

Chapter 12: Traffic and Transport

Chapter 12

Traffic and Transport

Introduction

12.1 This chapter presents the findings of the assessment of likely effects of the proposed Loch Liath Wind Farm (hereafter referred to as the 'Proposed Development') on Traffic and Transport. The specific objectives of the chapter are to:

- Describe the existing access network and transport baseline;
- Describe the assessment methodology and significance criteria used in completing the impact assessment;
- Describe the potential effects, including direct, indirect and any potential cumulative effects;
- Describe the mitigation measures proposed to address likely significant effects; and
- Assess the residual effects remaining following the implementation of mitigation.

12.2 The Access, Traffic and Transport assessment was undertaken by Pell Frischmann (see **Appendix 1.1: Statement of Expertise**).

12.3 This chapter is supported by a number of figures which are referenced throughout the text, and by **Appendix 12.1: Transport Assessment**.

Scope of the Assessment

Effects Assessed in Full

12.4 Informed by the work undertaken to date and baseline studies, the following effects have been identified for consideration in this assessment:

- Direct effects on road users during construction due to changes in traffic flows and transport of abnormal indivisible loads (AIL) in the surrounding study area¹; and
- Direct effects on local residents as a result of increased traffic during construction.

12.5 Assessment scenarios were used to predict the magnitude of change to baseline conditions of roads within the study area. To meet the criteria set out in the Institute of Environmental Management and Assessment (IEMA) guidance², a review of the effects on severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation and accidents / road safety has been undertaken.

Effects Scoped Out

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

- **Operational Phase:** The traffic effects during the operational phase of the Proposed Development are likely to be insignificant as expected traffic flows will be less than ten vehicle movements per week, far below the recognised thresholds for triggering a formal transport assessment. As such, the effects during the construction phase are scoped out of the assessment as agreed with Transport Scotland (TS) during Scoping (see **Table 12.1**).
- **Decommissioning Phase:** As noted in **Chapter 2: Approach to the EIA**, an assessment of effects on decommissioning of the Proposed Development has not been undertaken. Specific to access, traffic and transport, the traffic effects during the decommissioning phase can only be fully assessed closer to that period, i.e. 35 years on from the completion of construction. As elements of the Proposed Development are likely to remain in-situ (such as cable trenches, access tracks, etc), the traffic

flows associated with the decommissioning works will be lower than those associated with the construction phase. The construction phase therefore represents a worst case assessment and as such, no further consideration has been given to decommissioning effects, as agreed with TS during Scoping (see **Table 12.1**).

Assessment Methodology

Legislation and Guidance

Legislation

12.7 The assessment has been undertaken in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) (hereafter referred to as the "regulations").

Policy and Guidance

12.8 This assessment is carried out in accordance with the principles contained within the following documents:

- National Planning Framework 4 (2023);
- Transport Assessment Guidance (2012);
- The Guidelines for the Environmental Assessment of Road Traffic (1993);
- Highland-wide Local Development Plan (2012);
- Guidance on the Preparation of Transport Assessments (2014); and
- Table 2.2 of Volume 11, Section 2, Part 5 of the Design Manual for Roads and Bridges (DMRB) (2008).

Consultation

12.9 In undertaking the assessment, consideration has been given to the scoping responses and other consultation which has been undertaken as detailed in **Table 12.1**.

Table 12.1: Consultation Responses

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
The Highland Council (THC) 24/02/2021	Scoping Opinion	THC's Transport Planning team provided comment in relation to impacts on the local public road network in Highland. Transport Planning advise that feedback should also be obtained from Transport Scotland on their requirements for the public road they manage.	Transport Scotland has been consulted through Scoping. The responses are presented further in this table.
		Understand that the proposed route for delivery of turbine components to the Site is likely to be from either the A887 trunk road or the A831 local road. Should the Site entrance be located on the A887, turbine loads will access the Site from the ports of Kyle of Lochalsh (blades only) and Corpach (all other loads). Loads from, Corpach would approach the Site via the A830, A82, A87 and A887 from the west.	The Site access is to be located from the existing Bhlairaidh Wind Farm access located on the A887. It is proposed that turbine blades will be delivered from the port Kyle of Lochalsh while all other loads will be delivered from Corpach Harbour.

¹ Unless otherwise stated, all traffic flows quoted are two way flows.

² The Guidelines for the Environmental Assessment of Road Traffic (1993).

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		Should the Site entrance be located on the A831, all turbine components would be delivered from the Port of Inverness, with all turbine loads accessing the Site via the A9, A8082, A82 and A831.	
		<p>Construction Traffic Management Plan</p> <p>Require a Construction Traffic Management Plan (CTMP) be submitted for the approval of the Planning Authority. A CTMP will normally detail the following issues, however this is not an exhaustive list and the CTMP should be tailored to reflect the issues pertinent to this Proposed Development:</p> <ul style="list-style-type: none"> ■ Identification of all Council maintained roads likely to be affected by the various stages of the Proposed Development; ■ Predicted volume, type and duration of construction traffic; ■ Location of site compound, staff parking and visitor parking; ■ Proposed measures to mitigate the impact of general construction traffic and abnormal loads on the local road network following detailed assessment of relevant roads; ■ Details of any traffic management signage required for the duration of the construction period; and ■ Measures to ensure that all affected public roads are kept free of mud and debris arising from the Proposed Development. <p>The developer may also be requested to enter into a Section 96 agreement with THC to cover any abnormal wear and tear to the Council roads. This will include a requirement for pre and post construction surveys to be undertaken and agreed with the Council and for the provision of a suitable bond.</p> <p>If the Proposed Development involves any abnormal loads a detailed protocol, route and delivery programme will be required and agreed with any interested parties such as THC, the Police, Transport Scotland and community representatives. The protocol shall identify any requirement for convoy working and/or escorting of vehicles and include arrangements to provide advance notice of abnormal load movements in the local media.</p>	<p>A framework CTMP is presented in the Proposed Mitigation section of this chapter.</p> <p>It is proposed that a detailed CTMP will form a planning condition. The CTMP will contain the requested information.</p> <p>The list of roads links included in this assessment is presented in the Existing Conditions section of this chapter and further details of the roads included in the assessment are presented in Appendix 12.1.</p> <p>Details of the predicted volume, type and duration of construction are presented in Appendix 12.1.</p> <p>A site compound, staff parking and visitor parking will be provided as part of the Proposed Development. Information regarding these will be provided in the CTMP.</p> <p>Proposed measures to mitigate the impacts of construction traffic and abnormal loads are presented in the Proposed Mitigation section of this chapter. The Abnormal Indivisible Load (AIL) Route Survey Report (RSR) provided as part of Appendix 12.1 and outlines mitigation measures which are required to facilitate the delivery of AIL components from the respective port to the Site.</p> <p>Details of traffic management signage will be provided in the CTMP.</p> <p>As noted in the framework CTMP in the Proposed Mitigation section of this chapter, specific training and disciplinary measures will be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway.</p> <p>The Applicant will discuss any requirements for a Section 96 agreement with THC.</p> <p>Details of measures to be included in an Abnormal Load Transport Management Plan (TMP) are provided in the Proposed Mitigation section of this chapter.</p>
		<p>Transport Assessment</p> <p>THC Transport Planning would generally expect a Transport Assessment to be submitted with any future planning application and a High National Traffic Forecast be applied. The TA should consider the following points (noting that this is not exhaustive and should be used as a guide to submitting all relevant information in relation to roads, traffic</p>	<p>The Transport Assessment is provided in Appendix 12.1.</p> <p>High National Traffic Forecast growth factors have been used throughout the assessment.</p>

