Pell Frischmann

Novar 1 Wind Farm Repowering

Technical Appendix 11.1: Transport Assessment

September 2026

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1 Introduction

1.1 Purpose of the Report

Pell Frischmann Consultants Ltd. (PF) has been commissioned by Beaufort Wind Limited (BWL) (the 'Applicant') to undertake a Transport Assessment (TA) for the proposed Novar 1 Wind Farm Repowering (the 'Proposed Development'), located between Glen Glas and Strath Rusdale in The Highland Council (THC) administrative area. BWL is a subsidiary of Nadara.

The report identifies the key transport and access issues associated with the Proposed Development, including the route for Abnormal Indivisible Loads (AILs). The TA identifies where the Proposed Development may require mitigation works to accommodate the predicted traffic; however, design of these remedial works will be undertaken at the detailed design stage hence it is beyond the scope of this report. Any mitigation works will be agreed with THC and Transport Scotland (TS) prior to construction and deliveries taking place. The findings of this report have informed the assessment of traffic and transport related effects in Environmental Impact Assessment (EIA) Report Volume 2: **Chapter 11: Traffic and Access**.

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1.2 Report Structure

Following this introduction, the TA report is structured as follows:

- Chapter 2 describes the Proposed Development;
- Chapter 3 reviews the relevant transport and planning policies;
- Chapter 4 sets out the methodology used within this assessment;
- Chapter 5 describes the baseline transport conditions;
- Chapter 6 describes the trip generation and distribution of traffic in the Study Area;
- Chapter 7 summarises the traffic impact assessment;
- Chapter 8 considers mitigation proposals for development related traffic within the study network; and
- Chapter 9 summarises the findings of the TA and outlines the key conclusions.

2 Proposed Development

2.1 Site Location

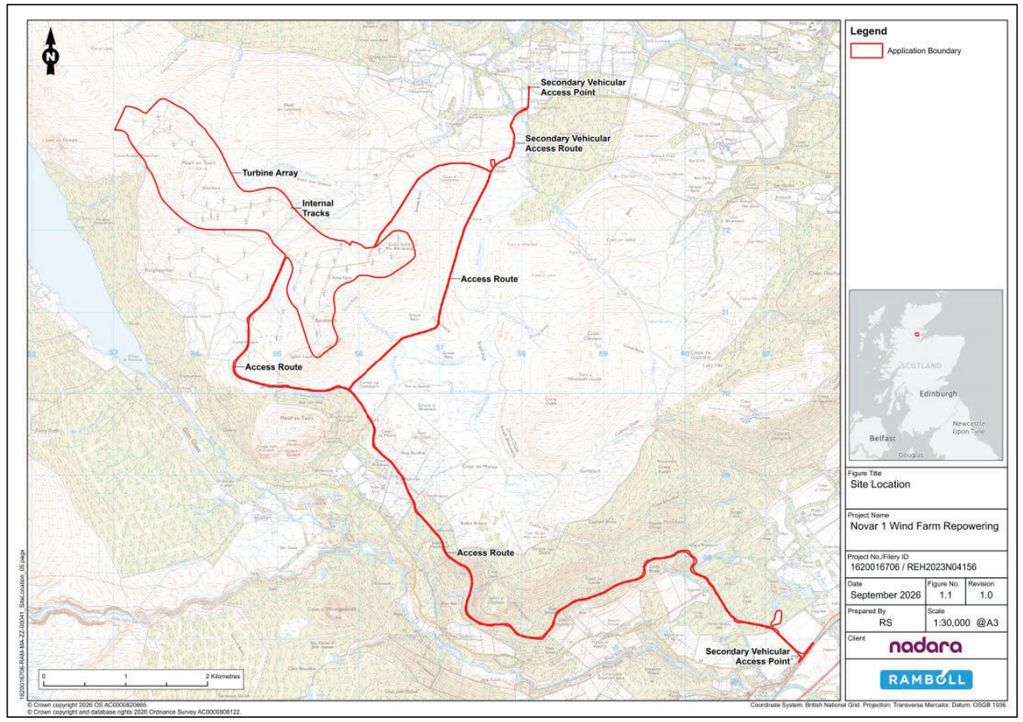
The Site is located within the Novar Estate, which is approximately 11 kilometres (km) north of Dingwall and 9km northwest of Alness in THC administrative area.

The Site is situated along the ridgeline connecting Meall Mor, Meall an Tuirc, Bendeallt and Cnoc Gille Mo Bhrianaig with the elevation ranging within the Site from 625 metres (m) Above Ordnance Datum (AOD) to 310m AOD, with the topography descending from the ridge in all directions to Loch Glass, Loch Moire and Strath Rusdale.

The Site is predominantly located on upland moorland, although there are some commercial forestry blocks of mostly coniferous species to the north, south, and east of the Site, and on the slopes of Cnoc Ceislein, with smaller areas of long-term retention conifer and broadleaves. The Alness River (also known as River Averon) runs to the north of the Site. The Operational Novar 2 Wind Farm is located to the west of the Site.

The Site location can be seen in **Figure 1.**

Figure 1 Site Location



2.2 Proposed Development

The Proposed Development will comprise the construction of the following:

- Decommissioning and removal of the existing 34 turbines along with associated infrastructure including below ground cabling from the site, the restoration of crane hardstanding and those Internal Tracks that are not required for the proposed new wind farm;

- Up to 9 new turbines with a rotor blade diameter of approximately 162m, a hub height of approximately 99m, and a maximum tip height of up to 180m;
- Permanent foundations supporting each wind turbine;
- Associated crane hardstanding at each turbine location;
- Existing on-site Internal Tracks and infrastructure to be reused where possible with some limited requirement to build new Internal Tracks to access new turbine positions. Existing southern Heavy Goods Vehicle (HGV) would require limited widening throughout its length to accommodate abnormal loads, whereas existing northern Light Goods Vehicle (LGV) access track will be retained in its current condition;
- Underground cables within the Site connecting the turbines to the on-Site substation;
- A new control building and substation compound;
- Temporary construction compound(s) and laydown area(s); and
- Biodiversity enhancement measures including options such as forestry planting and peatland restoration.

In addition, ancillary works may be required, such as:

- Extraction of rock from a borrow pit; and
- Off-site works to facilitate the delivery of abnormal loads.

The Proposed Development layout is shown in **Figure 2.1 (EIAR Volume 3a)**.

A complete description of the Proposed Development is provided in **Chapter 3: The Site and Proposed Development (EIA Report, Volume 2).**

2.3 Access Arrangements

The Proposed Development will be accessed from the B817 (Fyrish Crescent) via an existing simple priority junction, which currently provides access to the operational Novar 1 Wind Farm. This junction will be upgraded to accommodate the larger wind turbine components proposed as part of the Proposed Development.

The Main Vehicular Access Point is provided in **Annex A**.

A secondary access is available from the northeast via the U1990 (Boath Road); however this will only be used during the operational phase of the Proposed Development. No construction vehicles will be permitted to use this during the construction phase.

Strategic access to the Site will be taken from the A9 to the southeast and northeast, with construction traffic routing through to the Site via the B9176 and B817.

The likely Port of Entry (PoE) used for the discharging of wind turbine components will be the Port of Nigg, utilising sections of proven AIL routes used during the construction of other wind farms in the area.

2.4 Candidate Turbine

The Applicant has indicated that they wish to consider the Vestas 162 turbines at a hub height of 99m and a tip height of 180m for the purposes of this assessment. The details of the components that have been provided by Vestas are detailed in Table 1. Note these are indicative component dimensions at this time and are subject to change.

Table 1 Turbine Component Size Summary

Component	Length (m)	Width (m)	Height / Min Diameter (m)	Weight (t)
V162 Blade	79.970	4.460	3.80	34.96
Base Tower	12.310	4.197	4.197	95.00
Mid Tower 1	22.680	4.185	4.197	93.00

Component	Length (m)	Width (m)	Height / Min Diameter (m)	Weight (t)
Mid Tower 2	28.280	4.173	4.185	78.00
Top Tower	33.00	4.008	4.173	74.00

A detailed Route Survey Report (RSR) has been prepared and appends this TA as **Annex B**.

The selection of the final turbine model and specification will be subject to a commercial procurement process following consent of the application. The assumed dimensions may therefore vary slightly from those assumed as part of this assessment; however, the turbine tip height will be no greater than 180m.

With regards to the equipment used to transport the turbine components, to provide a robust assessment scenario based upon the known issues along the access routes and constraints in moving larger loads, it has been assumed that all blades would be carried on a Superwing Carrier trailer to reduce the need for mitigation in constrained sections of the route.

Towers would be carried in a 4+7 clamp adaptor style trailer, whereas loads such as the hub, nacelle housing, and top towers would be carried on a six-axle step frame trailer.

Examples of the vehicles and trailers that are likely to transport loads are shown in **Figure 2** to **Figure 4.**

Figure 2 Super Wing Carrier Trailer



Figure 3 Clamp Tower Trailer



Figure 4 Step Frame Trailer



These above vehicle configurations are subject to confirmation by the chosen haulier at the time of their commissioning.

As the loads are classified as Special Order, due to a rigid length in excess of 30m, a full Police Escort would be required along the full length of the route.

3 Policy Context

3.1 Introduction

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

3.1 National Policy

National Planning Framework 4 (2023)

The National Planning Framework 4 (NPF4) was approved by Scottish Parliament on 11 January 2023 and was adopted by Scottish Ministers on 13 February 2023. NPF4 sets out the Government's plan looking forward to 2045 that will guide spatial development, set out national planning policies, designate national developments and highlight regional spatial priorities. It is part of the development plan and so influences planning decisions across Scotland.

With regards to Traffic and Transport, Policy 11: Energy within the NPF4 notes that: *"Development proposals for all forms of renewable, low-carbon and zero emissions technologies will be supported. These include:*

- *Wind farms including repowering, extending, expanding and extending the life of existing wind farms; and*
- *Energy storage, such as battery storage and pumped storage hydro.*
- *In addition, project design and mitigation will demonstrate how the following impacts are addressed:*
    - *Impacts on communities and individual dwellings, including, residential amenity, visual impact, noise and shadow flicker;*
    - *Public access, including impact on long distance walking and cycling routes and scenic routes;*
    - *Impacts on road traffic and on adjacent trunk roads, including during construction; and*
    - *Cumulative impacts."*

The assessment undertaken as part of this TA and the associated **Chapter 11: Traffic and Access (EIAR Volume 2)** has taken cognisance of this and provided appropriate mitigation where necessary.

Planning Advice Note (PAN) 75

Planning Advice Note (PAN) 75: Planning for Transport provides advice on the requirements for TAs. 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)

TS's Transport Assessment Guidance was published in 2012. It aims to assist in the preparation of TAs 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.

