Guidelines for Traffic Impact Assessment' and also the IEMA 'Guidelines for the Environmental Assessment of Road Traffic'. Methodologies detailed in the IHT guidelines recommend that EIAs for large developments should be assessed in accordance with the IEMA guidelines noted above.

Field Surveys

7.4.5 The field survey comprised a detailed site visit to the site to review the potential access routes and potential constraints.

7.5 Assessment Methodology and Significance Criteria

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

- Determine baselines;
- Review development for impacts;
- Evaluate significance of effects on receptors;
- Identify mitigation; and
- Assess residual effects.

7.5.2 The IEMA 'Guidelines for environmental Impact Assessment' (2005) notes that the separate 'Guidelines for the Environmental Assessment of Road Traffic' (1993) document should be used to characterise the environmental traffic and transport effects (off-site effects) and the assessment of significance of major new developments. The guidelines intend to complement professional judgement and the experience of trained assessors.

7.5.3 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.

7.5.4 The IEMA Guidelines includes 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 7.2.

Table 7.2 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	Where the road is a local A or B class road, capable of regular use by HGV traffic.	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition.	Where roads have no adjacent settlements. Includes new strategic trunk roads that would

Receptor	Sensitivity			
	High	Medium	Low	Negligible
	frequent use by HGVs. Includes roads with traffic control signals, waiting and loading restrictions, traffic calming measures.	Includes roads where there is some traffic calming or traffic management measures.	Includes roads with little or no traffic calming or traffic management measures.	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.

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

Magnitude of Effect

7.5.6 The following rules, also taken from the IEMA Guidelines are used to determine which links with the study area should be considered for detailed assessment:

- Rule 1 – include highway links where traffic flows are predicted to increase by more than 30% (or where the number of heavy goods vehicles is predicted to increase by more than 30%); and
- Rule 2 – include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.

7.5.7 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 Guidelines states that “severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery.” Further, “Changes in traffic of 30%, 60%, and 90% are regarded as producing ‘slight’, ‘moderate’, and ‘substantial’ [or minor, moderate, and major] changes in severance respectively”. However, the Guidelines acknowledge that “the measurement and prediction of severance is extremely difficult”. (Para 4.28);

- Driver delay – the IEMA Guidelines note that these delays are likely to be “significant [or major] when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.” (Para 4.32)
- Pedestrian delay – the delay to pedestrians, as with driver delay, is likely only to be major when the traffic on the network surrounding the development is already at, or close to, the capacity of the system. An increase in total traffic of approximately 30% can double the delay experienced by pedestrians attempting to cross the road and would be considered major;
- Pedestrian amenity – the IEMA Guidelines suggests that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or its lorry component) is halved or doubled (Para 4.39). It is therefore considered that a change in the traffic flow of -50% or +100% would produce a major change in pedestrian amenity;
- 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 major changes respectively; and
- Accidents and safety – professional judgement would be used to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents.

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

Significance

7.5.9 To determine the overall significance of effects, the results from the receptor sensitivity and magnitude of change assessments are correlated and classified using a scale set out in Table 2.4 of Volume 11, Section 2, Part 5 of the Design Manual for Roads and Bridges (DMRB) and summarised in Table 7.3.

7.5.10 The DMRB defines the potential changes in effect as follows:

- Large: 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;
- Slight: 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; and
- Neutral: No effects or those that are imperceptible.

Table 7.3 Significance of Effects

Receptor Sensitivity	Magnitude of Impacts			
	High	Medium	Low	Negligible
High	Major	Major / Moderate	Moderate / Negligible	Negligible
Medium	Major / Moderate	Moderate	Negligible	Negligible / Neutral
Low	Moderate / Negligible	Negligible	Negligible	Negligible / Neutral
Negligible	Negligible	Negligible	Negligible / Neutral	Neutral

7.5.11 In terms of the EIA Regulations, effects would be considered of significance where they are assessed to be Major or moderate. Where an effect could be one of the Major / Moderate or Moderate / Negligible, professional judgement would be used to determine which option should be applicable.

Limitations and Assumptions

7.5.12 The assessment is based upon average traffic flows obtained from the Department for Transport (DfT) database. Activities at the site may fluctuate between one day and another and it is not possible to fully develop a day by day traffic flow estimate as no 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).