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		and transportation matters arising from the Proposed Development proposals).	
		1. Identify all public roads affected by the Proposed Development. In addition to transportation of all abnormal loads & vehicles (delivery of components) this should also include routes to be used by local suppliers and staff. It is expected that the developer submits a preferred access route for the Proposed Development. All other access route options should be provided, having been investigated in order to establish their feasibility. This should clearly identify the pros and cons of all the route options and therefore provide a logical selection process to arrive at a preferred route.	<p>The TA identifies the proposed roads that construction traffic will use and the RSR provided as part of Appendix 12.1 identifies the roads used to deliver the AILs to Site.</p> <p>Assumptions for the distribution of construction traffic is presented in the Predicted Construction Effects of this chapter. Construction traffic delivering materials to the Site will be predominantly travelling along the trunk road network which is constructed to accommodate significant HGV traffic.</p>
		2. Establish current condition of the roads. This work which should be undertaken by a consulting engineer acceptable to THC and will involve an engineering appraisal of the routes including the following: <ul style="list-style-type: none"> ■ Assessment of structural strength of carriageway including construction depths and road formation where this is likely to be significant in respect of proposed impacts, including non-destructive testing and sampling as required; ■ Road surface condition and profile; ■ Assessment of structures and any weight restrictions; ■ Road widths, vertical and horizontal alignment and provision of passing places; and ■ Details of adjacent communities. 	<p>A roads condition survey will be prepared prior to the commencement of construction and will include the requested information.</p> <p>It is anticipated that this would form a planning condition.</p> <p>The baseline established from the condition survey will inform any change in the road condition during the construction phase. Any necessary repairs attributed to the Proposed Development will be coordinated with the relevant authority.</p>
		3. Determine the traffic generation and distribution of the proposals throughout the construction and operation periods to provide accurate data resulting from the Proposed Development including: <ul style="list-style-type: none"> ■ Nos. of light and heavy vehicles including staff travel; ■ Abnormal loads; and ■ Duration of works. 	<p>Information regarding traffic generation and distribution is provided within Appendix 12.1.</p>
		4. Current traffic flows including use by public transport services, school buses, refuse vehicles, commercial users, pedestrians, cyclists and equestrians.	<p>Baseline total traffic flows are provided Appendix 12.1.</p>
		5. Impacts of proposed traffic including: <ul style="list-style-type: none"> ■ Impacts on carriageway, structures, verges etc; ■ Impacts on other road users; ■ Impacts on adjacent communities; ■ Swept path and gradient analysis where it is envisaged that transportation of traffic could be problematic; and ■ Provision of Trial Runs to be carried out to prove the route is achievable and/or to establish the extent of works required to facilitate transportation. 	<p>The impact of the Proposed Development on roads within the study area are presented in Table 12.12. The majority of the study area forms part of the trunk road network, which is constructed to accommodate significant HGV traffic.</p> <p>The RSR in Appendix 12.1 outlines any locations along the AIL delivery routes where mitigation measures are required. Consultation will be undertaken with THC's abnormal loads and structures team and Transport Scotland prior to any AIL</p>

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
			<p>deliveries being made which is in line with the AIL permitting process.</p> <p>It is expected that a Section 96 agreement will form a planning condition to cover any abnormal wear and tear to roads within the study area.</p> <p>The impacts of the Proposed Development on receptors such as road users and residents within communities are assessed below.</p> <p>Swept path assessment of AIL deliveries are presented as part of the RSR in Appendix 12.1. The proposed access to the Site is via the existing operational Bhlaraidh Wind Farm access and, as such, no swept assessment for HGVs is required.</p> <p>Trial Runs will be undertaken along the AIL delivery routes which is in line with the AIL permitting process.</p>
		6. Cumulative impacts with other developments in progress and committed developments including other Renewable Energy projects.	<p>Details of committed developments considered in the assessment are presented in Appendix 12.1.</p> <p>A Sensitivity Review has been undertaken in the Predicted Cumulative Sensitivity Review during Construction section of this chapter to identify possible issues if the consented onshore wind farms were to be constructed concurrently with the Proposed Development</p>
		7. Proposed mitigation measures to address impacts identified in 5 above, including: <ul style="list-style-type: none"> Carriageway strengthening; Strengthening of bridges and culverts; Carriageway widening and/or edge strengthening; Provision of passing places; Road safety measures; and Traffic management including measures to be taken to ensure that the Proposed Development traffic does not use routes other than the approved routes. 	<p>Details of mitigation measures are presented in the Proposed Mitigation section of this chapter.</p> <p>Construction traffic delivering materials to the Site will be predominantly travelling along the trunk road network which is constructed to accommodate significant HGV traffic.</p> <p>Road safety measures and traffic management measures will be presented in the CTMP.</p>
		8. Details of residual effects.	Details of residual effects are presented in Table 12.17 .
Fort Augustus & Glenmoriston Community Council 30/01/2021	Scoping Opinion	The proposal for access to the Site from the A887 would have all abnormal load movements from Corpach travel through the villages of Fort Augustus and Invermoriston. Noted opposition to this option as consider neither village is suitable for this type of traffic.	<p>Details of the AIL delivery routes are presented as part of the RSR in Appendix 12.1 which shows that the proposed Abnormal Indivisible Loads delivery route passes through Fort Augustus and Invermoriston.</p> <p>An Abnormal Load Transport Management Plan (TMP) presented in the Proposed Mitigation section of this chapter outlines measures to mitigate the AIL deliveries to</p>

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
			reduce the disruption to local communities, including Fort Augustus and Invermoriston.
Glen Urquhart Community Council 30/01/2021	Scoping Opinion	Traffic & Transport – when considering all road users this should include cyclists and horse riders	Mitigation measures which address the presence of cyclists and horse riders are detailed in the Access Management Plan..
The British Horse Society 25/01/2021	Scoping Opinion	The BHS expects developers to work with representatives of the local horse riding community to understand their road safety and countryside access concerns and facilitate engagement with other partners and consider whether any road safety interventions should be introduced, where there are significant numbers of horse riders and/or road traffic collisions involving horses.	Noted.
ScotWays 16/02/2021	Scoping Opinion	Noted that the National Catalogue of Rights of Way (CROW) shows HI52, HI53 and HI67 within the Scoping site boundary. HI67 is recorded as a right of way. HI52 and HI53 are listed in CROW as an “other route”, which means that although a route does not meet all the criteria to be recognised as a right of way it is seen as an important local route.	The Site Boundary has been updated since Scoping. Routes HI52, HI53 and HI67 are not located within the updated boundary however a small section of route HI17 is located along the proposed access to the Proposed Development (see Figure 13.1 of Chapter 13: Socio-Economics, Tourism and Recreation , which shows Core Paths and Rights of Way within 15 kilometres (km).
Transport Scotland 01/02/2021	Scoping Opinion	Note that the wind farm site access will be from the local road network. As such, Transport Scotland has no further comment to make on the access point itself.	It is proposed that the Site access will be from the existing Bhlaraidh Wind Farm access which is located along the A887 trunk road.
		Agree with using the Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Road Traffic as a screening process for the assessment.	Noted.
		Note that baseline traffic flows are to be obtained from new Automatic Traffic Count (ATC) surveys where traffic flows have not been adversely impacted by ongoing COVID 19 restrictions.	Traffic information has been sourced from existing Department for Transport (DfT) and Transport Scotland databases.
		The SR indicates that the proposed locations for the ATC surveys will be determined once the finalised access route has been selected. Transport Scotland is satisfied with this approach but would reiterate that potential trunk road impacts will require to be established. Also note that an alternative source of traffic data is Traffic Scotland's National Traffic Data System (https://ntds.trafficscotland.org/). The SR states that Low National Road Traffic Forecasts (NRTF) are to be utilised to establish future year base traffic. Transport Scotland considers this to be acceptable.	High National Road Traffic Forecasts have been used to establish the future year baseline at the request of THC.
		Agree that any impacts associated with the operational or decommissioning phases of the Proposed Development can be scoped out of the EIA.	Noted.
		Abnormal Loads Assessment Note that each turbine is likely to require between 12 and 14 abnormal loads to deliver the components to site and that detailed swept path analysis will be undertaken for the main constraint points on the route from the port of entry through to the Site access junction to demonstrate that the turbine	The AIL RSR is presented in Appendix 12.1 which shows swept path analysis for constraint points along the AIL delivery routes, as well as details proposed mitigation measures to facilitate AIL deliveries along the route.