Onshore Wind Turbines: Online Renewables Planning Advice (2014)

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.

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 abnormal indivisible loads during the construction phase, ongoing planned maintenance and for decommissioning (if applicable).

Onshore Wind Policy Statement (2022)

The Scottish Government's Onshore Wind Policy Statement was published in December 2022 and sets out an ambition of *"20 GW of installed onshore wind capacity in Scotland by 2030."*

With regards to transport of Abnormal Loads and Police Escorts, the statement notes that:

"Under the Road Traffic Act 1988, any abnormal load movement on public road in Scotland must be escorted by a specially trained police officer. This puts additional pressure on both Police Scotland and hauliers, as well as the wind energy sector's ability to deploy at scale in Scotland.

In order to meet our legally-binding net-zero targets, it is estimated that 3400 turbines will be installed in Scotland between now and 2030, this is the equivalent of a new turbine being installed every day between 2025-2030. Given this, and the significant issues surrounding the transportation of components, this issue has been brought into fresh focus, as we consider it could have serious implications on the delivery of our renewable energy pipeline and subsequent threat to our 2030 net-zero targets.

To this end, the Scottish Government is working directly with senior members of Police Scotland and the renewables and haulier industries. We have come together to consider this issue and to determine what actions must be taken, both short term and long-term, to relieve the pressure on Police Scotland resources to ensure turbines components can be efficiently and effectively conveyed to site."

3.2 Local Policy & Guidance

Highland-wide Local Development Plan (2012)

The Highland-wide Local Development Plan (LDP) was adopted by THC in April 2012 and is the established planning policy for the Highlands. It sets out a settlement strategy and spatial framework for how THC 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 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."

The Inner Moray Firth Local Development Plan 2 (2024)

The Inner Moray Firth Local Development Plan 2 (IMFLDP2) was adopted in June 2024 and replaced the previous plan, which was adopted in 2015. The plan seeks to deliver defined outcomes for communities, employment, connectivity and the environment but with particular emphasis on post-pandemic economic recovery and addressing the Climate and Ecological Emergency. The Plan makes policy, placemaking priority and development site choices that best balance both environmental sustainability and economic viability for both the public and private sector.

This Plan supports the area to maximise local and Scotland-wide benefits from investment in renewable energy and place the Highlands at the heart of the drive towards net-zero.

Onshore Wind Energy Supplementary Guidance (2016)

The Onshore Wind Energy Supplementary Guidance was adopted by THC in 2016. In relation to traffic and transport interests, the guidance document notes that:

"All proposals should seek to avoid significant adverse effects on the public road network individually and cumulatively with other built and permitted proposals as well as valid planning applications not yet determined (the weight apportioned to each will reflect their position in the planning process).

The proposals for the use of the public roads and mitigation works will require the approval of the Roads Authority. Developers will be required to enter into a Section 96 (Roads Scotland Act) agreement with the Council to cover damage to the public roads by construction traffic and may be required to provide a bond as surety.

Developers will be required to undertake a Transport Assessment to establish the transport impacts of the construction traffic associated with the development, the suitability of the existing road network, the impact on existing road users and adjacent communities, and the requirement for any mitigation works.".

Roads and Transport Guidelines for New Developments (2013)

THC document outlines the guidance and standards for the provision of infrastructure within the council area which includes the design and construction of all new roads associated with development proposals.

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)

THC has prepared guidance on how 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.

3.3 Policy Summary

The Proposed Development can align with the stated traffic and transport policy objectives and the design of the Site and proposed mitigation measures will ensure compliance with national and local objectives.

4 Study Methodology

There are three phases of the Proposed Development which have been considered in this assessment and are as follows:

- The construction phase;
- The operational phase; and
- The decommissioning phase.

4.1 Proposed Development Project Phases – Transport Overview

Of the three phases, the construction phase is considered to have the greatest impact in terms of transport and potential impacts on the road network and sensitive receptors. Construction plant, bulk materials and wind turbine components will be transported to Site, potentially resulting in a significant increase in traffic on the study network. It should be noted, however, that construction effects are short lived and transitory in nature.

The operational phase is restricted to occasional maintenance operations which generate significantly lower volumes of traffic that are not considered to be in excess of daily traffic variation levels on the road network.

The decommissioning phase involves fewer trips on the road network than the construction phase, as some elements of infrastructure are likely to be left in place, adding to local infrastructure that can potentially be used for further agricultural or leisure uses in the future.

4.2 Existing Novar 1 Wind Farm – Decommissioning Overview

With regards to the decommissioning of the existing wind turbines, the Applicant has advised that subject to the Proposed Development being granted planning consent, the existing wind farm would be decommissioned at the start of the overall three-year combined decommissioning and construction programme for the Proposed Development. There may be some elements of the decommissioning works still being undertaken during the principal construction period; however, traffic movements would be minimal and less than during the peak period of construction works assessed.

Based on the information provided in **Technical Appendix 1.5: Outline Decommissioning Strategy (EIAR Volume 4)**, infrastructure associated with the existing Novar 1 Wind Farm would be recycled or reused in the construction of the repowered wind farm where practicable. The existing wind turbines would be dismantled and transported off-Site.

4.3 Scoping Discussions

The Applicant submitted a scoping report to the Energy Consents Unit (ECU) in respect of the EIA which included a section considering traffic and transport. A full review of that scoping opinion and other correspondence relating to the scope of the study including pre-application advice is provided in the **Chapter 11: Traffic and Access (EIAR Volume 2)**.

The ECU's Scoping Opinion for the Proposed Development, supported by TS (3 March 2025) and THC (24 April 2025), confirmed that detailed assessment of the operational and decommissioning phases could be scoped out. During operation, traffic would be limited to occasional maintenance visits, typically by light goods vehicles (LGVs), with only infrequent heavy goods vehicle (HGV) access. Effects are therefore considered negligible and not significant in traffic terms. Decommissioning traffic is expected to be lower than during construction, as some infrastructure (e.g. Internal Tracks) would remain, and the construction phase is therefore considered the worst-case scenario. No further assessment of the operational or decommissioning phases has been undertaken, with a commitment to agree appropriate measures with the authorities at the time of decommissioning.

5 Baseline Conditions

5.1 Study Area Determination

The Study Area has been based on those roads that are expected to experience increased traffic flows associated with the construction of the Proposed Development. The geographic scope was determined through a review of the other developments in the area, Ordnance Survey (OS) plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials.

The Proposed Development would be accessed from the B817 (Fyrish Crescent) via an existing simple priority junction, which currently provides access to the operational Novar Wind Farm. This junction will be upgraded to accommodate the larger wind turbine components proposed as part of the Proposed Development.

A secondary access is available from the northeast via the U1990 (Boath Road); however as previously advised, this would only be used during the operational phase of the Proposed Development. No construction vehicles would be permitted to use this during the construction phase.

Strategic access to the Site would be taken from the A9 to the southeast and northeast, with construction traffic routing through to the Site via the B9176 and B817. Where feasible, local materials would be sourced which would avoid traffic impacting on local communities as far as practicable. It is not currently proposed to use the quarry (Pat Munro – Alness Quary) within Alness. Further information on sourcing of materials in detailed in **Section 6** of this report.

The likely PoE used for the discharging of wind turbine components would be the Port of Nigg, utilising sections of proven AIL routes used during the construction of other wind farms in the area. Full details of the proposed AIL route from the PoE through to the Site are included within **Section 6** and within **Annex B.**

Based on the above, the Study Area for this assessment is as follows:

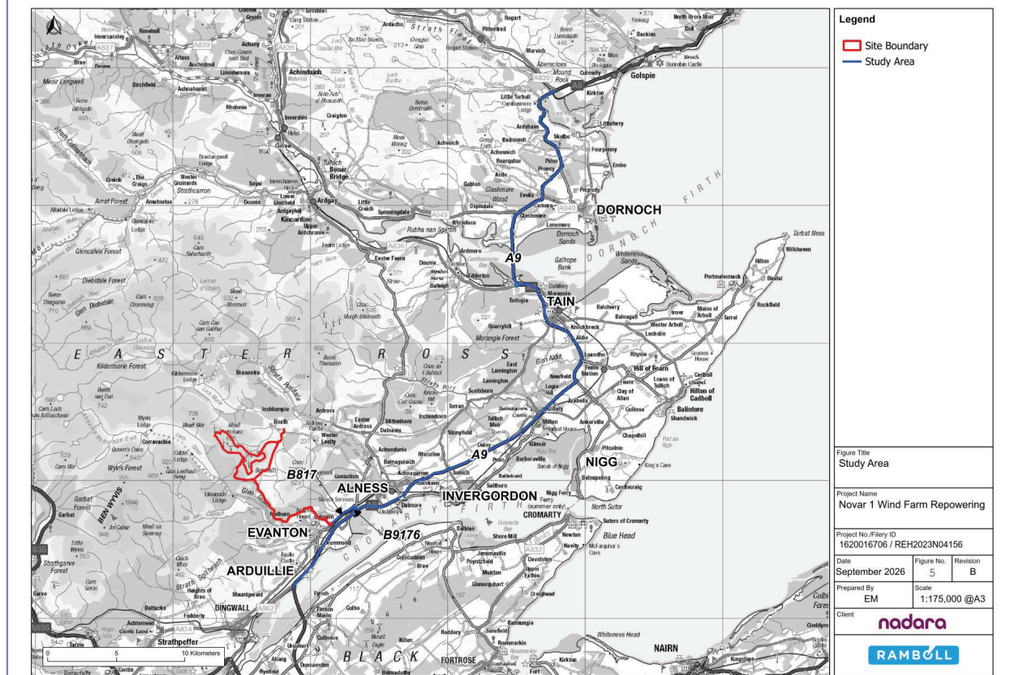
- B817, between the B9176 and the Main Vehicular Access Point;
- B9176, between the B817 and A9; and
- A9, between Ardullie and The Mound.

Note that the Study Area chosen relates to those roads likely to be subject to the biggest increase in construction traffic i.e. those closest to the Site for which their users could experience significant effects and does not include all roads used in the movement of construction materials and AIL traffic.

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

The Study Area is shown in **Figure 5.**

Figure 5 Study Area



5.2 Pedestrian and Cyclist Networks

With regards to dedicated pedestrian and cycle facilities in the immediate vicinity of the Site, there is a shared pedestrian and cycle path on the B817 from Alness through to the settlement of Evanton to the west of the Site. The path forms part of the Evanton – Skiach Cycleway (RC16.08) which is classified as a Core Path within THC and part of the National Cycle Network (NCN) Route 1. The path is approximately 2.35km in length and is a formal constructed path.

The path runs the length of the B817, with the path alternating between the northern and southern sides of the carriageway. It is segregated from the carriageway with the exception of a short section in the vicinity of Novar Tulloch Sawmills, approximately 1.35km to the northeast of the Main Vehicular Access Point.

