Chapter 12 Traffic and Transport

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List of Abbreviations

Abbreviation	Description
ATC	Automated Traffic Counts
AIL	Abnormal Indivisible Loads
HGV	Heavy Goods Vehicles
LGV	Light Goods Vehicles
NRTF	National Road Traffic Forecast
PIA	Personal Injury Accident
RSR	Route Survey Report
THC	The Highland Council
TPC	Travel Plan Coordinator
VMS	Variable Message Signs

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12. Traffic and Transport

12.1. Executive Summary

12.1.1. Access to the site will be taken directly from the B9007 using the existing priority T-junction access to the Tom nan Clach Wind Farm.

12.1.2. Existing traffic data established a base point for determining the impact during the construction phase and was factored to future levels to help determine the effect of construction traffic on the local road network.

12.1.3. The construction traffic will result in a temporary increase in traffic flows on the road network surrounding the Proposed Development. The maximum traffic effect associated with construction of the Proposed Development is predicted to occur in Month 7 of the construction programme. During this month, an average of 112 Heavy Goods Vehicles (HGV) movements is predicted per day and it is estimated that there will be a further 70 car and light van movements per day to transport construction workers to and from the site.

12.1.4. 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 slight or insignificant but as they will occur during the construction phase only, they are temporary and reversible.

12.1.5. Traffic levels during the operational phase of Proposed Development will 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 on-site.

12.1.6. The movement of Abnormal Indivisible Loads (AIL) traffic will require small scale and temporary remedial works at a number of locations along the identified delivery route.

12.2. Introduction

12.2.1. This chapter provides an assessment of the potential effects of the Proposed Development on receptors along the transport routes resulting from vehicle movements associated with the construction, operation and decommissioning phases.

12.2.2. 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.

12.2.3. A high-level overview of the effects of the traffic movements has been considered in accordance with the 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.

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

12.2.5. This chapter should be read in conjunction with **Appendix 12.1: Transport Assessment**.

12.3. Legislation, Policy and Guidelines

12.3.1. Relevant policy and guidance documents have been reviewed and taken into account as part of this assessment, which includes the following:

- Scottish Planning Policy (SPP) (2014):
- Planning Advice Note (PAN) 75;
- Transport Assessment Guidance (2012);
- Onshore Wind Turbines; Online Renewables Planning Advice (2014);
- Highland-wide Local Development Plan (2012); and
- Guidance on the Preparation of Transport Assessments (2014).

Scottish Planning Policy (SPP) (2014)

12.3.2. SPP is a statement of Scottish Government policy which outlines how land use planning matters should be addressed throughout Scotland. In relation to development management, the SPP notes that:

"Where a new development or a change of use is likely to generate a significant increase in the number of trips, a transport assessment should be carried out. This should identify any potential cumulative effects which need to be addressed"

Planning Advice Note (PAN) 75

12.3.3. 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)

12.3.4. 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 effects 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.

12.3.5. The document notes that a TA will be required where a development is likely to have significant transport effects but that the specific scope and contents of a TA will vary for developments, depending on location, scale and type of development.

Onshore Wind Turbines; Online Renewables Planning Advice (2014)

12.3.6. The most recent Scottish Government advice note regarding onshore wind turbines was published in 2014. The advice note identifies the typical planning considerations in determining applications for onshore wind turbines including landscape impact, impacts on wildlife and

ecology, shadow flicker, noise, ice throw, aviation, road traffic impacts, cumulative impacts and decommissioning.

12.3.7. In terms of road traffic impacts, the guidance notes that in siting wind turbines close to major roads, pre-application discussions are advisable as this is important for the movement of AIL during the construction period, ongoing planned maintenance and for decommissioning (if applicable).

Highland-wide Local Development Plan (2012)

12.3.8. 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.

12.3.9. The LDP does not contain any specific policy guidance for the Proposed Development. However, Policy 56 is relevant with regards 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."

Roads and Transport Guidelines for New Developments (2013)

12.3.10. THC's *Roads and Transport Guidelines for New Developments* document provides guidance in relation to transport implications of onshore wind farm developments. The document notes that:

"For wind farm proposals, a developer should be aware that the Council will require a Transportation Assessment (TA) to be submitted that must consider the existing road network, transportation constraints and potentially sensitive routes or communities.