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		<p>components can be delivered to site and to identify any temporary road works which may be necessary.</p> <p>Transport Scotland will require to be satisfied that the size of turbines proposed can negotiate the selected route and that transportation of components will not have any detrimental effect on structures within the trunk road route path.</p> <p>It should also be noted that any proposed changes to the trunk road network must be discussed and approved (via a technical approval process) by the appropriate Area Managers prior to the movement of any abnormal load.</p>	<p>Consultation will be undertaken with THC's abnormal loads and structures team and Transport Scotland prior to any AIL deliveries being made which is in line with the AIL permitting process.</p>

Study Area

12.10 The Study Area includes local roads that are likely to experience increased traffic flows resulting from the construction of the Proposed Development. The geographic scope was determined through a review of Ordnance Survey (OS) plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials³.

12.11 The Proposed Development will be accessed through the existing Bhlaraidh Wind Farm access, located along the A887. Vehicles will then access the turbines within the Site through a network of new onsite access tracks. All vehicles will access and egress the Site through Bhlaraidh Wind Farm access.

12.12 Strategic access to the Site is available from the north and south of the Site via the A82 (T), from the west via the A87 (T) and along the A887 (T) where the Site entrance is located from the existing Bhlaraidh Wind Farm access.

12.13 It is proposed that turbine blades will be delivered from Kyle of Lochalsh Port to the west of the Site, while all other turbine components will be delivered from Corpach Port.

12.14 It should be noted that blade deliveries will depart Kyle of Lochalsh Harbour using a blade lifting trailer, with blades loaded at the port. The blade delivery vehicles will then proceed onto Skye towards Broadford Airport where the blades are transferred onto a standard trailer at the airport. The blade delivery vehicle will undertake a U-turn at Broadford Airport and will travel eastbound along the A87 (T) along the proposed AIL delivery route.

12.15 Tower components will exit Corpach Harbour and will continue directly to the Site via the A830 and A82(T).

12.16 The Study Area for this assessment is as follows and consultation has been undertaken with the relevant transport authorities during formal Scoping consultation as detailed above in **Table 12.1**:

- A87, between Kyle of Lochalsh and Invergarry;
- A887, between Bun Loyne and Invermoriston;
- A82, between Fort William and south of Inverness; and
- A830, between Lochybridge and Corpach.

12.17 The study area is shown in **Figure 12.1**.

Desk Based Research and Data Sources

12.18 The following data sources have informed the assessment:

- Accident data – crashmap.co.uk;
- Traffic data – Department for Transport (DfT) Road Traffic Statistics database and Transport Scotland (TS) database;
- Sensitive locations within study area (as defined by IEMA such as settlements, schools etc.) – googlemaps.co.uk;

- Any other traffic sensitive receptors in the area (core paths, routes, communities, etc.) – googlemaps.co.uk and relevant agency's website;
- OS plans;
- Potential origin locations of construction staff and supply locations for construction materials to inform extent of local area roads network to be included in the assessment – googlemaps.co.uk;
- Constraints to the movement of AILs through a Route Survey including swept path assessments – site visits, OS plans, video footage and Google Streetview; and
- Cumulative development information – THC planning portal (<https://wam.highland.gov.uk/>) and the Scottish Government's Energy Consents Unit (<https://www.energyconsents.scot/>)

Field Survey

12.19 Detailed site visits were undertaken to inform the assessment. These included:

- Driving, videoing and reviewing potential AIL delivery vehicle access routes to identify potential constraints along the AIL delivery route in 2019 and 2020; and
- A review of access tracks and site walkover in July 2022.

Assessing Significance

Sensitivity

12.20 Sensitivity has been determined on the basis of the IEMA 'Guidelines for Environmental Impact Assessment' (2005) which notes that the separate 'Guidelines for the Environmental Assessment of Road Traffic' (1993) document should be used to characterise the environmental traffic and transport effects (offsite effects) and the assessment of significance of major new developments. The guidelines intend to complement professional judgement and the experience of trained assessors.

12.21 In terms of traffic and transport effects, the receptors are the users of the roads within the Study Area and the users and residents of locations through which those roads pass.

12.22 The IEMA Guidelines include guidance on how the sensitivity of receptors should be assessed. Using that as a base, professional judgement was used to develop a classification of sensitivity for receptors based on the characteristics of roads and locations. This is summarised in **Table 12.2**.

Table 12.2: Classification of Receptor Sensitivity

Sensitivity	Description
High	<p>Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs. Includes roads with traffic control signals, waiting and loading restrictions, traffic calming measures.</p> <p>Where a location is a large rural settlement containing a high number of community and public services and facilities.</p>
Medium	<p>Where the road is a local A or B class road, capable of regular use by HGV traffic. Includes roads where there is some traffic calming or traffic management measures.</p> <p>Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.</p>
Low	<p>Where the road is Trunk or A-class, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures.</p> <p>Where a location is a small rural settlement, with few community or public facilities or services.</p>
Negligible	<p>Where roads have no adjacent settlements. Includes new or existing strategic trunk roads that would be little affected by additional traffic and suitable for Abnormal Loads, and new strategic trunk road junctions capable of accommodating Abnormal Loads.</p>

³ Further details are provided in the 'trip distribution' section of this chapter

Sensitivity	Description
	Where a location includes individual dwellings or scattered settlements with no facilities.

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

Magnitude

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

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

12.25 Examples of sensitive areas are presented in the IEMA Guidelines include hospitals, churches, schools, historical buildings and links with high pedestrian flow.