Further away from the Proposed Development, in the wider Study Area, there are pedestrian facilities within the larger settlements of Alness and Evanton, where there are footways on one or both sides of the carriageway.

A review of THC's Core Path network[1] indicates that there are a number of Core Paths in the Site and wider Study Area. The closest of these are shown in **Figure 6** and are as follows:

- Within the Site:
  - Novar Green Road (RC16.04) – estate track, approximately 1.62km in length; and
  - Novar Quarry (RC16.07) – estate track, approximately 1.43km in length.
- Within wider Study Area:
  - Evanton – Skiach Cycleway (RC16.08) – constructed path, approximately 2.35km in length;
  - Fyrish Path (RC05.01) – constructed path, approximately 3.71km in length; and

[1] https://highland.maps.arcgis.com/apps/webappviewer/index.html?id=2fd3fc9c72d545f7bcf1b43bf5c8445f [Accessed December 2025]

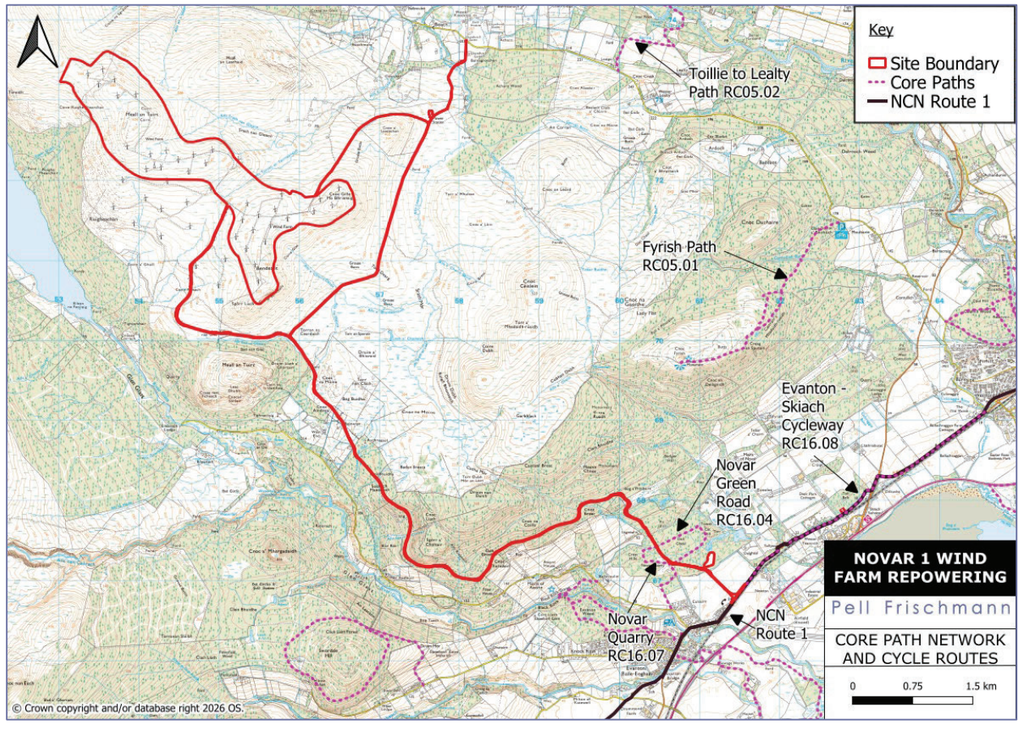
- Tollie to Lealty Path (RC05.02) – estate track, approximately 2.40km in length.

A number of additional Core Paths are located within Evanton, Alness and along the A9.

A review of the Walk Wheel Cycle Trust (previously Sustrans) NCN map[2] indicates that NCN Route 1 is the closest NCN Route to the Proposed Development. The NCN Route 1 is approximately 2,034km in length and routes from Dover in the south to Tain, in the Scottish Highlands, passing through Edinburgh and Aberdeen.

The closest section of the route is located to the southeast including a section of shared footway/cycleway along the B9176 as previously discussed. The location of NCN Route 1 in relation to the Site is shown in **Figure 6**.

Figure 6 Core Path Network and Cycle Routes



5.3 Road Access

A9

The A9 is the main trunk road in the area which links Perth to Scrabster. The road is subject to a speed limit of 60 miles per hour (mph) within the Study Area, however, sections of dual carriageway are signed as 70mph. Within the Study Area, the road is operated by BEAR Scotland on behalf of Transport Scotland and appears to be in good condition.

B9176

The B9176 (also known as Struie Road) is a single carriageway road, approximately 24km in length, which runs from the A9 at Skiach, which is located to the southwest of Alness, to Eastern Fern on the Dornoch Firth. The road is subject to a speed limit of 60mph within the Study Area, reducing to 40mph within the small village of

[2] https://www.walkwheelcycletrust.org.uk/ [Accessed December 2025]

Dalnavie for goods vehicles in excess of 7.5 tonnes. A narrow bridge is located on the B9176, where it crosses the River Averon, and signage shows that southbound traffic should give way to oncoming northbound traffic over the bridge. The road is maintained by THC and appears to be in a generally reasonable condition.

B817

The B817 is a single carriageway road, approximately 22.7km in length, which runs from Drummond in the north to Kildary in the south via Invergordon. The road is subject to a speed limit of 60mph within the Study Area to the east of the Site, reducing to 20mph at the Main Vehicular Access Point on the approach to the eastern extents of Evanton. Outwith the Study Area the road is mainly subject to a 60mph speed limit in rural areas, reducing to 30mph and 20mph within settlements. The road is maintained by THC and appears to be in a generally reasonable condition.

General Road Suitability

The Agreed Timber Route Map[3] has been developed by The Timber Transport Forum who are a partnership of the forestry and timber industries, local government, national government agencies, timber hauliers and road and freight associations. One of the key aims of the forum is to minimise the impact of timber transport on the public road network, on local communities and the environment and a way of achieving this is to categorise the roads leading to forest areas in terms of their capacity to sustain the likely level of timber haulage vehicles i.e. HGVs. The routes are categorised into four groups, namely; ‘Agreed Routes’, ‘Consultation Routes’, ‘Severely Restricted Routes’ and ‘Excluded Routes’.

‘Agreed Routes’ are categorised as routes used for timber haulage without restriction as regulated by the Road Traffic Act 1988. A-roads are classified as ‘Agreed Routes’ by default unless covered by one of the other road classifications. Those links classed as ‘Consultation Routes’ are categorised as a route which is key to timber extraction, but which are not up to ‘Agreed Route’ standard. Consultation with the local authority is required, and it may be necessary to agree limits of timing, allowable tonnage etc. before the route can be used. B-roads are classified as ‘Consultation Routes’ by default unless covered by one of the other classifications. ‘Severely Restricted Routes’ are not normally to be used for timber transport in their present condition. These routes are close to being Excluded Routes. Consultation with the local authority is required prior to use. Finally, ‘Excluded Routes’ should not be used for timber transport in their present condition. These routes are either formally restricted, or are close to being formally restricted, to protect the network from damaging loads.

Roads within the Study Area form part of the route network used for the extraction of timber and are therefore regularly used by HGV traffic. This includes the A9 and B9176 which are ‘Agreed Routes’ and the B817 which is a ‘Consultation Route’.

5.4 Existing Traffic Conditions

In order to assess the impact of the Proposed Development construction traffic on the Study Area, traffic data was obtained from Automatic Traffic Counters (ATC) that were deployed at the following locations in June and November 2024:

1. B817, east of the proposed Main Vehicular Access Point; and
2. B9176, north of its junction with the A9.

The ATCs were deployed over a 7-day period, to collect vehicle volumes, composition and speed per direction per hour.

To complement the ATC survey information, existing traffic count data was obtained from the Transport Scotland (TS) database[4], with 2024 data utilised data utilised. Data was obtained for the following locations:

[3] https://timbertransportforum.org.uk/ [Accessed December 2025]
[4] https://ts.drakewell.com/multinodemap.asp [Accessed December 2025]

1. A9, east of the A9/B9176 Junction (TS Counter: ATC01015);
2. A9, north of Tain at Morangie (TS Counter: ATC01021);
3. A9, between Poles and The Mound (TS Counter: ATC01334); and
4. A9, east of Ardullie Roundabout (TS Counter: ATC01012).

The traffic counters allowed the traffic flows to be split into vehicle classes and the data has been summarised into cars/LGVs and HGVs (all goods vehicles >3.5 tonnes gross maximum weight, including buses).

For the purposes of the assessment, 12-hour (07:00 to 19:00) two-way average traffic flows have been used within the assessment, to align with the likely 12-hour construction day and to ensure that the potential impact of the Proposed Development is not diluted on the road network with higher 24-hour flows.

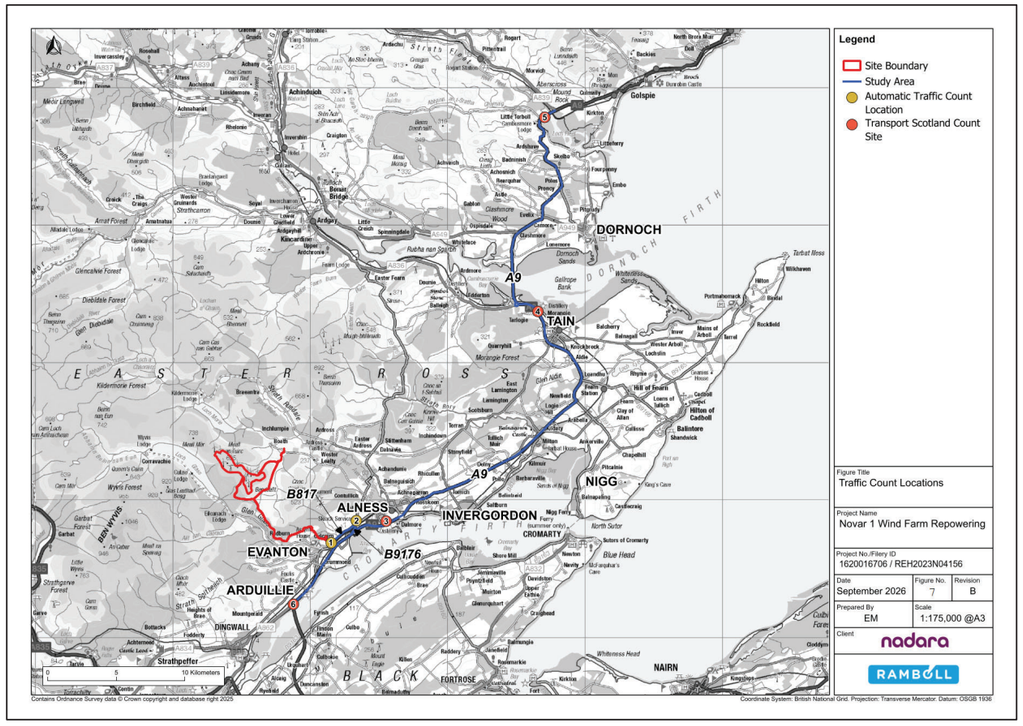
The following National Road Traffic Forecast (NRTF) growth factors were applied to the traffic flows in order to estimate the 2026 baseline year flows for the traffic data:

- Local Road Network, High NRTF growth factor – 2024 to 2026 is 1.024; and
- Trunk Road Network, Low NRTF growth factor – 2024 to 2026 is 1.011.