A wind farm vehicular site access must provide appropriate visibility splays and suitable surface water drainage. Within the site, the wind turbines are likely to be located some distance from the nearest public road, requiring internal access tracks to be constructed. As the access tracks need to accommodate abnormal loads, they have to be of a suitable width. These tracks are normally constructed from hard-core material and the developer will usually be encouraged/allowed to use material obtained from borrow pits within the site area, to reduce construction traffic. On-site concrete batching should also be considered, as this can also result in a reduction of associated vehicles on the local road network.

A suitable turning area must be constructed within the site, to accommodate abnormal load delivery vehicles, construction vehicles and future maintenance vehicles. During the construction period, a wheel-wash system shall be provided."

Guidance on the Preparation of Transport Assessments (2014)

12.3.11. THC has published guidance on how Transport Assessments (TA) should be prepared for development sites within The Highlands. The guidance was published by THC in November 2014.

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

12.4. Consultation

12.4.1. In undertaking the assessment, a request for a Scoping Opinion was issued to transport agencies that have an interest in the surrounding road network, which includes The Highland Council as local roads agency and Transport Scotland as the trunk road agency.

12.4.2. Consideration has been given to the scoping responses and other consultation undertaken as detailed in **Table 12.1** below.

Table 12.1 – List of Consultee Responses

Consultee	Consultation Response	Applicant Action
The Highland Council Scoping Opinion (24/03/2021)	THC welcomes that Section 10.2 includes reference to our published Roads and Transport Guidelines for New Developments and our Guidance on the Preparation of Transport Assessments.	Noted, these guidance documents are referred to in **Section 12.2.**
	Whilst THC welcome the intention to review road collision data for the roads impacted by construction traffic associated with this development, they recommend that the data reviews the last 5-years' worth of available data, not the 3-years proposed in Section 10.3.3.	The last 5-years' worth of accident data are detailed in **Section 12.5: Accident Review**.
	Expect the EIA to set out the anticipated breakdown of operational and decommissioning traffic movements (numbers and vehicle types) and demonstrating that they would be less onerous on the local public road network than those predicted for the proposed construction.	Decommissioning traffic is less than the construction phase traffic as elements of the site will remain in situ (cables , culverts and access tracks for example) and would be repurposed to support other uses in the future. No further assessment is therefore considered necessary at this stage. A decommissioning plan will be prepared once the site reaches the end of its operational life and a *Decommissioning Traffic Management Plan* will be prepared at that time.
	THC expect the assessment to also consider the physical capability of local public roads to accommodate impacts from other construction-related traffic.	This is provided **Route Survey Report** is presented in **Appendix 12.1**.
	THC notes that the submission will also need to confirm the intended routing of other construction-related traffic to and from the development site and justify its adequacy for the anticipated vehicle types and numbers expected.	The route of construction traffic is provided in **Appendix 12.1 Transport Assessment, Figure 4**.

Consultee	Consultation Response	Applicant Action
	THC's preference will be to restrict that to the same route proposed for abnormal load turbine components.	The proposed construction traffic route will avoid the section of road along the A938 between the A9 at Carrbridge and Duthill.
	THC expect the assessment to also consider the physical capability of local public roads to accommodate impacts from other construction-related traffic. Whilst the B9007 Duthill to Ferness Road has had passing place improvements delivered through the Tom nan Clach Wind Farm scheme, those enhanced passing places were keyed into an existing main carriageway that is now showing signs of failure.	The assessment is contained in the **Route Survey Report** is presented in in **Appendix 12.1**. The **Construction Traffic Management Plan** (CTMP) addresses the impact of construction related traffic on local roads. A **Section 96 Agreement** on the road to cover Wear and Tear will be agreed with THC to ensure the road does not deteriorate as a result of the proposed construction traffic.
	THC would expect the assessment to review the capability of the local public roads to physically accommodate increased loadings from larger goods vehicles over the construction period and, where necessary, proposing physical mitigation measures.	The CTMP addresses the impact of construction related traffic on local roads.
	States and welcomes the intention to implement and operate a Construction Traffic Management Plan (CTMP)	Noted. The CTMP will address THC's recommendations which were provided as part of the Scoping Opinion.
	Highlight how any survey information gathered during the current Covid pandemic are unlikely to reflect traffic levels during more normal times.	Traffic data has been retrieved from the Department for Transport's database for 2019. *Low National Road Traffic Forecasts* (NRTF) were applied to the traffic flows to estimate 2021 baseline flows.
	The submission should recognise that public roads serving the site are heavily influenced by tourist traffic during the busier summer season.	The traffic data obtained from the DfT site is based on an average annual daily flow which includes an average of the fluctuations of flows which are estimated during the tourist and non-tourist seasons.
	THC has no objection to the use of Low NRTF values on the local road network.	Noted.
	Committed Developments are to be agreed with the Highland Council Planning Service.	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.