12.26 The IEMA Guidelines identify the key impacts that are most important when assessing the magnitude of traffic effects from an individual development:

- Severance – the IEMA Guidelines states that, “*severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery.*” Further, “*Changes in traffic of 30%, 60% and 90% are regarded as producing ‘slight’, ‘moderate’ and ‘substantial’ [or minor, moderate and major] changes in severance respectively.*” However, the Guidelines acknowledge that “*the measurement and prediction of severance is extremely difficult.*” (Para 4.28).
- Driver delay – the IEMA Guidelines note that these delays are only likely to be “*significant [or major] when the traffic on the network surrounding the proposed development is already at, or close to, the capacity of the system.*” (Para 4.32).
- Pedestrian delay – the delay to pedestrians, as with driver delay, is likely only to be major when the traffic on the network surrounding the Proposed Development is already at, or close to, the capacity of the system. An increase in total traffic of approximately 30% can double the delay experienced by pedestrians attempting to cross the road and would be considered ‘major’.
- Pedestrian amenity – the IEMA Guidelines suggests that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or its lorry component) is halved or doubled (Para 4.39). It is therefore considered that a change in the traffic flow of -50% or +100% would produce a ‘major’ change in pedestrian amenity.
- Fear and intimidation – there are no commonly agreed thresholds for estimating levels of fear and intimidation, from known traffic and physical conditions. However, as the impact is considered to be sensitive to traffic flow, changes in traffic flow of 30%, 60% and 90% are regarded as producing ‘minor’, ‘moderate’ and ‘major’ changes respectively.
- Accidents and safety – professional judgement has been used to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents.

12.27 Table 2.2 of Volume 11, Section 2, Part 5 of the Design Manual for Roads and Bridges (DMRB) sets out four levels against which the magnitude of these impacts should be assessed – major, moderate, minor and negligible. The impacts and levels of magnitude are discussed below in **Table 12.3**.

Table 12.3: Magnitude of Effect

Magnitude	Description
Major	These effects are considered to be material in the decision-making process.

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

Significance

12.28 The predicted significance of the effect was determined through a standard method of assessment based on professional judgement, considering both sensitivity and magnitude of change as detailed in **Table 12.4** below.

Table 12.4: Significance Criteria

Receptor Sensitivity	Magnitude of Effect			
	Major	Moderate	Minor	Negligible
High	Major	Major / Moderate	Moderate / Minor	Minor
Medium	Major / Moderate	Moderate	Minor	Minor / Negligible
Low	Moderate / Minor	Minor	Minor	Minor / Negligible
Negligible	Minor	Minor	Minor / Negligible	Negligible

12.29 Significance is categorised as major, moderate, minor or negligible. Effects judged to be of major or moderate significance will be considered to be significant in with the context of the Regulations and will require mitigation.

12.30 Where an effect could be one of major/moderate or moderate/minor significance, professional judgement will be used to determine which option should be applicable. Effects judged to be of minor or negligible significance are considered not significant in the context of the Regulations.

Assessment Limitations

12.31 This assessment is based upon average traffic flows obtained from DfT and TS databases. There may be localised peaks within construction days where flows can be higher for a specific hour, such as a shift change onsite. However, it is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and assessment of likely significant environmental effects on Access, Traffic and Transport.

Existing Conditions

Active Travel Networks

12.32 A review of THC’s Core Path network (<https://highland.maps.arcgis.com/apps/webappviewer/>) indicates that there are no Core Paths in the vicinity of the site access. However, a small section of route HI17 is located along the proposed access to the Proposed Development and is listed as an “other route” and is not designated as a Right of Way (RoW) (see **Figure 13.1**).

12.33 A review of the Sustrans National Cycle Network Map (<https://www.sustrans.org.uk/national-cycle-network>) indicates that there are no National Cycle Network routes in the vicinity of the Site access or along the AIL delivery routes.

12.34 The Great Glen Way is a 127 km waymarked route between Inverness and Fort William which is mainly traffic-free, however there are sections in Drumadrochit, Invermoriston, Fort Augustus and Invergarry where pedestrians use the footways beside the highway and at these locations cyclists and horse riders travel along the road.

Accident Review

12.35 Road traffic accident data for the three-year period commencing 01 January 2018 through to 31 December 2020 was obtained from the online resource crashmap.co.uk⁴ which uses data collected by the police about road traffic crashes occurring on British roads where someone is injured.

12.36 The statistics are categorised into three categories, namely “Slight” for damage only incidents, “Serious” for injury accidents and “Fatal” for accidents that result in a death.

12.37 Tables 12.5, 12.6 and 12.7 summarise the accidents noted in the Study Area and the locations are presented in Figure 12.3.

Table 12.5: Accident History Summary

Survey Links	Number of Recorded Accidents		
	Slight	Serious	Fatal
The A887, between Bun Loyne and Invermoriston	1	1	0
The A87, between Bun Loyne and Kyle of Lochalsh	11	6	1
The A87, between Bun Loyne and Invergarry	8	6	1
The A87, between Invergarry and Lagnalean	15	7	4
The A82, between Inverary and Fort William	18	16	2
The A830, between Lochybridge and Corpach	1	0	1

12.38 A summary of the casualty types are presented in Table 12.6 and the types of vehicles involved in the accidents are presented in Table 12.7.

Table 12.6: Accident Casualty Type Summary

Survey Links	Severity	Number of Recorded Accidents				
		Cyclist	Child	Motorcyclist	Pedestrian	Driver / Passenger
The A887, between Bun Loyne and Invermoriston	Slight	0	0	0	0	1
	Serious	0	0	0	0	1
	Fatal	0	0	0	0	0
The A87, between Bun Loyne and Kyle of Lochalsh	Slight	0	0	1	0	12
	Serious	0	0	2	0	6
	Fatal	0	0	0	0	1
The A87, between Bun Loyne and Invergarry	Slight	0	0	2	0	8
	Serious	0	0	0	0	6
	Fatal	0	0	0	0	1
The A87, between Invergarry and Lagnalean	Slight	0	1	3	2	16

⁴ Accessed 03/11/2022

Survey Links	Severity	Number of Recorded Accidents				
		Cyclist	Child	Motorcyclist	Pedestrian	Driver / Passenger
	Serious	0	1	2	0	7
	Fatal	0	0	0	2	4
The A82, between Invergarry and Fort William	Slight	3	3	0	1	19
	Serious	1	2	4	0	15
	Fatal	0	1	0	0	2
The A830, between Lochybridge and Corpach	Slight	0	0	0	0	1
	Serious	0	0	0	0	0
	Fatal	0	0	0	1	1

Table 12.7: Vehicles Involved in Accidents Summary

Survey Links	Severity	Number of Recorded Accidents					
		Pedal Cycle	Motorcycle	Car	Goods Vehicle	Bus	Young Driver
The A887, between Bun Loyne and Invermoriston	Slight	0	0	1	0	0	0
	Serious	0	0	1	0	0	0
	Fatal	0	0	0	0	0	0
The A87, between Bun Loyne and Kyle of Lochalsh	Slight	0	1	9	3	0	0
	Serious	0	2	4	1	1	0
	Fatal	0	0	1	0	0	0
The A87, between Bun Loyne and Invergarry	Slight	0	2	8	0	0	2
	Serious	0	0	6	0	0	0
	Fatal	0	0	1	0	0	0
The A87, between Invergarry and Lagnalean	Slight	0	3	14	1	1	1
	Serious	0	2	6	1	0	1
	Fatal	0	0	3	1	0	1
The A82, between Invergarry and Fort William	Slight	3	0	15	3	1	3
	Serious	1	4	14	1	0	4
	Fatal	0	0	1	1	0	0