7.5.13 The assessment used however does provide sufficient information to allow an informed decision to be taken with respect to the identification and assessment of likely significant impacts relating to transport matters.

7.5.14 Assumptions on the origin points for materials have been made to provide a worst-case assessment scenario. Should these origin points change, the effects on surrounding areas may alter to those presented in the assessment.

7.6 Baseline Conditions

Current Baseline

7.6.1 Access to the site would be taken from the operational Tom na Clach Wind Farm (hereafter referred to as the 'Operational Scheme') access junction on B9007 which will be upgraded, if required, to meet manufacturer standards for the larger loads associated with the Proposed Development. The finalised layout of the junction would be agreed with THC via a Road Opening Permit, once the turbine procurement exercise has been completed.

7.6.2 Vehicles would then travel towards the turbine locations via the new and existing wind farm access tracks. The new access tracks would be designed to accommodate all predicted loads and traffic for both the construction and operational phases of the Proposed Development.

- 7.6.3 Abnormal Indivisible Load deliveries would be delivered to the site from the Port of Inverness and subsequently by the A9, A95, A938 and B9007.
- 7.6.4 The A9 is a major road which connects Stirling to Scrabster and forms part of the trunk road network. The road is operated by BEAR Scotland on behalf of Transport Scotland. Between Inverness and the north of Moy the road comprises a dual-carriageway which then merges into a single carriageway for the remainder of the route within the study area. Within the study area, the road is subject to a 60 mph speed limit in the main, although sections of dual carriageway have a 70 mph limit.
- 7.6.5 The A95 forms part of the trunk road network and connects Aviemore to Keith. The road is operated by Bear Scotland on behalf of Transport Scotland. The A95 is subject to the national speed limit.
- 7.6.6 The A938 is a single carriageway which is maintained by THC and is approximately 6m in width. There are a number of field accesses along the road as well as a small number of farm / residential accesses outwith Dulnain Bridge and Duthill.
- 7.6.7 The A938 is mainly subject to the national speed limit, which reduces to 30mph when travelling through Dulnain Bridge and reduces to 40mph through Duthill. In the vicinity of the A938 / B9007 priority junction, the A938 is subject to the national speed limit.
- 7.6.8 The A938 is a single carriageway which is maintained by THC and is approximately 6m in width. There are a number of field accesses along the road as well as a small number of farm / residential accesses outwith Dulnain Bridge and Duthill.
- 7.6.9 The A938 is mainly subject to the national speed limit, which reduces to 30mph when travelling through Dulnain Bridge and reduces to 40mph through Duthill. In the vicinity of the A938 / B9007 priority junction, the A938 is subject to the national speed limit.
- 7.6.10 The B9007 is a single carriageway which is subject to the national speed limit and is maintained by THC. The B9007 is approximately 4m in width. Passing places are present and signed along the length of the route.
- 7.6.11 The southern section of the B9007 was previously used as a delivery route for the Operational Scheme.

Baseline Traffic Flows

- 7.6.12 In order to establish the baseline situation, traffic survey data was sought along the road network in the vicinity of the site.
- 7.6.13 Traffic data used in this assessment has therefore been sourced from historic count data provided by the UK Department for Transport (DfT). The locations of the traffic counts are presented in **Appendix 7.A**.
- 7.6.14 The latest flows outlined by the UK DfT are for the year 2019 which have been unaffected by travel restrictions associated with the Covid-19 pandemic. In order to calculate the 2021 flows, a high National Road Traffic Forecast (NRTF) was applied to the 2019 flows. The NRTF high growth factor for 2019 to 2021 is 1.030.
- 7.6.15 Table 7.4 summarises baseline traffic data collected and used in this assessment.

Table 7.4 Existing Traffic Conditions (2021)

Survey Location	DfT Count Site	Cars & Lights	HGV	Total
A9, to the north of Moy	20726	6,587	735	7,322
A95, to the north of Avielochan	1056	5,691	619	6,310
A95, to the south of Dulnain Bridge	77101	3,797	570	4,366
A938, to the east of Dulnain Bridge	20867	2,093	176	2,269
A938, to the south of Tullochgribban High	30986	1,710	139	1,849
B9007, to the south of the site access	811532	453	21	474

Pedestrian and Cyclist Networks

7.6.16 A review of THC's Core Path Plan (<https://highland.maps.arcgis.com/apps/webappviewer>) indicates that there are no Core Paths along the A938 or the B9007 on the route towards the site access. The pedestrian network within the study area is limited which would be typical of a rural setting.