Consultee	Consultation Response	Applicant Action
Moray Council (02/03/2021)	Due to information provided identifying the proposed access route for abnormal loads being contained within the Highland Council area, Moray Council's Transportation Service will be required to be contacted regarding any part of the proposal which will access and/or utilise the road network system through Moray.	Noted. It is anticipated that AIL traffic and construction traffic will impact on the Moray Council transport network and any impact has been considered in the assessment.
ScotWays (02/03/2021)	The National Catalogue of Rights of Way does not show any rights of way affected by the area outlined on the Site Location Plan.	Noted.
Transport Scotland (TS) (01/03/2021)	Highlights that the forthcoming EIA report and more specifically the 'Transport and Access' chapter will be supported by a Transport Assessment Report and an Abnormal Load Route Survey.	EIA Report Volume 3 contains **Appendix 12.1 Transport Assessment** and the Abnormal Indivisible Load Route Survey.
	States that the assessment will be based upon both the Transport Assessment Guidance (Transport Scotland, 2012) and The Guidelines for the Environmental Assessment of Road Traffic (Institute of Environmental Assessment (IEA), 1993).	Noted.
	Notes that two rules from the guidance would be taken and used as a screening process to define the scale and extent of the assessment: 1. Where traffic flows are predicted to increase by >30%, include highway links. 2. Where traffic flows are predicted to increase by >10%, include any other specifically sensitive areas. TS are satisfied with this approach and the approach for the study of the area, including using both A9 and the A95 for the baseline traffic flow data.	Noted.
	TS notes that NRTF Low Growth is acceptable.	Noted.
	TS are satisfied with the approach for the proposed access route for abnormal loads. With loads to be offloaded at Inverness Port and accessing the site via A9, A95, A938 and B9007.	Noted.
	Highlight that a detailed swept path analysis will be undertaken for main constraint points from the port of entry to site access point. This will determine whether the turbine components can be delivered to site and identify if temporary road works will be required.	Noted. Swept path assessments for AIL delivery constraint points are contained within **Appendix 12.1 Abnormal Indivisible Load Route Survey**.
	States that Transport Scotland are satisfied with this approach but require the knowledge that the size of turbines will not have any effects on structures within truck road route path.	Noted.

12.5. Assessment Methods and Significance Criteria

Study Area

12.5.1. The study area includes local roads that are likely to experience increased traffic flows resulting from the Proposed Development. The geographic scope was determined through a review of Ordnance Survey (OS) plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials.

12.5.2. The study area for this assessment has been discussed with relevant transport authorities during scoping and is illustrated in **Appendix 12.1.** The study area is therefore as follows:

- A9 to the north of Aviemore;
- A9 to the south of Aviemore;
- A95 to the west of Boat of Garten;
- A95 near Dulnanin Bridge;
- A938 in Dulnain Bridge; and
- B9007 in the vicinity of the site access junction.

Desk Study

12.5.3. The desk study included reviews and identification of the following:

- relevant transport planning 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 materials to inform extent of local area roads network to be included in the assessment; and
- constraints to the movement of AIL through a Route Survey including swept path assessments.

Field Survey

12.5.4. A detailed site visit to the site to review the potential access routes and potential constraints was undertaken as part of the AIL access review.

Impact Assessment Methodology

12.5.5. 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.