Survey Links	Severity	Number of Recorded Accidents					
		Pedal Cycle	Motorcycle	Car	Goods Vehicle	Bus	Young Driver
The A830, between Lochybridge and Corpach	Slight	0	0	1	0	0	0
	Serious	0	0	0	0	0	0
	Fatal	0	0	0	1	0	0

- With regards to accident trends, a review of the above accidents indicates that: Two accidents were recorded at the same location, approximately 2.35km to the north-east of Invermoriston;
- Two accidents were recorded within about 40 metres (m) of each other, approximately 0.47km to the north-west of Allt na Criche scenic point;
- Two accidents were recorded at the same location in Fort Augustus, of which one of the accidents involved a pedestrian;
- Two accidents were recorded at the Allt a' Choilich bridge along the A82(T);
- Three accidents were recorded in close proximity to each other along the A82(T), approximately 1.25km to the south-west of Achnabobane Road;
- Two accidents were recorded in Fort William at the A82(T) / Fort William Railway Station access Roundabout;
- Along the A87(T), between Bumblebee Haven and Glen Garry Viewpoint West, there are two locations where two accidents were recorded within approximately 70m of each other;
- Along the A87(T), approximately 180m to the east of Kirkton Churchyard Cemetery, two accidents were recorded within 75m of each other, one of which was recorded as a fatality. Both were noted as single vehicle collisions; and
- Two accidents were recorded along the A887(T) to the south of River Moriston bridge.

12.39 A review of the above accident locations shows that, outside of urban areas, the topography is generally winding in nature in the areas of where the accidents occurred.

Baseline Traffic Conditions

12.40 The transport routes within the Study Area are set out below (see **Figure 12.1**).

12.41 The A87 is a two-way single carriageway which runs from Invergarry to Uig, in the north of Skye and is predominantly subject to the national speed limit, however this reduces when traveling through villages along the route. The A87 forms part of the trunk road network which is maintained by BEAR Scotland in this area.

12.42 The A887 is a two-way single carriageway which forms part of the trunk road network and links the A87, at Bun Loyne, to the A82, at Invermoriston. The A887 is predominantly subject to the national speed limit.

12.43 The A82 is a two-way single carriageway which forms part of the trunk road network and links Glasgow to Inverness via Fort William. The A82 is predominantly subject to the national speed limit.

12.44 The A830 is a two-way single carriageway road which forms part of the trunk road network. The section of the A830 near the access to Corpach Port is subject to a speed limit of 40mph, however, the road is generally subject to the national speed limit.

12.45 To assess the impact of construction traffic on the Study Area, existing traffic data was obtained from the TS database and DfT Traffic Statistics database for the following count points:

1. A887, west of Site Access (near Bun Loyne) (DfT 40958);
2. A887, east of Site Access (assumed to be equal to traffic flow data from DfT 40958);
3. A82, south of Invermoriston (DfT 50707);

4. A82, east of Invergarry (DfT 10760);
5. A82, north-west of Spean Bridge (TS ATC01036);
6. A82, Lochybridge (DfT 91196);
7. A830, east of Blar Mhor Roundabout (DfT 793);
8. A82, Fort William (DfT 30767);
9. A87, south of A87 / A887 (DfT 30776);
10. A87, west of A87 / A887 (DfT 10770);
11. A87, south of Dornie (TS ATCNW004);
12. A87, west of Balmacara (DfT 768);
13. A87, west of Kyle of Lochalsh (TS JTC00147);
14. A82, south of Drumnadrochit (DfT 758); and
15. A82, north of Lochend (DfT 20765).

12.46 Available traffic data from 2019 was used to estimate existing traffic flows, as this data was not affected by Covid 19 travel restrictions. National Road Traffic Forecasts (NRTF) high growth factors were applied to the 2019 data to estimate 2022 flows. The high growth factor for 2019 to 2022 is 1.042.

12.47 The count site locations are shown in **Figure 12.2**.

12.48 The Annual Average Daily Traffic (AADT) data available from the TS and DfT databases provided traffic flows which were split into vehicle classes, and the data has been summarised into cars / light good vehicles (LGV) and heavy goods vehicles (HGVS) (all goods vehicles > 3.5 tones gross maximum weight, as well as buses for the purpose of this assessment).

12.49 **Table 12.8** summarises the 24-hour average daily traffic data at the count sites.

Table 12.8: Baseline 24-hour Average Traffic Data (2022)

Ref. No.	Count Location	Cars / LGV	HGV	Total
1	A887, west of Site Access (near Bun Loyne)	873	174	1,047
2	A887, east of Site Access*	873	174	1,047
3	A82, south of Invermoriston	2,592	253	2,846
4	A82, east of Invergarry	2,591	243	2,834
5	A82, north-west of Spean Bridge	3,176	778	3,954
6	A82, Lochybridge	5,349	582	5,931
7	A830, east of Blar Mhor Roundabout	8,733	560	9,293
8	A82, Fort William	10,478	667	11,145
9	A87, south of A87 / A887	1,456	111	1,567
10	A87, west of A87 / A887	2,130	233	2,363
11	A87, south of Dornie	2,755	612	3,367
12	A87, west of Balmacara	3,839	252	4,091
13	A87, west of Kyle of Lochalsh	3,400	591	3,991

Ref. No.	Count Location	Cars / LGV	HGV	Total
14	A82, south of Drumnadrochit	3,392	447	3,839
15	A82, north of Lochend	6,224	728	6,952

*Assumed Count Point based on traffic flow from DFT Count Point 40958

Note minor variances due to rounding may occur

12.50 It is anticipated that the construction of the Proposed Development will commence in 2027, if consent is granted. It is expected that construction of the Proposed Development is to take up to 18 months, depending on weather conditions and ecological considerations.

12.51 In the absence of the Proposed Development, it is anticipated that traffic growth will occur regardless throughout the Study Area as a result of other development pressures, tourism and population flows.

12.52 A review of local online planning applications has been undertaken on the THC planning applications website to determine committed developments 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 10%).

12.53 The review determined that the mixed-use development at Drum Farm, Drumnadrochit (Planning Ref. 19/02762/FUL and 19/02761/FUL) should be included within the future baseline.

12.54 The future baseline traffic flows (including the committed development flows) are estimated by applying a National Road Traffic Forecast (NRTF) high growth to the 2022 traffic flows and then adding the committed trips to the appropriate road links.

12.55 The NRTF growth factors were applied to the 2022 traffic data presented in **Table 12.8** to estimate 2027 baseline traffic flows (without committed development), which are shown in **Table 12.9** below. The NRTF high growth factor for 2022 to 2027 is 1.062.

Table 12.9: 2027 Baseline Daily Flows (including Committed Development Trips)

Ref. No.	Count Location	Cars / LGV	HGV	Total
1	A887, west of Site Access (near Bun Loyne)	927	185	1,112
2	A887, east of Site Access	927	185	1,112
3	A82, south of Invermoriston	3,261	269	3,530
4	A82, east of Invergarry	3,260	258	3,518
5	A82, north-west of Spean Bridge	3,881	827	4,708
6	A82, Lochybridge	6,188	619	6,807
7	A830, east of Blar Mhor Roundabout	9,274	594	9,869
8	A82, Fort William	11,636	708	12,344
9	A87, south of A87 / A887	1,546	118	1,664
10	A87, west of A87 / A887	2,262	248	2,510
11	A87, south of Dornie	2,926	650	3,575
12	A87, west of Balmacara	4,077	268	4,345
13	A87, west of Kyle of Lochalsh	3,611	627	4,238
14	A82, south of Drumnadrochit	4,110	475	4,585

Ref. No.	Count Location	Cars / LGV	HGV	Total
15	A82, north of Lochend	7,935	774	8,708

Please note minor variances due to rounding may occur

Implications of Climate Change

12.56 Chapter 14: Other Issues provides details of the climate change projections in the west of Scotland for the 2060s, when the operational period of the Proposed Development is likely to end. In summary, the projections highlight that in the 2060s, summer and winter temperatures are likely to be greater than the current baseline (greater for summer), with winter rainfall increasing and summer rainfall decreasing.