7.6.17 A review of Sustrans cycle network plan of the United Kingdom indicates that there are no National Cycle Routes within the vicinity of the site.

Accident Review

7.6.18 Road traffic accident data for the 3-year period commencing 01 January 2018 through to the 31st December 2020 was obtained for the roads within the study area from the online resource crashmap.co.uk which uses data collected by the police about road traffic crashes occurring on British roads where someone is injured.

7.6.19 A summary analysis of the incidents indicates that:

- A total of 28 accidents were recorded within the study area over the reviewed three-year period;
- Of those 28 accidents, 17 were recorded as "Slight", 11 were recorded as "Serious" and none recorded as "Fatal";
- A total of 16 accidents were recorded along the A9, ten along the A95, one along the A938 and one at the A938 / B9007 priority junction;

- Three accidents (two serious and one slight) were recorded in the vicinity of the A9 / A95 priority junction and each involved HGVs;
- Two incidents (one serious and one slight) were recorded in the vicinity of the A95 / B9152 priority junction and involved cars;
- Two incidents were recorded in the vicinity of the A938 / A95 priority junction. One of the incidents involved a car and an HGV. There is no vehicle information available on Crashmap for the other accident;
- HGVs were involved in a total of 14 accidents which included seven along the A9, six along the A95 and one at the A938 / B9007 priority junction;
- Young drivers were involved in a total of five accidents;
- Four accidents recorded a child casualty;
- None of the recorded incidents involved a motorcycle; and
- None of the recorded incidents involved a pedestrian or cyclist.

7.6.20 The locations of the recorded accidents within the study area are illustrated in **Appendix 7.A**.

Future Baseline Traffic Flows

7.6.21 Background traffic growth will occur on the local road network irrespective of whether the Proposed Development is constructed. Projected baseline growth flows for the expected year of construction (anticipated to be 2023) have been calculated by applying NRTF high growth factors.

7.6.22 The future year baseline traffic flows are provided in Table 7.5 for the start of construction in 2023.

Table 7.5 Existing Traffic Conditions (2023)

Survey Location	Cars & Lights	HGV	Total
A9, to the north of Moy	6,745	753	7,498
A95, to the north of Avielochan	5,827	634	6,461
A95, to the south of Dulnain Bridge	3,888	583	4,471
A938, to the east of Dulnain Bridge	2,143	180	2,324
A938, to the south of Tullochgribban High	1,751	142	1,893
B9007, to the south of the site access	464	21	485

7.7 Identification and Evaluation of Key Impacts

- 7.7.1 This section provides an assessment of the effects arising from the traffic predicted to be generated by the Proposed Development.
- 7.7.2 Table 7.6 outlines the summary of receptor sensitivity to be assessed in this assessment.

Table 7.6 Summary of Receptor Sensitivity

Receptor	Rationale	Receptor Sensitivity
A9 Users	A class roads that can accommodate HGV traffic with no traffic calming facilities present.	Low
A95 / A938 Users	Where a location includes individual dwellings or scattered settlements with no facilities.	Negligible
B9007 Users	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs	High
Residents in Dulnain Bridge	Location is a small rural settlement, few community or public facilities or services.	Low

7.8 The 'Do Nothing' Scenario

- 7.8.1 In the absence of the Proposed Development, it is anticipated that traffic growth along the A9 and A938 will occur as these links will experience increased traffic flows from other development pressures, tourism traffic and population flows.

7.9 Design Layout Considerations

- 7.9.1 The existing access junction will be upgraded in order to meet manufacturer standards for the larger loads.
- 7.9.2 Visibility splays of 160m in both directions with a set-back distance of 4.5m from the centre of the access junction will be provided at the junction. The finalised design of the junction will be confirmed via a Road Opening Permit with THC upon the completion of the turbine procurement exercise.

7.10 Assessment of Effects

- 7.10.1 The assessment is based upon the construction effects that may occur within the study area. In order to assess the effects, it is necessary to determine the likely traffic generation associated with the Proposed Development.
- 7.10.2 During the assumed 24-month construction period, the following traffic would require access to the site:
- Staff transport, either cars or staff minibuses;
 - Construction equipment and materials, deliveries of machinery and supplies such as concrete raw materials;
 - AILs consisting of the wind turbine components and heavy lift crane(s); and
 - Escort vehicles for AIL deliveries.