12.5.6. This chapter considers the following:

- the existing baseline transport conditions of the study area surrounding the site;
- the likely infrastructure requirements necessary to enable the Proposed Development;
- the likely effects and changes associated with the imposition of construction traffic on the local road network; and

- what measures would be required to mitigate any potential significant effects of the temporary construction traffic.

Receptor Sensitivity / Importance

12.5.7. 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.

12.5.8. 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.

12.5.9. 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 12.2**.

Table 12.2 – 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
User / 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

Impact Magnitude

12.5.10. The following rules taken from the IEMA Guidelines are used to determine which links within 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.

12.5.11. 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 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 only 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.

12.5.12. While not specifically identified, as more vulnerable road users, cyclists and horse riders are considered in similar terms to pedestrians.

Significance of Effect

12.5.13. 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 is summarised in **Table 12.3**.

12.5.14. 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 12.3 – Significance of Effects

RECEPTOR SENSITIVITY	MAGNITUDE OF IMPACTS			
	Major	Moderate	Minor	Negligible
High	Large	Large/Moderate	Moderate/Slight	Slight
Medium	Large/Moderate	Moderate	Slight	Slight/Neutral
Low	Moderate/Slight	Slight	Slight	Slight/Neutral
Negligible	Slight	Slight	Slight/Neutral	Neutral

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

Requirements for Mitigation

12.5.16. If significant likely potential effects are identified, appropriate mitigation will be implemented to remove and reduce the significance of the effects where possible.

Assessment of Residual Effects

12.5.17. Residual effects will be assessed following a similar methodology as the potential effects but taking into consideration the identified mitigation.

Assessment of Cumulative Effects

12.5.18. 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 110 m. Their site is currently seeking planning permission for 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 149.9 m.

12.5.19. 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.

12.5.20. Should any of the current scoping schemes under planning consideration at present be consented, any crossover of traffic with the Proposed Development flows will be addressed via a traffic management plan. The inclusion of further traffic flows in the baseline (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.

12.5.21. The use of low *National Road Traffic Forecast* (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.

Limitations to Assessment

12.5.22. The assessment is based upon an assumed construction programme for the Proposed Development. Alterations in this programme may increase or decrease traffic flows per month.

12.5.23. This assessment is based upon average daily traffic flows within the peak month of site deliveries to provide a worst-case assessment scenario. There may be localised peaks with construction days where flows can be higher for a specific hour, such as shift change on site.

12.6. Baseline Conditions

Road Access

Site Access

12.6.1. Access to the site will be taken directly from the B9007using the existing Tom nan Clach Wind Farm site access junction. The junction will need to be modified to suit the larger turbine loads, however junction visibility and function remain as per the existing arrangement.

12.6.2. The layout of the junction is provided in Appendix A

B9007

12.6.3. The B9007 is a local road maintained by THC and provides connections across Dava Moor. It provides a link from the A938 to the south and both the A939 and A940 to the north-east. The southern portion of the road was previously used for the transport of abnormal loads associated with the Tom nan Clach Wind Farm development and comprises a number of new passing places which supported that project.

A938

12.6.4. The A938 is maintained by THC and provides local connections between the A9 to the east of Slochd and the A95 at Dulnain Bridge. The section between Dulnain Bridge and the B9007 has previously been used for the transport of abnormal loads associated with the Tom nan Clach Wind Farm. The A938 is predominantly subject to the national speed limit, however, this reduces when going through villages. In the vicinity of the priority junction with the B9007, the A938 is subject to the national speed limit.

A95

12.6.5. The A95 is a trunk road which links Aviemore to Keith. The road is operated by BEAR Scotland on behalf of Transport Scotland. The A95 is of a good standard throughout its length and is predominantly subject to the national speed limit, which reduces when going through villages.

A9

12.6.6. 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 60mph within the study area, however, sections of dual carriageway are signed as 70mph.

Existing Baseline Traffic Flows

12.6.7. In order to establish the baseline situation, traffic survey data was sought along the road network in the vicinity of the site.