12.57 It is considered that climate change projections will not have a discernible impact on the baseline conditions for road traffic within the timescales of the Proposed Development.

12.58 It is assumed that, at regional level, appropriate measures will be put in place to ensure flood risk is managed and does not have long term effects on transport infrastructure.

Future Baseline in the Absence of the Proposed Development

12.59 As noted above, the assessment has been undertaken on the basis of a future baseline of conditions in 2027, with growth factors applied. In the absence of the Proposed Development, it is anticipated that traffic growth will occur throughout the Study Area as a result of other development pressures, tourism and population flows.

Design Considerations

12.60 As noted above and detailed further in **Chapter 3: Site Selection and Design Strategy** and **Chapter 4: Project Description**, access to the Site will be via the existing Bhlaraidh Wind Farm access. At the outset of the project, consideration was given to accessing the Site from the north, off the A831 along the Affric Kintail Way. Detailed review and survey of both options was undertaken by the EIA team, and it was concluded that the southern option would result in fewer environmental effects, as well as requiring less new infrastructure to be constructed to access the Site.

12.61 Borrow pits will be located onsite and are expected to meet 70% of material requirements for the access tracks, hardstandings and compound sub-bases. To provide a robust and maximum case assessment, it has been assumed that 50% of the material requirements will be imported to Site.

12.62 Batching of concrete for use onsite is considered feasible and economic and facilities to enable this are being provided at the Proposed Development. The assessment has taken into consideration the importation of concrete batching materials, including water.

Assessment of Effects

12.63 The assessment of effects is based on the project description as outlined in **Chapter 4**. Unless otherwise stated, potential effects identified are considered to be negative.

12.64 A review of sensitive receptors has been undertaken within the Study Area based on the review of baseline conditions. **Table 12.10** details the receptors and their sensitivities for use within the assessment. A justification for the sensitivity has been provided, based upon the details contained in **Table 12.2**.

Table 12.10: Receptor Sensitivity Summary

Receptor	Sensitivity	Justification
Users of A887	Low	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures.

Receptor	Sensitivity	Justification
Users of A87	Low	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures.
Users of A82	Low	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures.
Users of A830	Low	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures.
Invermoriston Residents	Medium	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.
Lochend / Dochgarroch Residents	Low	Where a location is a small rural settlement, few community or public facilities or services.
Drumnadrochit Residents	Medium	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.
Fort Augustus Residents	Medium	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.
Kyle of Lochalsh Residents	Medium	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.
Inverinate Residents	Low	Where a location is a small rural settlement, few community or public facilities or services.
Shiel Bridge Residents	Low	Where a location is a small rural settlement, few community or public facilities or services.
Invergarry Residents	Medium	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.
Spean Bridge Residents	Medium	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.
Fort William Residents	High	Where a location is a large rural settlement containing a high number of community and public services and facilities.
Corpach Residents	High	Where a location is a large rural settlement containing a high number of community and public services and facilities.
HI17 Route Users	High	Minor paths / tracks used by walkers, not constructed to accommodate HGV traffic flows.

12.65 Based on the indicators which are stated within the IEMA Guidelines, the following locations are identified as a sensitive receptors in this assessment due to the presence of schools, churches or medical practices, as well as paths:

- Lochend / Dochgarroch;
- Drumnadrochit;
- Fort Augustus;
- Kyle of Lochalsh;
- Inverinate;
- Invergarry;
- Spean Bridge;
- Fort William;
- Corpach; and

- HI107 Route Users.

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

12.67 All other locations within the Study Area (Invermoriston and Shiel Bridge) are subject to 'Rule 1' and are assessed if traffic flows (or HGV flows) on highway links are anticipated to increase by more than 30% as a result of the construction of the Proposed Development.

Construction Effects

Predicted Construction Effects

12.68 The assessment is based upon the construction effects that may occur within the Study Area during the 18 month construction programme. To assess the effects, it is necessary to determine the likely traffic generation associated with the Proposed Development during the peak construction month.

12.69 During the assumed 18 month construction period, the following traffic will require access to the Site:

- Staff transport, either cars or staff minibuses;
- Construction equipment and materials, deliveries of machinery, and supplies such as ready-mix concrete and some aggregate materials;
- AILs consisting of the wind turbine components and heavy lift crane(s); and
- Escort vehicles for AIL deliveries.

12.70 Except for the turbine components and high capacity cranes, most traffic will be normal construction plant and will include grading tractors, excavators, forklifts and dumper trucks. Most will arrive at the Site on low loaders.

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

12.72 The components can be delivered on a variety of transport platforms with typical examples illustrated in **Appendix 12.1**.

12.73 In addition to the turbine deliveries, two high capacity erection cranes will be needed to offload some components and erect the turbines. One crane is likely to be a mobile crane with a capacity up to 1,000 tonnes that will be escorted by boom and ballast trucks to allow full mobilisation onsite. A smaller erector / assist crane will also be present to allow the assembly of the main cranes and to ease overall erection of the turbines.

12.74 The resulting traffic generation profile is included in **Appendix 12.1**. The assessment is based upon an assumed construction programme for the Proposed Development, lasting 18 months. Alterations in this programme, may increase or decrease traffic flows per month.

12.75 The peak of construction occurs in Month 8 with 130 movements per day (52 Car / Lights and 78 HGV journeys). These figures on average indicate approximately four additional inbound HGV movements per hour on the network at the peak of construction activities.

12.76 The distribution of the Proposed Development traffic on the network will vary depending on the types of loads being transported. The assumptions for the distribution of construction traffic during the peak months will be as follows:

- All construction traffic enters and exits the Site via the existing Bhlaraidh Wind Farm access, located along the A887. Vehicles will then reach the turbines through access tracks. All vehicles will access and egress the Site through this access.
- As a worst case assessment, deliveries associated with the batching of concrete onsite such as cement and water would arrive via the A82, to the south-west of Inverness.
- Aggregate materials for use in the construction of the Site as well as for onsite concrete batching would be sourced from local quarries. For the purposes of the assessment, it is assumed that all material would be taken from the quarries located to the

south-west of Inverness. 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 High Voltage (HV) electrical installation and control buildings would arrive via the A82, to the south of the Site (assumed sourced from within the Central Belt).
- Staff working at the Site are likely to be based locally. It is assumed that 50% would arrive from Inverness, 25% from Fort Augustus and 25% from Fort William.
- General Site deliveries would be via the A82 to the north of the Site. These are generally smaller rigid HGV vehicles.

12.77 Following the distribution and assignment of traffic flows to the Study Area network, the resultant daily traffic during the peak of construction is summarised in **Table 12.11**.