These traffic count sites were identified as being areas where sensitive receptors on the access route would be located. A full receptor sensitivity and effect review is prepared in **Chapter 11: Traffic and Access (EIAR Volume 2)**.

The locations of the traffic count sites are illustrated in **Figure 7.**

Figure 7 Traffic Counter Locations



The 12-hour two-way average traffic flows for each of the traffic count locations are presented in Table 2.

Table 2 12-Hour Two Way Average Traffic Data (2026)

Site ID	Survey Location	Count Source	Cars & LGVs	HGVs	Total
1	B817, east of the proposed Main Vehicular Access Point	ATC	1,542	213	1,755
2	B9176, north of its junction with the A9	ATC	1,019	496	1,515
3	A9, east of the A9 / B9176 Junction	TS	8,277	1,901	10,178
4	A9, north of Tain at Morangie	TS	6,110	1,201	7,312
5	A9, between Poles and The Mound	TS	3,666	831	4,497
6	A9, east of Ardullie Roundabout	TS	10,632	2,349	12,980

Please note minor variances due to rounding may occur.

The ATC survey locations and the TS database which provided traffic volume data was also used to obtain speed statistics. The two-way seven-day average and 85th percentile speeds observed at two of the count sites are summarised in Table 3.

Table 3 Speed Summary Table

Site ID	Survey Location	Count Source	Mean Speed (mph)	85%ile (mph)	Speed Limit (mph)
1	B817, east of the proposed Main Vehicular Access Point	ATC	44.7	53.0	60
2	B9176, north of its junction with the A9	ATC	48.3	55.7	60
3	A9, east of the A9 / B9176 Junction	TS	51.3	57.6	60
4	A9, north of Tain at Morangie	TS	53.1	59.6	60
5	A9, between Poles and The Mound	TS	50.0	62.7	60
6	A9, east of Ardullie Roundabout	TS	44.1	55.8	60

Speed data obtained 2024 for ATC locations and 2025 for TS locations

The speed information indicates that for the most part, speed limits are being adhered to within the Study Area, with the exception of the 85th percentile on the A9 between Poles and the Mound. On this road link, the 85th percentile speed exceeds the speed limit by approximately 5%. The average (mean) speeds on all sites are below the speed limit of 60mph.

5.4.1 Accident Review

Personal Injury Accident (PIA) data for the five-year period commencing 01 January 2020 through to the 31 December 2024 was obtained from the online resource CrashMap[5] which uses data collected by the police about road traffic crashes occurring on British roads, where someone is injured.

TA Guidance[6] requires an analysis of the PIA on the road network in the vicinity of any development to be undertaken for at least the most recent three-year period, or preferably a five-year period, particularly if the Site has been identified as being within a high accident area. Whilst the Study Area has not been identified as having a high accident rate, a five-year review has been undertaken to ensure a comprehensive assessment has been undertaken.

The PIA statistics are categorised into three categories, namely:

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

[5] https://www.crashmap.co.uk [Accessed December 2025]
[6] UK Government (2014) Travel Plans, Transport Assessments and Statements Available at: https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements

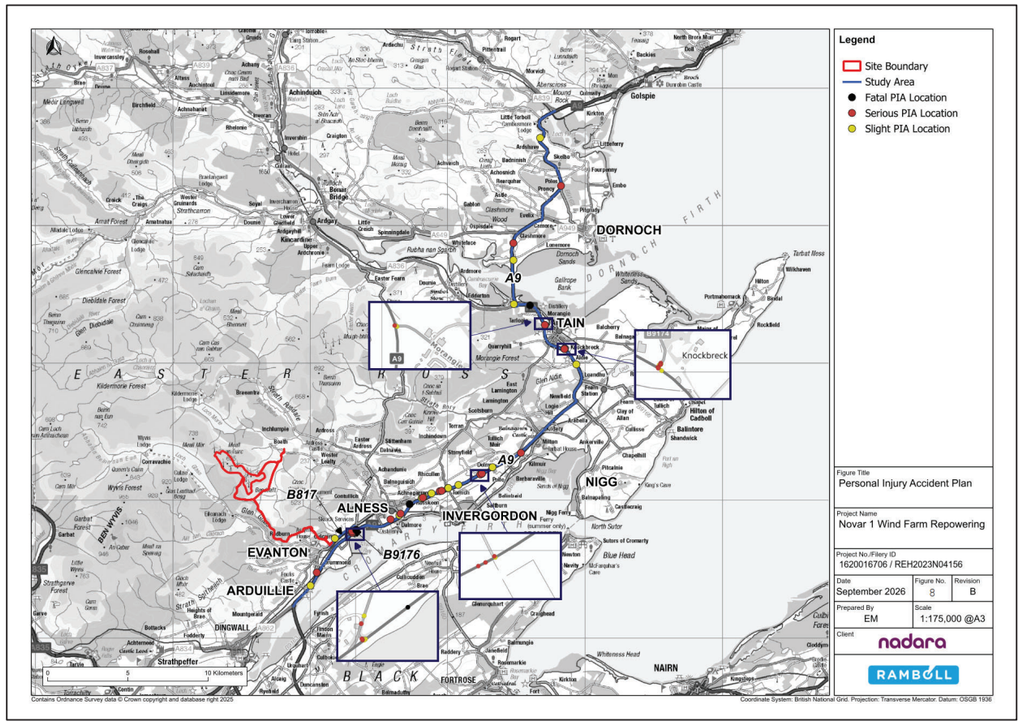
- A “Fatal” PIA, for those accidents that result in a death.

The general locations and severity of the recorded accidents within the Study Area are summarised in Table 4, while **Figure 8** shows their locations.

Table 4 PIA Summary

Road Link	Severity			No of PIAs involving an HGV
	Slight	Serious	Fatal	
A9	23	20	3	11
B9176	1	1	0	1
B817	1	0	0	1
Total	**25**	**21**	**3**	**13**
Percentage of total accidents	*51%*	*43%*	*6%*	*27%*

Figure 8 PIA Locations



A general summary of the accidents considered within the review is as follows:

A9

- There were a total of 46 accidents recorded on the A9 within the Study Area, 23 of which were slight, 20 were serious and there were three fatalities;
- The first fatality occurred to the north of Glen Morangie and involved a collision between a car and HGV, resulting in a single fatality in the car. The accident occurred in the evening on a section of road with no street lighting;
- The second fatality occurred to the southwest of Achnagarron Morangie and involved a collision between a car and HGV, resulting in a single fatality in the car. The accident occurred in the evening on a section of road with no street lighting;

- The third fatality occurred on approach to the junction between the A9 and B9176 and involved three cars and two HGVs, resulting in a single fatality in one of the HGVs;
- Twelve of the accidents recorded on the A9 involved an HGV. Of these, four were categorised as being slight, five serious and three fatalities;
- There were a number of clusters of PIAs at junctions on the A9. The first of these of these was at the northern junction of the A9 and B9174, where three accidents have been recorded, two slight and one serious. All of the recorded accidents at this location involved two or more vehicles. No HGVs or motorcycles were involved in any of the accidents;
- The second cluster occurred at the southern junction between the A9 and B9174 at Tain, where a total of 10 accidents were recorded. Five of the accidents were recorded as serious and five as slight. All of the recorded accidents involved between two and four vehicles. One HGV was involved in one of the accidents, which was serious, and two of the accidents involved young drivers (under 25). The junction has been highlighted as an area of concern by both local residents and Councillors and requests for improvements to the junction have been made to TS;
- The third cluster occurred at the junction between the A9 and the U1905 (Denny Smithy Road) where there were a total of four accidents recorded, three serious and one slight. All of the accidents involved between two and three cars, with one of the accidents involving an HGV. This accident also involved a young driver (under 25);
- The fourth cluster occurred at the junction between the A9 and the B9176 were there were a total of four accidents recorded, two serious and two slight. All of the accidents involved between two and three cars, with one of the accidents involving an HGV. Two of the accidents involved a young driver (under 25);
- There was one accident resulting in a pedestrian casualty, which occurred near Achnagarron and was recorded as serious. The accident involved an HGV on a section of road where there are no pedestrian facilities;
- There were no accidents on the A9 involving a bus or cyclist; and
- There were 21 accidents on the A9 occurring during Winter months (November – March) when poor weather conditions may have exacerbated the risk of an accident occurring.

B9176

- There was a total of two accidents recorded on the B9176 within the Study Area, one of which was slight and one was serious;
- The serious accidents involved two vehicles, a car and a motorcycle, and occurred on approach to the junction with Airfield Road. The slight accident also occurred at the junction and involved a car and an HGV;
- There were no accidents on the B9176 involving a bus or cyclist;
- There were no accidents on the B9176 resulting in a child or pedestrian casualty; and
- There was one accident on the B9176 occurring during Winter months (November – March) when poor weather conditions may have exacerbated the risk of an accident occurring.

B817

- There was one accident recorded on the B817 within the Study Area, which was slight;
- The accident occurred on approach to the junction between the B817 and Dalgheal House, where the road corridor has vegetation lining both sides of the carriageway. The accident involved two vehicles, a car and an HGV;
- There were no accidents on the B817 involving a bus or cyclist;
- There were no accidents on the B817 resulting in a child or pedestrian casualty; and
- There were no recorded accidents in the vicinity of the Main Vehicular Access Point on the B817.

PIA Summary

The analysis identifies a total of 49 PIAs across the assessed links over the five-year period. The severity breakdown is 51% slight, 43% serious and 6% fatal.

Most accidents occurred on a bend or on approach to a junction, where there is an increased interaction between vehicles. The nearest recorded PIA to the Main Vehicular Access Point occurred approximately 620m to the east and involved a car and HGV and was classed as slight.

There were four clusters of accidents recorded on the A9 at known accidents black spots, all at junctions. Of the 46 recorded accidents on the A9, 21 of them occurred within the aforementioned clusters.

Based on the information available, it has been established that there are no specific road safety issues within the immediate vicinity of the Site that currently require addressing or would be exacerbated by construction activities associated with the Proposed Development. The locations where clusters of PIAs have occurred has been identified and will be given consideration within the CTMP.