12.6.8. Traffic data used in assessment has therefore been sourced from historic count data provided by the UK Department for Transport (DfT). The following DfT count points have been used in this assessment:

- A9 North of Aviemore – DfT Count No. 10808;
- A9 South of Aviemore – DfT Count No. 40821;
- A95 West of Boat of Garten – DfT Count No. 1056;
- South of Dulnain Bridge – DfT Count No. 77101;
- A938 in Dulnain Bridge – DfT Count No. 20867; and
- B9007 Near Site Access – DfT Count No. 811532.

12.6.9. The locations of the traffic counts are presented in **Appendix 12.1**.

12.6.10. The latest flows outlined by the UK DfT are for the year 2019. In order to calculate the 2021 flows, a low National Road Traffic Forecast (NRTF) was applied to the 2019 flows. The NRTF low growth factor for 2019 to 2021 is 1.016 (note that any variances are due to rounding).

12.6.11. Baseline traffic flows are presented in **Table 12.3.**

Table 12.3 – 24-hour Average Traffic Data (2021)

Survey Location	Cars & Lights	HGV	Total
A9 to the north of Aviemore	6724	1307	8030
A9 to the south of Aviemore	7106	1018	8124
A95 to the west of Boat of Garten	5613	557	6170
A95 near Dulnain Bridge	3745	519	4264
A938 in Dulnain Bridge	2065	142	2207
B9007 near site access junction	447	13	460

Accident Review

12.6.12. As agreed with THC, road traffic accident data for the five-year period commencing 01 January 2016 through to 31 December 2020 was obtained for the A938 and B9007 in the vicinity of the site. This information was sourced from the online resource CrashMap.co.uk which uses data collected by police about road traffic crashes occurring on British roads where a personal injury accident (PIA) occurred.

12.6.13. A summary of the PIAs indicates that:

- Eight PIAs were recorded along the A938 and B9007 of which seven were classified as 'Slight' injuries and one was classified as 'Serious'.
- One of the recorded PIAs involved an HGV, this accident occurred at the B9007 / A938 priority junction. The traffic accident also involved a car and resulted in one casualty which was recorded as 'Slight'. CrashMap notes that a young driver was involved in the accident.
- The closest PIA to the site occurred approximately 865m south of the existing Tom nan Clach Wind Farm entrance, which was classified as 'Slight'.
- One of the PIA locations was recorded as 'Serious'. The incident, involving one car, occurred along the A983 approximately 640m east of the A938 / A9 priority junction and resulted in two casualties.

12.6.14. The data from CrashMap does not suggest any apparent trend in relation to accidents on the local road network.

Active Travel Links

12.6.15. A review of The Highland Council Core Path Map: (www.highland.maps.arcgis.com/apps/webappviewer/) does not show any core paths along the B9007 in the vicinity of the site.

12.6.16. The *Sustrans National Cycle Route* (NCR) map (www.sustrans.org.uk/national-cycle-network/) does not show any national cycle routes along B9007.

Future Year Baseline

12.6.17. While the year of construction is yet to be finalised, for the purposes of this assessment it is anticipated that construction will commence in 2026 and is anticipated to take up to 18 months depending on weather conditions and ecological considerations.

12.6.18. To assess the likely effects during the construction phase, base year traffic flows were determined by applying a low NRTF growth factor to the 2021 Baseline flows.

12.6.19. The NRTF low growth factor for 2021 to 2026 is 1.027.

Table 12.4 – Future Baseline 24-hour Average Traffic Data (2026)

Survey Location	Cars & Lights	HGV	Total
A9 to the north of Aviemore	6905	1342	8247
A9 to the south of Aviemore	7298	1046	8343
A95 to the west of Boat of Garten	5765	572	6337
A95 near Dulnain Bridge	3846	533	4379
A938 in Dulnain Bridge	2120	146	2266
B9007 near site access junction	459	14	473

Summary of Sensitive Receptors

12.6.20. This section provides an assessment of the effects arising from the traffic predicted to be generated by the Proposed Development.

12.6.21. **Table 12.5** outlines the summary of receptor sensitivity to be assessed in this assessment.

Table 12.5 – Summary of Sensitive Receptors

Receptor	Sensitivity	Justification
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
Residents in Dulnain Bridge	Location is a small rural settlement, few community or public facilities or services.	Low

12.7. Potential Effects

Construction

12.7.1. The assessment is based upon the construction effects that may occur within the study. In order to assess the effects, it is necessary to determine the likely traffic generation associated with the Proposed Development.