Table 12.11: Peak Construction Traffic

Ref. No.	Count Location	Cars / LGV	HGV	Total
1	A887, west of Site Access (near Bun Loyne)	10	0	10
2	A887, east of Site Access	42	78	119
3	A82, south of Invermoriston	10	0	11
4	A82, east of Invergarry	10	0	11
5	A82, north-west of Spean Bridge	10	0	11
6	A82, Lochybridge	10	0	11
7	A830, east of Blar Mhor Roundabout	10	0	11
8	A82, Fort William	10	0	10
9	A87, south of A87 / A887	0	0	0
10	A87, west of A87 / A887	10	0	10
11	A87, south of Dornie	10	0	10
12	A87, west of Balmacara	10	0	10
13	A87, west of Kyle of Lochalsh	10	0	10
14	A82, south of Drumnadrochit	31	77	108
15	A82, north of Lochend	31	77	108

Note minor variances due to rounding may occur

12.78 The resulting figures were compared with the 2027 baseline traffic to provide a percentage change in movements at each count location within the study area, as shown in **Table 12.12**.

Table 12.12: 2027 Future Baseline + Construction Traffic (based on peak construction phase: Month 8)

Ref. No.	Count Location	Cars / LGV	HGV	Total	Cars / LGV % Increase	HGV % Increase	Total % Increase
1	A887, west of Site Access (near Bun Loyne)	938	185	1,123	1.12%	0.00%	0.94%
2	A887, east of Site Access	969	262	1,231	4.49%	41.94%	10.71%

Ref. No.	Count Location	Cars / LGV	HGV	Total	Cars / LGV % Increase	HGV % Increase	Total % Increase
3	A82, south of Invermoriston	3,272	269	3,541	0.32%	0.16%	0.31%
4	A82, east of Invergarry	3,271	258	3,529	0.32%	0.17%	0.31%
5	A82, north-west of Spean Bridge	3,891	827	4,719	0.27%	0.05%	0.23%
6	A82, Lochybridge	6,199	619	6,818	0.17%	0.07%	0.16%
7	A830, east of Blar Mhor Roundabout	9,285	595	9,880	0.11%	0.07%	0.11%
8	A82, Fort William	11,647	708	12,355	0.09%	0.00%	0.08%
9	A87, south of A87 / A887	1,546	118	1,664	0.00%	0.00%	0.00%
10	A87, west of A87 / A887	2,272	248	2,520	0.46%	0.00%	0.41%
11	A87, south of Dornie	2,936	650	3,586	0.36%	0.00%	0.29%
12	A87, west of Balmacara	4,087	268	4,355	0.26%	0.00%	0.24%
13	A87, west of Kyle of Lochalsh	3,621	627	4,249	0.29%	0.00%	0.25%
14	A82, south of Drumnadrochit	4,141	552	4,693	0.76%	16.24%	2.36%
15	A82, north of Lochend	7,966	851	8,817	0.39%	9.96%	1.24%

Note minor variances due to rounding may occur

Numbers in bold indicate where the IEMA Rules 1 or 2 (whichever applies) will be exceeded.

12.79 The total traffic movements are not predicted to increase by more than 30% on all of the study network, in line with IEMA Guidelines. Total traffic increases are all either approximately 10% or below 10% which is similar in scale to what is generally accepted as daily variation in traffic flows and are considered insignificant.

12.80 The total HGV traffic movements will increase significantly (more than 30%) on the A887, to the east of the Site access. Whilst this increase is statistically significant, it is generally caused by the relatively low existing HGV flows on the A887 which will experience an additional 78 HGV journeys per day (39 inbound and 39 outbound) during the peak month of construction. This approximately represents an additional three inbound HGV journeys every hour during construction activities, which is not considered significant in terms of overall traffic flows

12.81 As the total HGV traffic movements will increase by more than 30% at the A887, east of Site Access the IEMA Rule 1 has been exceeded and as such the A887, east of Site Access is taken forward for further assessment.

12.82 None of the other count locations exceed the IEMA Rules 1 or 2 and as such, no further assessment of these locations are required.

12.83 **Table 12.10** highlights the 'other route' HI17 Users as a receptor, and as any increase in traffic in the Site would be considered to significant, HI17 Route Users should also be brought forward for assessment.

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

12.85 A review of existing road capacity has been undertaken using the DMRB, Volume 15, Part 5 'The NESAs Manual'. The theoretical road capacity has been estimated for each of the road links for a 12-hour period that makes up the study area. The results are summarised in **Table 12.13**.

Table 12.13: 2027 Daily Traffic (12 hour) Capacity Review Summary

Ref. No.	Count Location	2027 Baseline Flow	2027 Base + Development Flows	Theoretical Road Capacity (12hr)	Spare Road Capacity %
1	A887, west of Site Access (near Bun Loyne)	1,112	1,123	21,600	95%
2	A887, east of Site Access	1,112	1,231	21,600	94%
3	A82, south of Invermoriston	3,530	3,541	21,600	84%
4	A82, east of Invergarry	3,518	3,529	21,600	84%
5	A82, north-west of Spean Bridge	4,708	4,719	21,600	78%
6	A82, Lochybridge	6,807	6,818	21,600	68%
7	A830, east of Blar Mhor Roundabout	9,869	9,880	28,800	66%
8	A82, Fort William	12,344	12,355	81,600	85%
9	A87, south of A87 / A887	1,664	1,664	21,600	92%
10	A87, west of A87 / A887	2,510	2,520	21,600	88%
11	A87, south of Dornie	3,575	3,586	21,600	83%
12	A87, west of Balmacara	4,345	4,355	21,600	80%
13	A87, west of Kyle of Lochalsh	4,238	4,249	21,600	80%
14	A82, south of Drumnadrochit	4,585	4,693	21,600	78%
15	A82, north of Lochend	8,708	8,817	21,600	59%

Note minor variances due to rounding may occur

12.86 The results indicate that ample spare capacity exists within the trunk and local road network to accommodate construction phase traffic.

12.87 The significance of the potential effects on the above receptors (considered to be of high sensitivity i.e. the A887 east of the Site Access and Right of Way Users) has been determined using the rules and thresholds previously outlined in the Assessment of Significance section. **Table 12.14** summarises the significance on the receptors for the construction phase prior to mitigation measures being applied.

Table 12.14: Construction Phase Effects Summary

Receptors	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
A887 Users	Severance	Minor	Minor (Not Significant)	Increase in total traffic is anticipated to be 10.71%. Changes in traffic flow less than 30% are considered minor. The effect of severance is therefore considered minor.
	Driver Delay	Minor	Minor (Not Significant)	There is ample spare capacity along the existing link road, therefore the effect of driver delay is considered minor.
	Pedestrian Delay	Minor	Minor (Not Significant)	The total number of additional construction vehicles expected on link on this is 119 vehicles which equates to approximately 11 vehicles per hour which is not considered significant in terms of pedestrian delay for this receptor.
	Pedestrian Amenity	Minor	Minor (Not Significant)	Baseline HGV flows equate to 185 HGVs daily and the Proposed Development will see an additional 78 HGVs daily during peak construction activities. This will result in the baseline of approximately 17 HGVs two-way movements per hour increasing to 24 HGVs two way movements per hour per hour during peak construction activities. However, as the A887 forms part of the trunk network, HGV traffic is expected along this road. The effect on pedestrian amenity is therefore considered minor.
	Fear & Intimidation	Minor	Minor (Not Significant)	Increase in HGV traffic is anticipated to be 41.94%. and intimidation. However, as the A887 forms part of the trunk network, HGV traffic is expected along this road. The effect is therefore considered minor.
	Accidents & Safety	Moderate	Minor (Not Significant)	The review of accidents which were recorded along the A887 found that two accidents were recorded within the survey period. Both of these accidents occurred at the same location, south side of the narrow bridge in Glenmoriston. Signage is located along the A887 warning motorists that north-bound traffic is to give way to oncoming south-bound traffic. The effect is considered to be minor.
	'HI17 Route Users (see route on Figure 13.1)	Severance	Major	Major (Significant)
Driver Delay		Negligible	Negligible (Not Significant)	Not applicable.
Pedestrian Delay		Moderate	Major / Moderate (Significant)	Pedestrians could experience delays if their movements interact with construction traffic along the 'other route' path network which would not be experienced prior to the construction period. The effect is therefore considered major / moderate.