5.5 Future Baseline

5.5.1 2029 Traffic Flows

Subject to the Proposed Development being granted planning consent, the decommissioning of the Novar 1 Wind Farm and the construction of the repowered wind farm would be undertaken over a period of three years. The construction of the repowered wind farm is estimated to take approximately 18 months (principal construction period) within the overall 3-year construction phase, depending on weather conditions and ecological considerations.

To assess the likely effects during the construction phase, base year traffic flows were determined by applying NRTF growth factors to the surveyed traffic flows. As requested by THC and TS during the scoping exercise, high NRTF growth factors have been used for the local road network and low NRTF growth factors for the trunk road network. The NRTF low growth factor, for 2026 to 2029 is 1.015 and the high is 1.036. These factors have been applied to the 2026 traffic data presented in Table 2 to estimate the 2029 Base traffic flows presented in Table 5.

Table 5 12-Hour Two Way Average Traffic Data (2029)

Site ID	Survey Location	Cars & LGVs	HGVs	Total
1	B817, east of the proposed Main Vehicular Access Point	1,597	221	1,818
2	B9176, north of its junction with the A9	1,055	514	1,569
3	A9, east of the A9 / B9176 Junction	8,401	1,929	10,330
4	A9, north of Tain at Morangie	6,202	1,219	7,421
5	A9, between Poles and The Mound	3,721	844	4,564
6	A9, east of Ardullie Roundabout	10,791	2,384	13,175

Please note minor variances due to rounding may occur.

5.6 Committed Developments

5.6.1 Onshore Wind Farm and Energy Related Planning Applications

A review of THC's online planning portal[7] and Scottish Governments ECU portal[8] was undertaken to identify any consented developments within the vicinity of the Proposed Development which would generate significant traffic within the same Study Area and should be included within the assessment.

TA Guidance[9] from the UK Government advises that only those projects with extant planning permission or local development plan allocations within an adopted or approved plan require to be included in any assessment.

[7] https://www.highland.gov.uk/info/180/planning_-_applications_warrants_and_certificates/143/planning_permission/4 [Accessed December 2025]
[8] https://www.energyconsents.scot/ApplicationSearch.aspx?T=1 [Accessed December 2025]
[9] https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements

Those projects in scoping or at the application stage should not be included in cumulative assessments as they have yet to be determined. When considering traffic impacts specifically in relation to the construction phase of a project, the potential traffic impact is highly speculative and as such, cannot be included in the assessment. Table 6 shows local developments within the planning system which are considered within the cumulative assessment.

Table 6 Summary of Local Developments

Reference	Project	No. of Turbines	Status
22/02442/FUL 22/00054/REFRC (Appeal) PPA-270-2282	Strathrory Wind Farm	7	Consented, under construction
19/01861/S36 ECU00001800	Kirkan Wind Farm	17	Consented
21/01921/S36 ECU00003251	Garvary Wind Farm	24	Consented
21/00849/FUL 23/02991/SCRE ECU00004824	Lairg II Wind Farm Re-design	5	Consented
21/03695/S36 ECU00001930	Achany Extension Wind Farm	18	Consented
20/05067/FUL	Strath Tirry Wind Farm	4	Consented
22/01635/S36 ECU00002031	Chleansaid Wind Farm	16	Consented
22/01732/S36	Tom nan Clach Extension Wind Farm	7	Consented
23/05999/FUL	Contullich Energy Storage Project	-	Consented

Strathrory Wind Farm was granted planning permission following a successful appeal in June 2023, with a condition requiring commencement of development within five years of that date. Construction of the wind farm has since commenced, and the scheme is therefore not considered a committed development for the purposes of this assessment. The access routes associated with Strathrory Wind Farm overlap with the Study Area of the Proposed Development along the A9 and the B9176; however, as construction activities are already in progress, the scheme will be completed prior to the Proposed Development commencing.

Kirkan Wind Farm was granted planning permission in July 2023, with a condition requiring commencement of development within five years of that date. Construction of the wind farm has not yet commenced and there is no available information to indicate when construction will begin. Based on the submitted information for the scheme there are sections of the Study Areas that would overlap, however based on planning condition two relating to the commencement of the scheme, if construction commenced at the end of the five-year period (July 2028) the peak of construction activity based on the submitted traffic and transport submission would have passed prior to the Proposed Development commencing in 2029. As such it is considered that Kirkan Wind Farm does not require further consideration within the cumulative development sensitivity review.

Garvary Wind Farm was granted planning permission in February 2025, with a condition requiring commencement of development within five years of that date. Construction of the wind farm has not yet commenced and there is no available information to indicate when construction will begin. Based on the submitted information for the scheme there are sections of the Study Areas that would overlap. Garvary Wind Farm has

therefore been considered a committed development and has been given further consideration within the cumulative development sensitivity review.

Lairg II Wind Farm Re-design was granted planning permission in October 2021, with a condition requiring commencement of development within three years of that date. Construction of the wind farm has since commenced (early 2025), and the scheme is therefore not considered a committed development for the purposes of this assessment. The access routes associated with the scheme overlap with the Study Area of the Proposed Development; however, as construction activities are already in progress, the scheme will be completed prior to the Proposed Development commencing.

Achany Extension Wind Farm was granted planning permission in May 2023, with a condition requiring commencement of development within five years of that date. A S36 variation application has since been made in November 2025 and has yet to be determined. The access routes associated with the scheme overlap with the Study Area of the Proposed Development; however, should the S36 variation application be unsuccessful, the existing consent will have lapsed by the time the Proposed Development commences construction. Alternatively, should the scheme progress under the existing consent, based on planning condition two relating to the commencement of the scheme, if construction commenced at the end of the five-year period (May 2028) the peak of construction activity based on the submitted traffic and transport submission would have passed prior to the Proposed Development commencing in 2029. As such it is considered that Achany Extension Wind Farm does not require further consideration within the cumulative development sensitivity review.

Strath Tirry Wind Farm was granted planning permission June 2022, with commencement no later than three years from date of consent. A S42 application made in May 2025 and consented in September 2025, allowed for an extension to September 2030 for commencement. Based on the submitted information for the scheme there are sections of the Study Areas that would overlap. Strath Tirry Wind Farm has therefore been considered a committed development and has been given further consideration within the cumulative development sensitivity review.

Chleansaid Wind Farm was granted planning permission in December 2023, with a condition requiring commencement of development within five years of that date. Based on the submitted information for the scheme there are sections of the Study Areas that would overlap. Chleansaid Wind Farm has therefore been considered a committed development and has been given further consideration within the cumulative development sensitivity review.

Tom nan Clach Extension Wind Farm was granted planning permission in May 2024, with a condition requiring commencement of development within five years of that date. A review of the submitted traffic and transport studies for the scheme show that there are no shared sections of the Study Area. As such it is considered that Tom nan Clach Extension Wind Farm does not require further consideration within the cumulative development sensitivity review.

The review identified the consented Contullich Energy Storage Project (planning reference: 23/05999/FUL) as a potential cumulative development to consider within this assessment. The Contullich Energy Storage Project was granted planning permission in January 2025. A condition has been imposed that the development must commence within five years of this date. The construction access routes detailed for the Contullich Energy Storage Project overlap the Study Area of the Proposed Development along the A9 and the B9176. From reviewing online supporting planning documents it is assumed that construction will take place over an 18-month period. The Contullich Energy Storage Project will therefore be included as a cumulative development, should the construction phases of the scheme and the Proposed Development overlap.

Based on the information provided, the following projects have been considered in a cumulative development sensitivity review assessment within in **Chapter 11: Traffic and Access (EIAR Volume 2)**, should the construction phases of the schemes and the Proposed Development overlap:

- Garvary Wind Farm;

- Strath Tirry Wind Farm;
- Chleansaid Wind Farm; and
- Contullich Energy Storage Project.

Should any other schemes be consented and constructed at the same time as the Project, the Applicant would welcome the opportunity to engage with other developers in consultation with THC to ensure appropriate traffic management measures would be implemented to minimise any cumulative impacts. In the event of all the sites being constructed at the same time it is suggested this would be mitigated through the use of an overarching Traffic Management and Monitoring Plan (TMMP) for all of the sites and by introducing a phased delivery plan which would be agreed with THC and Police Scotland.

Furthermore, it is extremely unlikely that peak traffic conditions would occur should more than one scheme be constructed at the same time, due to differences in construction programmes, material supplies and developer resources.

5.6.2 Other Planning Applications

A review of the THC online planning portal was also undertaken for other developments with planning consent, which should be considered within this assessment. The review examined consented developments whose trips are considered significant in scale (i.e., has associated traffic impact of over 30%).

The review identified the proposed mixed-use development, comprising residential (160 unit) and business/community uses development located to the south of the Proposed Development at the eastern extents of Evanton, with access taken via the Proposed Developments access on the B817. No detailed information in relation to timescales is currently available on the proposals, or information on predicted traffic generation included with information submitted for planning reference 16/01842/PIP, 2301468/MSC or 20/02702/MSC. It is therefore considered that the use of low NRTF growth factors within the assessment is considered sufficient to capture the baseline traffic flows associated with the scheme should it be fully built out by the time the Proposed Development is constructed in 2029.

The review did not identify any other significant traffic generating developments in the Study Area that may occur during the construction phase associated with the Proposed Development.

The use of NRTF growth factors for future background traffic is considered robust for addressing smaller, non-significant traffic generation caused by smaller developments within the Study Area.

It should be noted that the inclusion of additional traffic trips to the baseline, such as committed development trips, will dilute the potential impact that the Proposed Development will have on the local road network. As such, the approach taken is considered to be an overly robust assessment.

6 Trip Generation and Distribution

6.1 Construction Phase

6.1.1 Trip Derivation

During the 18-month principal construction period when the construction of the repowered wind farm will take place, the following traffic would require access to the Site:

- Staff transport, in either cars or staff minibuses;
- Construction equipment and materials, deliveries of machinery and supplies such as concrete materials and crushed rock;
- Components relating to the substation and associated infrastructure;
- AILs consisting of the wind turbine sections and heavy lift cranes; and
- Escort vehicles for AIL deliveries.

Average monthly traffic flow data was used to establish the construction trips associated with the Proposed Development, based on the assumptions detailed in the following sections. It should be noted that there may be variations in the following calculations due to rounding, which are not considered significant. It should be noted that any assumptions are based on professional judgement and previous wind farm construction site experience.

6.1.2 Construction Staff

Staff will arrive in non-HGV vehicles and where possible will be encouraged to car share. The workforce on-Site will depend on the activities undertaken, but, based on previous wind farm construction site experience for a project of this scale which suggests three staff per turbine during the short peak period of construction is likely, the maximum number of staff expected on-Site could be around 27 per day.

For the purposes of estimating traffic movements, it was assumed that 60% of staff would be transported by minibus and 40% would arrive by car (single car occupancy was assumed as the worst case at this stage with potentially fewer movements through car sharing).