12.7.2. During the assumed 18 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.

12.7.3. Average monthly traffic flow data were used to establish the construction trips associated with the Proposed Development and are detailed in the Transport Assessment contained in **Appendix 12.1**. 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.

12.7.4. It is proposed that the Port of Entry used for the deliveries of wind turbine components would be Inverness Port.

12.7.5. The turbines are to be delivered in component sections for transport and would be assembled at the sites. The nacelle, hub, drive train, blade, tower sections are classified as AIL due to their weight and/or length, width and height when loaded.

12.7.6. Loads relating to the turbine components would be delivered on the route illustrated in **Appendix 12.1**

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

12.7.8. If consented, the Applicant would engage in detailed discussions with the turbine suppliers, haulage contractors, Transport Scotland, Police Scotland and road authorities with regards to an agreed port of entry strategy and AIL delivery route.

12.7.9. The trip estimates have been assigned to the proposed construction programme to allow the identification of the peak of construction traffic to be established. The construction programme is also provided in the Transport Assessment.

12.7.10. It is anticipated that a borrow-pit will be provided on-site which will provide 95% of aggregate materials for tracks / hardstandings and 100% aggregate for concrete. To provide a robust assessment of potential traffic impact, it has been assumed that 50% of the material for tracks, hardstandings and compound areas will be imported to the site. This represents an overestimate, with the expectation that the borrow pit will be more than adequate source for material. The assessment is therefore an over-estimate and is considered robust.

12.7.11. The peak of construction occurs in Month 7 with 112 HGV movements per day (56 inbound and 56 outbound) and 70 Car / LGV movements (35 inbound trips and 35 outbound trips). These figures on average indicate approximately and additional 10 HGV movements per hour on the network at the peak of construction activities.

12.7.12. 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 on B9007.
- Deliveries associated with the batching of concrete 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 quarries located along the A9, near Scatraig. The Balance of Plant (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 from the north 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 arrive from the south of Aviemore and 20% will come from east of Dulnain Bridge; and
- general site deliveries will be via the A9 and A95. These are generally smaller rigid HGV vehicles.

12.7.13. 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 2026 Baseline traffic data. The resulting figures were compared with weekday 2026 Baseline traffic to provide a percentage change in movements.

Table 12.6 – Traffic Impact Summary

Survey Location	Cars & Lights	HGV	Total	Cars & LGV % Increase	HGV % Increase	Total Traffic % Increase
A9 to the north of Aviemore	6949	1454	8403	0.6%	8.4%	1.9%
A9 to the south of Aviemore	7311	1046	8357	0.2%	0.0%	0.2%
A95 to the west of Boat of Garten	5822	684	6506	1.0%	19.6%	2.7%
A95 near Dulnain Bridge	3903	645	4548	1.5%	21.0%	3.9%
A938 in Dulnain Bridge	2190	258	2449	3.3%	76.8%	8.0%
B9007 near site access junction	529	126	655	15.3%	826.8%	38.6%

12.7.14. With the exception of the B9007, near the site access, the total traffic movements are not predicted to increase by more than 30% on all of the study network.

12.7.15. While the uplift in traffic on B9007 is high in percentage terms, this is due to the low baseline traffic flows which amount to a total of 182 movements (70 Cars & LGV movements and 112 HGV movements) per day.

12.7.16. The total HGV traffic movements will increase significantly on the A938. Whilst this increase is statistically significant, it is generally caused by the relatively low HGV flows on the A938 and will see an additional 112 HGV journeys per day (56 inbound and 56 outbound). This represents less than five inbound HGV journeys every hour during normal construction activities, which is not considered significant in operational terms.

12.7.17. It should also be noted the construction phase is transitory in nature and the peak of construction activities is short-lived.

12.7.18. A review of existing road capacity has been undertaken using the Design Manual for Roads and Bridges, Volume 15, Part 5 "*The NESA Manual*". 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 12.7**.