- 7.10.3 Except for the turbine components, most traffic would be normal construction plant and would include grading tractors, excavators, high-capacity cranes, forklifts and dumper trucks. Most would arrive at the site on low loaders.
- 7.10.4 The turbines are delivered in component sections for transport and would be assembled at the site. The nacelle, hub, drive train, blade, tower sections are classified as AIL due to their weight and/or length, width and height when loaded.
- 7.10.5 The components can be delivered on a variety of transport platforms with typical examples illustrated in the appendices.
- 7.10.6 In addition to the turbine deliveries, two high-capacity erection cranes would be needed to offload some components and erect the turbines. The main crane is likely to be a mobile crane with a capacity up to 1,000 tonnes that would 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.
- 7.10.7 The resulting traffic generation profile is attached in **Appendix 7.A** for review. The peak of construction occurs in Month 7 with 34 HGV movements per day (17 inbound and 17 outbound) and 27 Car / LGV movements (14 inbound trips and 14 outbound trips). These figures on average indicate approximately an additional 3 HGV movements per hour on the network at the peak of construction activities.
- 7.10.8 The distribution of development traffic on the network would vary depending on the types of loads being transported. The assumptions for the distribution of construction traffic during the peak months would be as follows:
- All construction traffic enters the site via the site access junction on the B9007;
 - Deliveries associated with the batching of concrete on site will arrive via the A9;
 - Sand and aggregate for use in the on-site batching plant will be sourced from local quarries. For the purposes of the assessment, it is assumed that all material will be taken from the quarry near Scatraig. The BoP contractor will confirm final quarry and material sourcing with THC in the CTMP;
 - HGV deliveries associated with the HV electrical installation, control buildings, batteries, etc will arrive via the A9;
 - Staff working at the site are likely to be based locally. It is assumed that 60% will come from Inverness while 20% will travel from the south of Aviemore and 20% will travel to the east of Dulnain Bridge; and
 - General site deliveries will be via the A9 and A95 to site. These are generally smaller rigid HGV vehicles are more suitable for the topography of the B9176, unlike articulated HGVs.
- 7.10.9 Loads relating to the turbine components would be delivered on the route illustrated in **Appendix 7.B**. The closest feasible port to the site that has previously accommodated onshore wind farm developments is Port of Inverness. From the Port of Inverness, loads would travel to site via the A9, A95, A938 and B9007.

7.10.10 To estimate the total trips through the study area during the peak of the construction phase, traffic was distributed through the network and combined with the 2023 Baseline traffic data. The resulting figures were compared with the weekday 2023 Baseline traffic to provide a percentage change in movements.

Table 7.6 Traffic Impact Summary

Survey Location	Cars & Lights	HGV	Total	Cars & Lights % Increase	HGV % Increase	Total Traffic % Increase
A9, to the north of Moy	6,761	786	7,548	0.2%	4.4%	0.7%
A95, to the north of Avielochan	5,849	667	6,516	0.4%	5.2%	0.9%
A95, to the south of Dulnain Bridge	3,910	617	4,526	0.6%	5.7%	1.2%
A938, to the east of Dulnain Bridge	2,170	214	2,384	1.3%	18.4%	2.6%
A938, to the south of Tullochgribban High	1,778	176	1,954	1.6%	23.3%	3.2%
B9007, to the south of the site access	491	54	546	5.9%	157.6%	12.5%

*Please note minor variances due to rounding may occur.

7.10.11 The total traffic movements are not predicted to increase by more than 30% on all of the study area.

7.10.12 Results outlined in Table 7.6 suggest that the total HGV movements along the B9007 is expected to increase by 157.6%. While the increase in total HGV movements is statistically significant, it is generally caused by the low HGV traffic along the B9007. The peak construction period will see an additional 33 HGV journeys (17 inbound and 17 outbound). This represents less than two inbound trips every hour during normal construction activities, which is not considered significant in terms of total flows.

7.10.13 The significance of the potential effects has been determined using the rules and thresholds outlined in Table 7.3. Table 7.7 summarised the significance on the receptors for the construction phase.