Based on these assumptions, staff transport cars and light vehicles would account for a maximum of 26 vehicle movements (13 inbound trips and 13 outbound trips) per day during the peak period of construction.

6.1.3 Abnormal Indivisible Loads

The turbines are broken down into components for transport to the Site. The nacelle, blade and tower sections are classified as AILs due to their weight, length, width and height when loaded. For the purposes of the report, the ‘worst case’ numbers of components requiring transport are illustrated in Table 7.

Table 7 Turbine Components

Component	Number of Components per Turbine
Rotor Blades	3
Tower Sections	4
Nacelle	1
Hub	1
Drive Train	1
Nose Cone	1
Transformer	1
Ancillary	1
Site Parts	0.25 (parts shared between 4 wind turbines on one delivery)

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

Escort vehicles would accompany the AIL convoys to support the traffic management measures. Up to three vehicles would be deployed and it is assumed that three AIL turbine component loads would be delivered per convoy. This would result in 31 convoys on the network, with a total of approximately 184 escort vehicle movements (92 inbound trips and 92 outbound trips).

Wind turbine components that do not classify as AILs, would be delivered in addition to these, resulting in a further approximate 58 vehicle movements (29 inbound trips and 29 outbound trips). All of these deliveries are expected to occur over a period of approximately three to four months depending on weather conditions.

The escort vehicles have been assumed to be police cars and light goods vehicles. Motorcycles may be deployed, depending upon police resources.

6.1.4 General Deliveries

Throughout the construction phase, general deliveries would be made to the Site by HGV. These would include fuel, Site office supplies and staff welfare. At height of construction, it is assumed that up to 40 journeys to Site are made (20 in and 20 out) per month.

6.1.5 Timber Extraction

There will be a requirement for a small amount of timber felling and extraction associated with the construction of the Proposed Development. It is currently estimated that there will be in the order of 75 trees that will require to be felled (up to 150 tonnes) and exported from the Site. Note this is subject to change following the preparation of a detailed felling plan.

It has been assumed that the timber will be felled at the start of the principal construction period and occur over a period of two months. For the purposes of the assessment, it has been assumed that all timber extracted will be done using a dedicated timber articulated lorry, which has a payload capacity of approximately 25 tonnes.

Based on the above, it is therefore assumed that a total of 16 vehicle movements (8 inbound trips and 8 outbound trips) will be required to extract the timber from the Site, including plant mobilisation.

6.1.6 Material Deliveries

Various materials will need to be delivered to the Site to construct the Site-based infrastructure. At the outset of the construction works, HGV deliveries will deliver plant and initial material deliveries to the Site to enable the formation of the compounds and to deliver construction machinery and plant.

It is not currently proposed to batch concrete on-Site; rather it has been assumed that ready-mix concrete would be delivered from suppliers to the south, in the Inverness area for the purposes of this assessment. In order to prevent the potential for ‘cold joints’ within the wind turbine base, there will be a requirement for each base to be poured in a single, continuous operation. Based on the size of each wind turbine base (1,240 m^3) this would result in 310 HGV movements (155 inbound trips and 155 outbound trips) per turbine. Assuming two concrete pumps running simultaneously, it is estimated that each pour will typically take between 12 and 16 hours of non-stop deliveries.

Based on the scale of the Proposed Development, it has been assumed that one pour per week would be undertaken. As such, it is expected that pouring of the nine turbine bases would occur over a three-month period, allowing for potential impacts due to weather and other unforeseen circumstances.

The estimated total volume of concrete required on-site is 11,260 m³, based upon expected wind turbine foundation, substation foundation and miscellaneous uses across the Site. Table 8 below shows the breakdown for each use.

Table 8 Concrete Material Deliveries

Element	Volume/Installation (m³)	Inbound Trips	Total Movements
Wind turbine foundations	11,160	1,395	2,790
Substation foundation & miscellaneous uses	100	13	26

Reinforcement steel required in the wind turbine foundations, substation etc. across the Site are detailed in Table 9 below.

Table 9 Steel Deliveries

Element	Weight/Installation (t)	Total Weight (t)	Lorry Capacity (t)	Inbound Trips	Total Journeys
Turbine foundation	124	1,116	30	38	76
Substation/control building/met mast foundation	200	200	30	7	14

The proposed Internal Tracks will generally be up to 6m in width and would be designed to accommodate 13 tonne axle loads. In addition to the Internal Tracks, crane hardstands will be constructed to enable the wind turbine erection process. There will also be three compound areas, a temporary laydown area.

Based on the Borrow Pit Assessment undertaken and included as **Technical Appendix 9.8: Borrow Pit Assessment (EIAR Volume 4)**, it is estimated that up to 96,000 m³ of aggregate material will be available from the identified borrow pit location, including a 20% reduction for unsuitable material. This is in excess of the estimated circa 60,869 m³ required on-Site.

Furthermore, as detailed in **Technical Appendix 1.5: Outline Decommissioning Strategy (EIAR Volume 4)**, infrastructure associated with the existing Novar 1 Wind Farm would be recycled or reused in the construction of the repowered wind farm where practicable. The existing wind turbines would be dismantled and transported off-Site.

Notwithstanding this, as a worst-case assessment, it has been assumed that 100% of the aggregate material requirements will be imported to the Site, to allow for a suitably robust assessment to be undertaken. Therefore, for the purpose of this assessment, it is assumed that the aggregate material will be delivered from the Pat Munro (Dornoch Quarry) located to the north off the A9. It acknowledged that there are other local quarries closer to the Proposed Development (Pat Munro – Alness Quary) within Alness, however it is not proposed to use this quarry to avoid increasing HGV movements on the local road network.

The estimate of imported material (i.e. 100% of the total volume of required material) is detailed in Table 10.

Table 10 Aggregate Material Deliveries

Element	Total Volume (m³)	Total Weight (t)	Lorry Capacity (t)	Inbound Trips	Total Movements
Stone/aggregates	60,869	133,911	20	6,696	13,392

Geotextile would be delivered to the Site in rolls. A total of 498 large rolls may be required and would be delivered by HGV which would result in 50 vehicle movements (25 inbound trips in and 25 outbound trips).

Cables would connect each turbine to the internal substation and control building. Trip estimates for the cable materials are provided below in Table 11 and Table 12. Up to three cables are to be provided within each cable trench and would be backfilled with cable sand. The cable materials would be likely sourced from Inverness via the A9, with sand sourced from quarries to the north off the A9.

Table 11 Cable Trip Estimate

Element	Total Cable Length (m)	Length per Drum (m)	Number of Drums	Inbound Trips	Total Movements
Cables	74,103	500	148	17	34

Table 12 Cable Sand Trip Estimate

Element	Volume (m³)	Total Weight (t)	Lorry Capacity (t)	Inbound Trips	Total Movements
Cable Sand	8,337	13,338	20	667	1,334

Ducting would be used to shield the trench and ducting would be used to protect the cable when it runs under roadways, with 74 vehicle movements predicted for ducting materials (37 inbound trips and 37 outbound trips).

One substation building would be constructed on the Site. This would require deliveries of building materials and structural elements and would result in 250 vehicle movements (125 inbound trips in and 125 outbound trips).

The resulting traffic generation estimates have been plotted onto the indicative construction programme, for the principal construction period to illustrate the peak journeys on the network. Table 13 illustrates the trip generation throughout the construction programme for each month, showing two-way construction vehicle movements, i.e. an inbound and outbound trip.

Table 13 Construction Traffic Profile (two-way trips)

Activity	Class	Month											
		1	2	3	4	5	6	7	8	9	10	11	12
Site establishment & mobilisation	HGV	60	40	20									
Timber felling /extraction	HGV	16											
General Site deliveries	HGV	40	40	40	40	40	40	40	40	40	40	40	40
Aggregate deliveries	HGV		1,913	1,913	1,913	1,913	1,913	1,913	1,913				
Concrete deliveries	HGV									930	930	930	
Reinforcement deliveries	HGV							45	45				
Substation	HGV									63	63	63	63
Cabling & ducting deliveries	HGV										54	54	
Cabling sand	HGV										334	334	334
Geotextile deliveries	HGV		25		25								
AIL cranage	HGV												20
AIL deliveries	HGV												
AIL escorts	Car & LGV												
Reinstatement	HGV												
Testing & commissioning	Car & LGV												
Staff	Car & LGV	285	285	428	571	571	571	571	571	571	571	571	571
Total HGV		116	2,018	1,973	1,978	1,953	1,953	1,998	1,998	1,033	1,420	1,420	456
Total cars/LGV		285	285	428	571	571	571	571	571	571	571	571	632
Total movements		401	2,304	2,401	2,549	2,524	2,524	2,569	2,569	1,603	1,991	1,991	1,088
Average HGV per day		6	92	90	90	90	90	92	92	48	66	66	22
Average cars/LGV per day		14	14	20	26	26	26	26	26	26	26	26	30
Average per Day		20	106	110	116	116	116	118	118	74	92	92	52

Please note minor variances due to rounding may occur.
Calculations assume that there are 22 working days per month.
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Activity	Class	Month					
		13	14	15	16	17	18
Site establishment & mobilisation	HGV						
Timber felling/extraction	HGV						
General Site deliveries	HGV	40	40	40	40	40	40
Aggregate deliveries	HGV						
Concrete deliveries	HGV						
Reinforcement deliveries	HGV						
Substation	HGV						
Cabling & ducting deliveries	HGV						
Cabling sand	HGV	334					
Geotextile deliveries	HGV						
AIL cranage	HGV			20			
AIL deliveries	HGV	79	79	79			
AIL escorts	Car & LGV	61	61	61			
Reinstatement	HGV					60	60
Testing & commissioning	Car & LGV				40	40	40
Staff	Car & LGV	571	571	571	428	285	285
Total HGV per month		453	119	139	40	100	100
Total cars/LGV per month		632	632	571	468	325	325
Total movements per month		1,085	751	710	508	425	425
Average HGV per day		22	6	8	2	6	6
Average cars/LGV per day		30	30	26	22	16	16
Average per day		52	36	34	24	22	22

Please note minor variances due to rounding may occur.
Calculations assume that there are 22 working days per month.

The peak of construction occurs in month seven and eight when there would be a total of 2,569 vehicle movements per month, which equates to approximately 118 vehicle average movements per day, comprising 92 two-way HGV movements and 26 car/LGV movements. This would equate to just under ten total movements or approximately seven HGV movements per hour, across a typical 12-hour day, assuming a flat traffic profile, where traffic arrived and departed the Site equally throughout the working day. This is in the scenario whereby 100% of aggregate materials for use on the Site is sourced from local suppliers.