Table 12.7 – 2026 Daily Traffic (12hr) Capacity Review Summary

Survey Location	2026 Baseline Flow	Theoretical Road Capacity (12hr)	2026 Base + Development Flows	2026 Base + Development Used Capacity %	Spare Road Capacity %
A9 to the north of Aviemore	8247	28800	8327	28.91%	71.09%
A9 to the south of Aviemore	8343	28800	8357	29.02%	70.98%
A95 to the west of Boat of Garten	6337	28800	6429	22.32%	77.68%
A95 near Dulnain Bridge	4379	28800	4472	15.53%	84.47%
A938 in Dulnain Bridge	2266	21600	2372	10.98%	89.02%
B9007 near site access junction	473	3360	578	17.22%	82.78%

12.7.19. 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.

Operational

12.7.20. It is predicted that during the operational phase of the wind farm there would be two 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.

Decommissioning

12.7.21. The decommissioning phase would result in fewer trips on the road network than the construction phase as it is considered likely that the majority of the proposed access track would be left in place for wider estate access.

12.7.22. It is anticipated that the level of daily traffic would be similar to those associated with the AIL delivery trips which are outlined in **Appendix 12.1**(Table 9 Construction Traffic Profile). Maximum daily trips associated with the decommissioning phase would therefore likely comprise approximately five AIL delivery vehicles (112 turbine deliveries / 22 days) and 15 AIL escort vehicles (three escort vehicles per turbine).

12.8. Mitigation

Construction Traffic Management Plan

12.8.1. During the construction phase, a project website, blog or Twitter feed will be regularly updated to provide the latest information relating to traffic movements associated with vehicles accessing the site. This would be agreed with THC.

12.8.2. The following measures will be implemented during the construction phase through the CTMP:

- where possible the detailed design process will 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);

- all materials delivery lorries (dry materials) will be sheeted to reduce dust and stop spillage on public roads;
- specific training and disciplinary measures will be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- wheel cleaning facilities will be established at the site entrance, depending on the views of THC;
- normal site working hours would be limited to between 07:00 and 18:00 (Monday to Friday and 07:00 and 13:00 (Saturday);
- appropriate traffic management measures will 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/ or banksmen at the site access and warning signs;
- 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 will 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.

12.8.3. THC is likely to request that an agreement over the cost of abnormal wear on its network is made.

12.8.4. Video footage of the pre-construction phase condition of the B9007 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.

12.8.5. 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. Damage to road infrastructure caused directly by construction traffic would be made good and street furniture that is removed on a temporary basis will be fully reinstated.

12.8.6. 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.

Staff Sustainable Access Plan

12.8.7. 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; and
- car parking management.

Framework Abnormal Load Transport Management Plan

12.8.8. An **AIL Traffic Management Plan** (TMP) will also be developed to ensure road safety for all road users during transit of development loads. The TMP will outline measures for managing the convoy and set out 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.

12.8.9. The TMP will be developed in consultation with the police, local community and highways authorities and agreed before deliveries to the site commence.

12.8.10. The AIL transports will be escorted by a number of vehicles, potentially including a police escort to assist a civilian escort car on specific sections of the route. It is proposed that an advance escort will warn oncoming vehicles ahead of the convoy, with the other escorts staying with the convoy at all times. The escorts and convoy will remain in radio contact at all times where possible.

12.8.11. The transit of AILs along areas of restricted geometry will be undertaken as a rolling closure to reduce the level of disruption to local traffic and residents. Subject to trunk road licensing conditions and police requirements, it is likely that the convoys will travel in the early morning periods, before peak times.

12.8.12. Advance warning signs are recommended to be installed on the approaches to the affected road network. Temporary signage advising drivers that AILs will be operating is recommended along the route.

12.8.13. Signage such as this will help improve driver information and alert drivers of oncoming traffic, thereby allowing them to consider whether proceeding to the nearest convenient passing bay, or breaking their journey until the convoy has moved on, will be appropriate.

12.8.14. To further improve drivers' information, it is suggested that the Variable Message Signs (VMS) operated by the Transport Scotland are used to warn drivers of AILs operating on the trunk road sections of the route. The signs will also warn drivers of possible delays and to allow them to consider alternative routes.