Table 7.7 Construction Phase Effects Summary

Receptors	Severance	Driver Delay	Pedestrian Delay	Amenity	Fear	Accidents & Safety
A9 Users	Slight	Slight	Slight	Slight	Slight	Slight
A95 / A938 Users	Slight	Slight	Slight	Slight	Slight	Moderate
B9007 Users	Moderate	Moderate	Slight	Moderate	Moderate	Moderate
Residents in Dulnain Bridge	Slight	Slight	Slight	Slight	Slight	Slight

7.10.14 The assessment of significance suggests that accidents in locations along the A95 and A938 as well as the construction effects for B9007 road users are considered significant effects, prior to the application of mitigation measures.

7.10.15 A review of existing road capacity has been undertaken using the Design Manual for Roads and Bridges, Volume 15, Part 5 "The NESAs Manual". The theoretical road capacity has been estimated for each of the road links that makes up the study area. The results are summarised in Table 7.8.

Table 7.8 2023 Daily Traffic (12hr) Capacity Review Summary

Survey Location	2023 Baseline Flow	Theoretical Road Capacity	2023 Base + Development Flows	2023 Base + Development Used Capacity	Spare Road Capacity
A9, to the north of Moy	7,498	28,800	7,548	26.21%	73.79%
A95, to the north of Avielochan	6,461	28,800	6,516	22.63%	77.37%
A95, to the south of Dulnain Bridge	4471	28,800	4,526	15.72%	84.28%
A938, to the east of Dulnain Bridge	2,324	21,600	2,384	11.04%	88.96%
A938, to the south of Tullochgribban High	1,893	21,600	1,954	9.05%	90.95%
B9007, to the south of the site access	485	3,360	546	16.24%	83.76%

*Please note minor variances due to rounding may occur.

7.10.16 The results indicate there are no road capacity issues with the Proposed Development and ample spare capacity exists within the trunk and local road network to accommodate construction phase traffic.

7.11 Operational Effects

7.11.1 It is predicted that during the operation of the wind farm there would be two vehicle movements per vehicle movements per week for maintenance purposes associated with the Proposed Development. Also, there may be occasional abnormal load movements to deliver replacement components to the wind farm site in the unlikely event of a major failure.

7.12 Decommissioning Effects

7.12.1 Prior to decommissioning of the site, anticipated to be 40 years from commissioning, a traffic assessment would be undertaken and appropriate traffic management procedures followed.

7.12.2 The decommissioning phase would result in fewer trips on the road network than the construction phase as it is considered likely that elements of infrastructure such as access tracks and electrical connections would be left in place and components may be broken up onsite to allow transport by reduced numbers of standard HGVs.

7.13 Cumulative Effects

7.13.1 Cairn Duhie Wind Farm (13/04142/S36) was granted section 36 consent and deemed planning permission in 2017 for 20 wind turbines with a blade tip height of up to 110m. A re-design of the consented scheme (21/01521/S36) to comprise a total of 16 turbines with a blade tip height of up to 149.9m.

7.13.2 Cairn Duhie has not been included as Committed Development in the traffic assessments as the revised design is not consented and it is not anticipated that the construction period will overlap with the construction period of the Proposed Development.

7.13.3 It should also be noted that the proposed construction route associated with the consented Cairn Duhie Wind Farm will access the wind farm site from the north via the A96 and A939, and as such will not impact the study area for the Proposed Development.

7.13.4 Ourack Wind Farm (20/00082/SCOP) is currently in the Scoping phase of its planning application. Ourack Wind Farm site is located to the east of the Proposed Development, within 20km. It is proposed that the site will be accessed from the A940.

7.13.5 The Lethen Wind Farm site (21/00666) is located to the east of the Proposed Development and if consented, it is proposed that vehicles will access the site via the Operational Development's access along the B9007. The site has been submitted into planning, however as the scheme has not been consented, it is not committed development and would not form part of the baseline assessment,

7.13.6 Should either the Lethen or Ourack schemes under planning consideration at present be consented, any crossover of traffic with the Proposed Development flows would be addressed via a traffic management plan. The inclusion of further traffic flows in the base line (i.e. including non-consented traffic) would dilute the potential impact that the Proposed Development would have. As such, the approach taken is considered to be an overly robust assessment.

7.13.7 The use of high NRTF growth factors for background traffic is considered robust for addressing smaller, non-significant traffic generation caused by smaller

developments within the study area. As such, a robust assessment case has been provided in this report.