In the scenario whereby 100% of aggregate material, is sourced from the on-Site borrow pit or from the recycling and re-use of materials sourced from the decommissioning of the existing Novar 1 Wind Farm, which is considered to be a more realistic scenario, there would be a total of 1,061 vehicle movements per month in the peak, which equates to an average of approximately 50 vehicle movements per day, comprising 24 two-way HGV movements and 26 car/LGV movements.

Notwithstanding the above, those days on which turbine foundations will be poured, there will be a requirement for each base to be poured in a single, continuous operation, which will result in 310 HGV movements (155 inbound trips and 155 outbound trips) per turbine. In addition, there will be approximately two additional HGV movements associated with general deliveries on foundation concrete pour days, however it would be proposed to re-schedule all other deliveries where practicable outwith this time to reduce the potential impact on the local road network. This scenario would only occur nine times during the construction phase. There would still be 26 car/LGV movements associated with construction staff, resulting in a total of 338 two-way vehicle movements on turbine foundation concrete pour days. This would equate to approximately 28 two-way total vehicles movements or 26 two-way HGV movements per hour, across a typical 12-hour day, assuming a flat traffic profile i.e. vehicles distributed evenly across the day.

As previously advised, it has been assumed that one pour per week would be undertaken, and for the purposes of the assessment the day on which the turbine base is poured has been used both with the TA and **Chapter 11: Traffic and Access (EIAR Volume 2)** in order to provide a worst-case assessment.

6.1.7 Distribution of Construction Trips

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 are as follows:

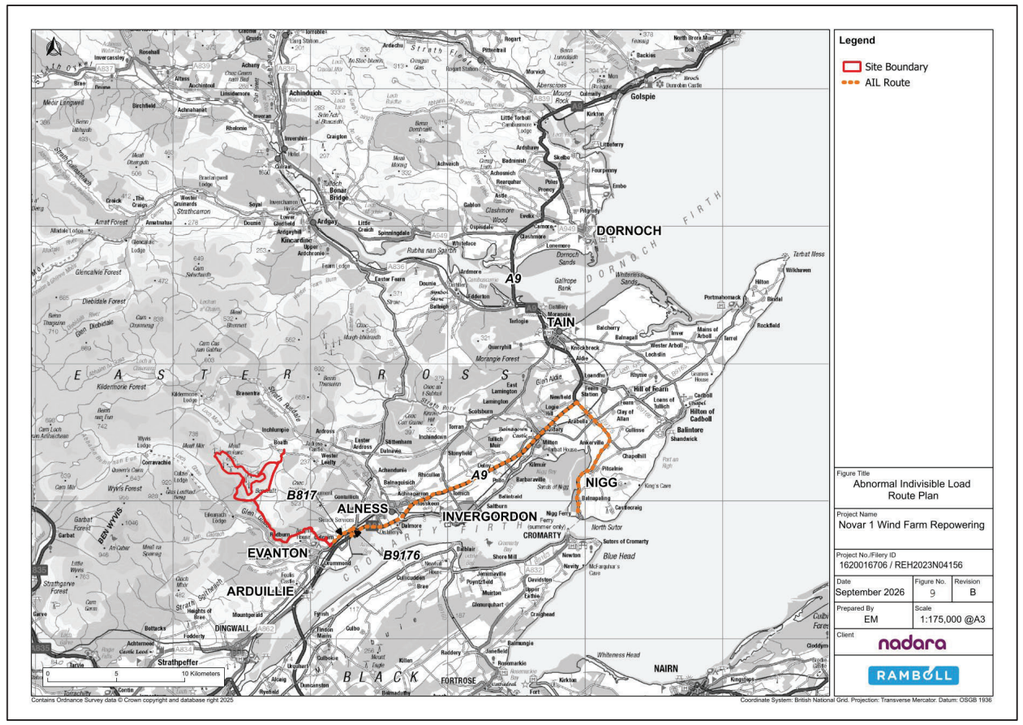
- All construction traffic enters the Site via the proposed access junction on the B817;
- Deliveries associated with ready-mix concrete, will be sourced from concrete suppliers, which for the purpose of this assessment will originate from the south on the A9, routing via the B9176 and B817;
- Sand and aggregates would be sourced from local quarries. For the purposes of the assessment, it is assumed that all material will be sourced from the Pat Munro (Dornoch Quarry) located off the A9 to the north, routing via the A9, B9176 and B817;
- The Balance of Plant (BoP) contractor would confirm final quarry and material sourcing with THC in the Construction Traffic Management Plan (CTMP);
- HGV deliveries associated with the HV electrical installation, control buildings, etc would arrive from the south via the A9, routing via the B9176 and B817;
- Staff working at the Site are likely to be based locally. It is assumed that 80% would come from the south via the A9 from the Inverness area, while 10% would arrive from the Alness area and 10% from the north-east via the A9;
- General site deliveries would be via the A9 from the south. These are generally smaller rigid HGV vehicles; and
- Timber taken off-Site would be used for both sawmill timber products and biomass/chipwood. As such, the destination of this would depend on the final usage. Current assumptions are that timber used for sawmill timber products would travel to the Dingwall area and the biomass/chipwood, would travel to the Inverness area, both routing via the B817, B9176 and A9.

Loads relating to the turbine components would be delivered from Port of Nigg. The proposed access route would be as follows:

- Loads would exit Nigg Port and will join the B9175 northbound;
- Loads would make a left turn at Nigg Roundabout onto the A9;
- Loads would continue west on the A9 until the B9176 at Skiach services, where loads would make a right turn onto the B9176;
- Loads would turn left onto the B817 travelling west; and
- Loads would turn right into the existing access junction leading to Site.

The proposed AIL access route is illustrated in **Figure 9** and has been considered, within the AIL RSR, provided in **Annex B**.

Figure 9 Proposed AIL Access Route



6.1.8 Peak Construction Traffic

Following the distribution and assignment of traffic flows to the Study Area network, the resultant daily traffic during the peak of construction (concrete foundation pour day) are summarised in Table 14.

Table 14 Peak Construction Traffic (concrete foundation pour day)

Survey Location	Cars/LGV	HGV	Total
B817, east of the proposed Main Vehicular Access Point	26	312	338
B9176, north of its junction with the A9	26	312	338
A9, east of the A9 / B9176 Junction	4	0	4
A9, north of Tain at Morangie	4	0	4
A9, Poles and The Mound	4	0	4
A9, east of Ardullie Roundabout	26	312	338

Please note that variances may occur due to rounding.

6.2 Operational Phase

In the operational phase, it is envisaged that the level of traffic associated with the Proposed Development would equate to on average two vehicle trips per week which is considered negligible and therefore no detailed assessment of the operational phase of the development has been undertaken.

6.3 Decommissioning Phase

Prior to decommissioning of the Site, a traffic assessment would be undertaken, and appropriate traffic management procedures followed.

The decommissioning phase would result in fewer trips on the road network than the construction or operational phase as it is considered likely that elements of infrastructure such as Internal Tracks would be left in place and structures may be broken up on-Site to allow transport by a reduced number of HGVs.

7 Traffic Impact Assessment

7.1 Construction Impact

The peak of construction activity (concrete foundation pour day) traffic data was combined with the future year (2029) traffic data to allow a comparison between the baseline results to be made.

The increase in traffic volumes is illustrated in percentage increases for each class of vehicle. This is illustrated in Table 15.

Table 15 2029 Baseline + Construction Development – 12-Hour Flows and Impact

Survey Location	Cars & LGV	HGV	Total Traffic	Cars & LGV % Increase	HGV % Increase	Total Traffic % Increase
B817, east of the proposed Main Vehicular Access Point	1,623	533	2,156	1.6%	141.2%	18.6%
B9176, north of its junction with the A9	1,081	826	1,907	2.5%	60.7%	21.5%
A9, east of the A9 / B9176 Junction	8,405	1,929	10,334	0.0%	0.0%	0.0%
A9, north of Tain at Morangie	6,206	1,219	7,425	0.1%	0.0%	0.1%
A9, Poles and The Mound	3,725	844	4,568	0.1%	0.0%	0.1%
A9, east of Ardullie Roundabout	10,817	2,696	13,513	0.2%	13.1%	2.6%

Please note minor variances due to rounding may occur.

The total traffic movements are predicted to increase by a maximum of 21.5% on the B9176. This is not considered significant in traffic terms for roads within the Study Area. To put the increase into perspective, the road will see an additional 338 total vehicle movements per day or approximately 28 vehicle movements per hour over the course of a typical 12-hour shift. The rest of the Study Area will see total traffic increase by a maximum of 18.6%, which occurs on the B817 to the east of the proposed Main Vehicular Access Point.

With regards to HGV traffic, this is predicted to increase by 141.2% on the B817, which could be considered statistically high, however this is caused by the relatively low levels of existing HGV traffic using the road. To put the increase into perspective, over the course of a typical 12-hour shift on-Site, there would be 312 HGV movements, which would equate to an additional 26 HGV movements per hour. The rest of the Study Area would see HGV traffic increase by a maximum of 60.7%, which occurs on the B9176, north of its junction with the A9.

A review of existing theoretical road capacity has been undertaken using The NESA Manual, formerly part of the Design Manual for Roads and Bridges, Volume 15, Part 5. The theoretical road capacity has been estimated for each of the road links for a 12-hour period that makes up the Study Area. The results are summarised in Table 16.

Table 16 2029 Peak Traffic Flow Capacity Review

Survey Location	2029 Baseline Flow	2029 Base + Development Flows	Theoretical Road Capacity (12hr)	Spare Road Capacity %
B817, east of the proposed Main Vehicular Access Point	1,818	2,156	21,600	90.0%
B9176, north of its junction with the A9	1,569	1,907	28,800	93.4%
A9, east of the A9 / B9176 Junction	10,330	10,334	28,800	64.1%
A9, north of Tain at Morangie	7,421	7,425	28,800	74.2%
A9, Poles and The Mound	4,564	4,568	28,800	84.1%
A9, east of Ardullie Roundabout	13,175	13,513	28,800	53.1%

Please note minor variances due to rounding may occur.

The results indicate there are no road capacity issues with the addition of construction traffic associated with the Proposed Development and significant spare capacity exists within the trunk and local road network to accommodate all construction phase traffic.

8 Proposed Mitigation Measures

8.1 Construction Phase

8.1.1 Construction Traffic Management Plan (CTMP)

During the construction phase, the project website (https://novar1repowering.co.uk/) 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 and TS.