12.8.15. Additionally, 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.

12.8.16. 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 residents aware of convoy movements and help reduce any potential conflicts.

Abnormal Indivisible Loads

12.8.17. An Abnormal Indivisible Load Route Survey Report (RSR), contained in **Appendix 12.1**, was undertaken which highlights a number of constraint points that were assessed using swept path assessment software. Swept path assessment drawings are provided as part of the RSR.

12.8.18. The RSR identified the key points and issues associated with the AIL route that require remedial works to accommodate the predicted loads. The results and recommendations contained in the report are summarised below:

- 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 Tom nan 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 will be held to confirm the proposed mitigation as a new junction will be created on both the A95 and A938.
- A938 Muckrach Farm – Loads will over-run and over-sail the outside of the following left bend where load bearing surfaces should be laid. The embankment will be reprofiled (subject to a detailed review on a topographical base plan) and detailed design is required to confirm whether verge strengthening is required.
- A938 Tullochgribban Plantation – A swept path assessment has been undertaken and indicates that loads will overrun and oversail the outside of the righthand bend where a load bearing surface will be laid. Detailed design on a topographical base plan is required to confirm whether verge strengthening is required.

12.8.19. There will be other minor improvements e.g., slight widening and tree trimming within the Highways verge at various points along the route as represented in full in the RSR swept path assessment drawings.

12.8.20. AIL mitigation works can be designed to be temporary in nature to enable restoration to their original condition (if required by THC). Areas of widening must be usable for the lifetime of the wind farm, although they can be re-vegetated following construction.

Operational Phase Mitigation

12.8.21. The site entrance junction and access track will be well maintained and monitored during the operational life of the development. Regular maintenance will be undertaken to keep the site access track drainage systems fully operational and to ensure there are no run-off issues onto the public road network.

12.9. Residual Effects

12.9.1. This section considers the assessment of traffic impacts following the incorporation of the identified 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 12.8**.

12.9.2. The assessment confirms that the effects will be minor in nature and that the significance will be slight in nature. The traffic effects are transitory in nature and are confined to the construction period only. No long lasting detrimental transport or access issues are associated with the Proposed Development.

12.10. Cumulative Effects

12.10.1. No cumulative effects have been included in the assessment. The inclusion of further traffic flows in the base line will dilute the potential impact that the proposed development proposals will have. As such, the approach taken is considered to be an overly robust assessment.

12.10.2. The use of Low NRTF traffic growth assumptions has provided a robust future year assessment scenario to account for the level of trip generation that can occur as a result of the types of local development that may occur within the study area and the effects of tourist traffic on the network.

12.11. Summary

12.11.1. The Proposed Development will lead to increased traffic volumes on a number of roads in the vicinity of the site during the construction phase. These will be of a temporary timescale and transitory in nature.

12.11.2. The peak of construction occurs in Month 7 with 182 journeys (70 Car / Lights and 112 HGV journeys).

12.11.3. 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 slight or insignificant but as they will occur during the construction phase only, they are temporary and reversible.

12.11.4. Traffic levels during the operational phase of Proposed Development will 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 on-site.

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

Table 12.8 – Summary of Effects

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/Adverse		Significance	Beneficial/Adverse
Construction					
A9 Users	Moderate / Minor	Adverse	Implementation of Construction Traffic Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements, provision of localised road improvement works.	Minor	Adverse, Temporary
Residents in Dulnain Bridge	Moderate / Minor	Adverse	Implementation of Construction Traffic Management Plan including adoption of a voluntary speed limit of 15 mph for all construction vehicles through Dulnain Bridge, provision of construction traffic road signage, convoy escorts for AIL movements, provision of localised road improvement works.	Minor	Adverse, Temporary
Operational					
No operational effects anticipated.					
Decommissioning					
Any decommissioning effects would be less that those predicted for the construction phase.					

12.12. References

Institute of Environmental Assessment (1993) *Guidelines for the Environmental Assessment of Road Traffic*

Institution of Environmental Management and Assessment (IEMA) (2005) *Guidelines for Environmental Impact Assessment*

Highways Agency (2008) *Table 2.2 of Volume 11, Section 2, Part 5 of the Design Manual for Roads and Bridges*