7.14 Mitigation

Mitigation During Construction

7.14.1 During the construction period, a project website, blog or Twitter feed would be regularly updated to provide the latest information relating to traffic movements associated with vehicles accessing the site. This would be agreed with the local roads authority.

7.14.2 The following measures would be implemented during the construction phase through the CTMP:

- Where possible the detailed design process would minimise the volume of material to be imported to site to help reduce HGV numbers;
- A site worker transport and travel arrangement plan, including transport modes to and from the worksite (including pick up and drop off times);
- A Traffic Management Plan;
- 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 site entrance, depending the views of THC;
- Unless otherwise agreed with THC, normal site working hours would be limited to between 0700 and 1900 (Monday to Friday and 0700 and 1300 (Saturday) though component delivery and turbine erection may take place outside these hours;
- Appropriate traffic management measures would be put in place on the B9007 to avoid conflict with general traffic, subject to the agreement of the roads authority. Typical measures would include HGV turning and crossing signs and banksman where necessary;
- Provide construction updates on the project website and or a newsletter to be distributed to residents within an agreed distance of the site.
- Adoption of a voluntary speed limit of 15 mph for all construction vehicles through Dulnain Bridge;

All drivers would be required to attend an induction to include:

- A tool box 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.
- 7.14.3 THC may request that an agreement to cover the cost of abnormal wear on its network is made.
- 7.14.4 Video footage of the pre-construction phase condition of the abnormal loads access route and the construction vehicles route would be recorded to provide a baseline of the condition of the road prior to any construction work commencing. This baseline would inform any change in the road condition during the construction phase. Any necessary repairs would be coordinated with THC's roads team. Any damage caused by traffic associated with the Proposed Development during the construction period that would be hazardous to public traffic would be repaired immediately.
- 7.14.5 Damage to road infrastructure caused directly by construction traffic would be made good and street furniture that is removed on a temporary basis would be fully reinstated. It is anticipated that a Section 96 Agreement will be developed with THC to ensure that the road network does not deteriorate as a result of the proposed construction traffic.
- 7.14.6 There would be a regular road review and any debris and mud would be removed from the carriageway using an onsite road sweeper to ensure road safety for all road users.

AIL Route Survey Report

- 7.14.7 The AIL Route Survey Report (RSR) highlights a number of constraint points which have been assessed within the report using swept path assessment software. The locations of the constraint points and the swept path drawings are included in **Appendix 7.B**.
- 7.14.8 The RSR identifies key points and issues associated with the route that requires the temporary removal of physical obstructions such as bollards and road signs, as well as the trimming of vegetation. Additional mitigation outlined in the RSR highlights that a load bearing surface will be required to be laid at a number of locations along the delivery route, as well as reviewing the vertical profile of the road to ascertain if tar wedges will be required to prevent grounding.
- 7.14.9 The clearance of overhead power lines at a number of locations along the delivery route is to be reviewed with the utility provider before moving loads to ensure that there is sufficient head height and flashover protection for all temperature ranges.
- 7.14.10 The RSR notes that while AIL components are being delivered, parking should be suspended at A938 Dulnain Bridge and a Temporary Traffic Regulation Order (TTRO) may be necessary.
- 7.14.11 The following substantive remedial works are identified as part of the Swept Path Assessment to accommodate the predicted AIL movements at Points of Interest (POI) which are detailed in the RSR:
- POI 21: A95 / A938 Junction – Due to the length of the proposed loads and the orientation of the road junction it is not possible to utilise the existing junction and the mitigation used by the Operational Scheme

that is located in the verge. It is proposed that loads will turn left onto a new track in advance of the junction. Detailed discussions with Transport Scotland and THC should be held to confirm the proposed mitigation as a new junction will be created on both the A95 and A938.

- POI 60: Proposed Site Access, B9007 –The junction will need to be upgraded to meet manufacturer standards for the larger loads if it is used to access the proposed site.

7.14.12 AIL mitigation works can be designed to be temporary in nature to enable the restoration to their original condition (if required by THC and Transport Scotland).

Abnormal Load Management Plan

7.14.13 An AIL Management Plan would be developed. All abnormal load deliveries would be undertaken at appropriate times (to be discussed and agreed with the relevant roads authorities and police) with the aim of minimising the effects on the local road network. It is likely that the abnormal load convoys would travel in mid-morning to avoid school drop off and pick up times.