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

- Agree AIL route modifications and improvements with THC and TS. Works which would be required to facilitate turbine deliveries are outlined in the RSR, which is presented in **Annex B**;
- Where possible, the detailed design process would minimise the volume of material to be imported to the Site to help reduce HGV numbers;
- A Staff Travel Plan, including transport modes to and from the worksite (including pick up and drop off times);
- A Transport Management Plan for AIL deliveries;
- To guarantee continuous, unhindered access for concrete wagons, all non-essential HGV deliveries, general servicing trips, and off-Site material export operations will be reduced where practicable and re-scheduled outwith the designated turbine foundation concrete pour days;
- 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 on the views of THC;
- Normal site working hours would be limited to between 0700 and 1900 Monday to Friday and 0700 and 1300 on Saturdays though component delivery and turbine erection may take place outside these hours i.e. depending on when police escort is available;
- Appropriate traffic management measures would be put in place on the B9176 and B817 and other local roads leading through to the Site, to avoid conflict with general traffic, subject to the agreement of THC. Typical measures would include HGV turning and crossing signs and/or banksmen at the Site access and warning signs;
- Make staff associated with regular deliveries to the Site aware of any know issues on the proposed access routes to the Site, for example locations with known safety issues or locations with a history of accidents, advising them to be extra vigilant and to adhere to posted speed limits;
- Provide construction updates on the project website, social media feeds and a newsletter to be distributed to residents within an agreed distance of the Site;
- Adoption of a voluntary reduced speed limits, for example on the B9176 and B817 and at other locations to be agreed with THC;
- All drivers would be required to attend an induction to include:
  - A toolbox talk safety briefing;
  - The need for appropriate care and speed control;
  - A briefing on driver speed reduction agreements (to slow Site traffic at sensitive locations through the villages); and
  - Identification of the required access routes and the controls to ensure no departure from these routes.

THC is likely to request that an agreement to cover the cost of abnormal wear on its network is made. 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 phase that would be hazardous to public traffic would be repaired immediately.

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

There would 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.

Before the AILs traverse the route, the following tasks would be undertaken to ensure load and road user safety:

- Ensure any vegetation which may foul the loads is trimmed back to allow passage;
- Confirm there are no roadworks or closures that could affect the passage of the loads;
- Check no new or diverted underground services on the proposed route are at risk from the abnormal loads; and
- Confirm the police are satisfied with the proposed movement strategy.

8.2 Abnormal Load Traffic

8.2.1 Abnormal Load Management Plan

There are a number of traffic management measures that can help reduce the effect of abnormal load convoys. All abnormal load deliveries would be undertaken at appropriate times (to be discussed and agreed with THC, Transport Scotland and the police) with the aim to minimise the effect on the local road network. It is likely that the abnormal load convoys would travel in the early morning periods before peak times while general construction traffic would generally avoid the morning and evening peak periods.

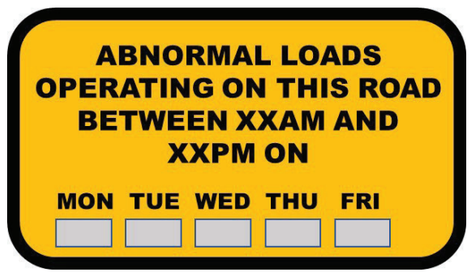
The majority of potential conflicts between construction traffic and other road users would occur with abnormal load traffic. General construction traffic is not likely to come into conflict with other road users as the vehicles are smaller and road users are generally more accustomed to them.

Potential conflicts between the abnormal loads and other road users can occur at a variety of locations and circumstances.

- On sections of single carriageway road or narrow road sections, for example on the B9176 and B817;
- At locations where there are significant changes in the horizontal alignment of the carriageway, requiring the loads to use the full carriageway width;
- Where traffic turns at a road junctions, requiring other traffic to be restrained on other approach arms; and
- In locations where high speeds of general traffic are predicted.

Advance warning signs would be installed on the approaches to the affected road network. Information signage could be installed to help assist drivers and an example is illustrated in **Figure 10**. Flip up panels (shown in grey) will be used to mask over days where convoys would not be operating. When no convoys are moving, the sign will be bagged over by the Traffic Management contractor.

Figure 10 Example Information Sign



This signage would assist in helping improve driver information and allow other road users to consider alternative routes or times for their journey (where such options exist).

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

The Abnormal Load Transport Management Plan would also include:

- Procedures for liaising with the emergency services to ensure that police, fire and ambulance vehicles are not impeded by the loads. This is normally undertaken by informing the emergency services of delivery times and dates and agreeing communication protocols and lay over areas to allow overtaking;
- A diary of proposed delivery movements to liaise with the communities to avoid key dates;
- 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.

8.2.2 Public Information

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

Information would relate to expected vehicle movements from the PoE through to the Main Vehicular Access Point. This would assist residents in understanding the timing of the convoy movements and may help reduce any potential conflicts.

8.2.3 Convoy System

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

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

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

8.3 Outdoor Access Management Plan (OAMP)

Within the Site, consideration has been given to pedestrians and cyclists alike due to potential interactions between construction traffic and users of Core Paths/paths, cycle routes and public roads. A framework Outdoor Access Management Plan (OAMP) has been prepared and provided as **Annex C**. A full OAMP will be developed and secured via a planning condition.

Users of the Core Paths/paths etc. would be separated from construction traffic wherever possible. Crossing points would be provided where required, with path users having right of way and temporary diversions would be provided where necessary. Appropriate Traffic Signs Manual Chapter 8[10] compliant temporary road signage would be provided to assist at these crossings for the benefit of all users.

[10] https://assets.publishing.service.gov.uk/media/5a74adeaed915d7ab83b5ab2/traffic-signs-manual-chapter-08-part-01.pdf

The principal contractor would ensure that speed limits are always adhered to by their drivers and associated subcontractors. This is particularly important within close proximity to the forest paths and at crossing points. Advisory speed limit signage would also be installed on approaches to areas where path users may interact with construction traffic.

Signage would be installed on the Site exits that makes drivers aware of local speed limits and reminding drivers of the potential presence of pedestrians and cyclists in the area. This would also be emphasised in the weekly toolbox talks.

A scoping response has been received from The British Horse Society, and it is proposed to consider measures implemented on similar schemes as part of the Proposed Development. These measures are predominantly focused around the interactions between HGV traffic and horses. Horses are normally nervous of large vehicles, particularly when they do not often meet them. Horses are flight animals and will run away in panic if really frightened. Riders will do all they can to prevent this but, should it happen, it could cause a serious accident for other road users, as well as for the horse and rider.

The main factors causing fear in horses in this situation are:

- something approaching them, which is unfamiliar and intimidating;
- a large moving object, especially if it is noisy;
- lack of space between the horse and the vehicle;
- the sound of air brakes; and
- anxiety on the part of the rider.

The British Horse Society has previously recommended the following actions that will be included in the Site training for all HGV staff:

- on seeing riders approaching, drivers must slow down and stop, minimising the sound of air brakes, if possible;
- if the horse still shows signs of nervousness while approaching the vehicle, the engine should be shut down (if it is safe to do so);
- the vehicle should not move off until the riders are well clear of the back of the HGV;
- if drivers are wishing to overtake riders, please approach slowly or even stop in order to give riders time to find a gateway or lay by where they can take refuge and create sufficient space between the horse and the vehicle. Because of the position of their eyes, horses are very aware of things coming up behind them; and
- all drivers delivering to the Site must be patient. Riders will be doing their best to reassure their horses while often feeling a high degree of anxiety themselves.

8.4 Staff Travel Plan

A 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;
- Car parking management; and
- Restrictions on parking, for example on the public road network and verges in the vicinity of the Development Ste entrance.

8.5 Operational Phase Mitigation

Site entrance roads would be well maintained and monitored during the operational life of the development. Regular maintenance will be undertaken to keep the Site Internal Track drainage systems fully operation and to ensure there are no run-off issues onto the public road network.

9 Summary and Conclusions

Pell Frischmann Consultants Ltd. has been commissioned by the Applicant to undertake a Transport Assessment for the Proposed Development, located approximately 11km north of Dingwall and 9km northwest of Alness in The Highland Council administrative area.

The Proposed Development would be accessed from the B817 (Fyrish Crescent) via an existing simple priority junction, which currently provides access to the operational Novar Wind Farm. This junction will be upgraded to accommodate the larger wind turbine components proposed as part of the Proposed Development.

Strategic access to the Site would be taken from the A9 to the southeast and northeast, with construction traffic routing through to the Site via the B9176 and B817. The likely PoE used for the discharging of wind turbine components would be the Port of Nigg, utilising sections of proven AIL routes used during the construction of other wind farms in the area.

Existing traffic data from Transport Scotland was supplemented by new Automatic Traffic Count surveys, with the data used to establish a base point for determining the impact during the construction phase and was factored to future levels (2029) to help determine the impact of construction traffic on the road network.

The peak of construction during typical on-Site construction activity occurs in month seven and eight when there will be a total of 2,569 vehicle movements per month, which equates to an average of approximately 118 vehicle movements per day, comprising 92 two-way HGV movements and 26 car/LGV movements. This would equate to an average of just under ten total movements or approximately seven HGV movements per hour, across a typical 12-hour day, assuming a flat traffic profile, where traffic arrived and departed the Site equally throughout the working day. This is in the scenario whereby 100% of aggregate materials for use on the Site is sourced from local suppliers.

In the scenario whereby 100% of aggregate material, is sourced from the on-Site borrow pit or from the recycling and re-use of materials sourced from the decommissioning of the existing Novar Wind Farm, which is considered to be a more realistic scenario, there would be a total of 1,061 vehicle movements per month in the peak, which equates to an average of approximately 50 vehicle movements per day, comprising 24 two-way HGV movements and 26 car/LGV movements.

Notwithstanding the above, those days on which turbine foundations will be poured, there would be a requirement for each base to be poured in a single, continuous operation, which would result in 310 HGV movements (155 inbound trips and 155 outbound trips) per turbine. In addition, there would be approximately two additional HGV movements associated with general deliveries on foundation concrete pour days. There would be 26 car/LGV movements associated with construction staff, resulting in a total of 338 two-way vehicle movements on turbine foundation concrete pour days. It has been assumed that one pour per week would be undertaken, and as such the above scenario would occur for a total nine days, spread across a three-month period, allowing for potential impacts due to weather and other unforeseen circumstances. This would equate to approximately 28 two-way total vehicles movements or 26 two-way HGV movements per hour, across a typical 12-hour day, assuming a flat traffic profile i.e. vehicles distributed evenly across the day.

In addition, a review of the theoretical road capacity was undertaken for the Study Area which showed that with the addition of construction traffic associated with the Proposed Development, there was significant spare capacity within the road network.

A series of mitigation measures and management plans have been proposed to help mitigate and offset the impacts of the construction phase traffic flows for both general construction traffic and abnormal loads associated with the delivery of the turbine components. It is considered that these can be secured by condition with The Highland Council.

The Proposed Development would lead to a temporary increase in traffic volumes within the Study Area during the construction phase only, however this can be appropriately and effectively managed. It is therefore concluded that there are no transport related matters which would preclude the construction of the Proposed Development.