7.14.14 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.

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

7.14.16 The location and numbers of signs would be agreed post consent and would form part of the wider Traffic Management Proposal for the project.

7.14.17 The Abnormal Load Transport Management Plan would also include:

7.14.18 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;
- 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 committee 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.

7.14.19 Information on the movement of AIL convoys will be provided to local media outlets to help assist the public. These will include:

- Local newspapers;
- Local radio stations;
- Applicant website; and
- THC / Transport Scotland website.

7.14.20 Information will relate to expected vehicle movements on the A939 through to the site access. It is intended that this level of information will make local residents aware of convoy movements and help reduce any potential conflicts.

7.14.21 Advance warning signs could be installed on the approaches to the affected road network, subject to the agreement of the road authorities.

A Staff Sustainable Access Plan

7.14.22 Staff Travel Plan would 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; and
- Car parking management.

7.15 Assessment of Residual Effects

7.15.1 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 7.9.

7.15.2 The assessment confirms the effects would be minor in nature and they would be not significant. The traffic effects are transitory in nature. No long-lasting detrimental transport or access issues are associated with the construction phase of the proposed development.

Residual Construction Effects

7.15.3 This section considers the assessment of traffic effects following the incorporation of the mitigation measures identified above. Effects during the operational phase were scoped out of the assessment, which therefore only considers those arising during the construction phase.

7.15.4 Table 7.9 summarises the assessment of residual effects identified in the evaluation with mitigation in place.

7.15.5 It should be borne in mind that the assessment has focussed on the peak in construction traffic activities and that the percentage increases noted are high, given the relatively low level of HGV traffic on the existing network.

7.15.6 The construction period is transitory in nature and all impacts will be short lived and temporary.

Residual Operational Effects

7.15.7 No residual operational effects are predicted as part of the Proposed Development.

Residual Decommissioning Effects

7.15.8 No residual decommissioning effects are predicted as part of the Proposed Development.

Residual Cumulative Effects

7.15.9 No residual cumulative effects are predicted as part of the Proposed Development.

7.16 Summary

7.16.1 The Proposed Development would lead to a temporary increase in traffic volumes on the study road network during the construction phase. Traffic volumes would fall off considerably outside the peak period of construction.

7.16.2 The maximum traffic impact associated with construction is predicted to occur in Month 7 of the programme. The greatest impact would occur at the site access where an additional 61 trips are included to the network.

7.16.3 The development traffic at the peak of construction would result in 33 HGV movements per day (17 inbound and 17 outbound) and 27 Car / LGV movements (14 inbound trips and 14 outbound trips).

7.16.4 No significant capacity issues are expected on any of the roads within the study area due to the additional construction traffic movements associated with the Proposed Development as background traffic movements are low, the links are of reasonable standard and appropriate mitigation is proposed.

7.16.5 A review of the road network has been undertaken to assess the feasibility of transporting turbines to the site and no significant issues have been noted.

7.16.6 Traffic levels during the operational phase of Proposed Development would be one or 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 may be left in situ and others broken up onsite.

7.16.7 The movement of AIL traffic would require small scale and temporary remedial works at a number of locations along identified delivery route.

Table 7.9 Summary of Potential Significant Effects of the Proposed Development

Likely Significant Effect	Mitigation Proposed	Means of Implementation	Outcome/Residual Effect
Construction			
Severance	CTMP proposals	Implementation of CTMP via planning condition.	Not significant
Driver delay	CTMP Proposals and improved signage	CTMP Proposals and improved signage.	Not significant
Pedestrian delay	CTMP proposals	CTMP Proposals and improved signage scheme.	Not significant
Pedestrian amenity	CTMP proposals	CTMP Proposals and improved signage scheme.	Not significant
Fear and intimidation	CTMP proposals	CTMP Proposals and improved signage scheme.	Not significant
Accidents and safety	CTMP Proposals and improved. Junction Design to THC standards.	CTMP Proposals, improved signage and develop signage strategy and agree works with THC. Construction of THC compliant access junction.	Not significant
Severance	CTMP proposals	Implementation of CTMP via planning condition.	Not significant
Operation			
None	None	None	None
Decommissioning			
None	None	None	None