Receptors	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
	Pedestrian Amenity	Major	Major (Significant)	The presence of traffic flows along a location where there would have been no traffic prior to the construction phase could affect the amenity of the 'other route' path network for users. The effect is therefore considered major.
	Fear & Intimidation	Major	Major (Significant)	The presence of traffic flows along a location, where there would have been no traffic prior to the construction phase could cause fear and intimidation of the 'other route' path network for users. The effect is therefore considered major.
	Accidents & Safety	Moderate	Major / Moderate (Significant)	There is potential to impact the safety of the 'other route' path users interacting with construction delivery vehicles. The impact is therefore considered major / moderate.

12.88 The assessment of significance suggests that total traffic flows which may impact users of the 'other route' path network during peak construction works are considered to result in significant adverse effects, prior to the application of mitigation measures.

12.89 The assessment of significance also suggests that users of the A887 will not experience significant adverse effects as a result of construction traffic flows.

12.90 It is worth considering that the effects relate solely to the peak of construction activities (Month 8), and that the construction period is short lived and the effects temporary in nature.

Proposed Mitigation

Construction Traffic Management Plan (CTMP)

12.91 The following measures would be implemented during the construction phase through the CTMP, to be secured via a planning condition:

- Where possible the detailed design process will minimise the volume of material to be imported to Site to help reduce HGV numbers;
- Where necessary, a site worker Staff Travel Plan, including transport modes to and from the worksite (including pick up and drop off times);
- 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 will be established at the Site entrance, depending on the views of TS;
- Unless otherwise agreed with the roads authorities, normal site working hours will be limited to between 0700 and 1900 Monday to Friday and 0700 and 1300 Saturday though component delivery, foundation pours, turbine erection and emergency work may take place outside these hours. No work is proposed on Sundays and public holidays unless otherwise agreed with THC;
- Appropriate traffic management measures will be put in place on the A887 in the vicinity of the Site access, subject to the agreement of the roads authority. Typical measures will include HGV turning and crossing signs and banksman where necessary.
- Construction updates will be provided on the project website and / or a newsletter to be distributed to residents within an agreed distance of the Site; and

- Adoption of a voluntary speed limit of 15mph through Invermoriston, Lochend / Dochgarroch, Drumnadroichit, Fort Augustus, Kyle of Lochalsh, Inverinate, Shiel Bridge, Invergarry, Spean Bridge, Fort William and Corpach for HGV construction traffic. Site specific speed limits will be adhered to within the Site.

- All drivers will be required to attend an induction to include:

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

12.92 TS may request that an agreement to cover the cost of abnormal wear on the A887 and the new link road is made. This will be covered by a planning condition.

12.93 Video footage of the pre-construction phase condition of the abnormal loads access route and the construction vehicles route will be recorded to provide a baseline of the condition of the road prior to any construction work commencing. This baseline will inform any change in the road condition during the construction phase. Any necessary repairs will be coordinated with the relevant authority. Any damage caused by traffic associated with the Proposed Development during the construction period that will be hazardous to public traffic will be repaired immediately.

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

12.95 There will be a regular road edge review and any debris and mud will be removed from the public road to keep the road clean and safe. Before the AILs traverse the chosen transport route, the following tasks will 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.

Abnormal Load Transport Management Plan (TMP)

12.96 An Abnormal Load Transport Management Plan will be prepared to cater for all movements to and from the Proposed Development. Upon confirmation of the candidate turbine, the finalised TMP will include the following further details:

- 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 will be used to liaise with the communities in order to avoid key dates, such as popular local events.;
- A protocol for working with local businesses to ensure the construction traffic does not interfere with deliveries or normal business traffic; and
- Proposals to establish a construction liaison committee to ensure the smooth management of the project and provide public interface with the Applicant, the construction contractors, the local community, and if appropriate, the police forming the committee. This committee will form a means of communicating and updating on forthcoming activities and dealing with any potential issues arising.

Onsite Measures delivered using a Access Management Plan

12.97 Consideration will be given to pedestrians due to potential interactions between construction traffic and users of the RoW network. These measures will be formulated into an Access Management Plan.

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

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

12.100 Users of the paths will be separated from construction traffic through the use of barriers (where permitted and appropriate) and this will ensure that safe access to the Site for recreational purposes will be maintained. Crossing points will be provided where required, with path users having right of way. Appropriate Traffic Signs Manual Chapter 8 compliant temporary road signage would be provided to assist at these crossings for the benefit of all users.

12.101 The British Horse Society recommendations on the interactions between HGV traffic and horses states that horses are normally nervous of large vehicles, particularly when they do not often meet them. Horses are flighty 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.

12.102 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.

12.103 The British Horse Society recommends 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.

A Staff Travel Plan

12.104 A Staff Travel Plan will be deployed where necessary, to manage the arrival and departure profile of staff and to encourage sustainable modes of transport, especially car-sharing. A package of measures could include:

- Appointment of a Travel Plan Coordinator;
- Provision of public transport information;
- Mini-bus service for transport of site staff;
- Promotion of a car sharing scheme; and
- Car parking management.

Public Information

12.105 Information on the turbine convoys will be provided to local media outlets to help assist the public. These could include:

- Local newspapers;

- Online media outlets;
- Community Council; and
- THC websites.

12.106 Information will relate to expected vehicle movements transporting AILs from the PoEs at Kyle of Lochalsh Harbour and Corpach Harbour through to the Site access junction. This will assist residents becoming aware of the convoy movements and may help reduce any potential conflicts.

Offsite Mitigation

12.107 It is anticipated that an agreement on wear and tear on road infrastructure caused directly by construction traffic will be established prior to construction commencing. The agreement will set out the area of review, scope and response requirement of any dilapidations that can be proven to be linked to construction traffic.

12.108 The AIL RSR highlights a number of constraint points which have been assessed within the report using swept path assessment software. Key points and issues associated with the route that requires the temporary removal of physical obstructions are outlined in **Appendix 12.1**.

12.109 The locations of the constraint points and swept path drawings are included in **Appendix 12.1**. All mitigation works can be designed to be temporary in nature to enable the restoration to their original condition, if required by the appropriate roads authority.

Residual Construction Effects

12.110 The identification of residual construction effects considers the assessment of traffic impacts following the incorporation of the identified mitigation measures. An evaluation of the potential effects of the temporary increase in traffic on the Study Area roads used for the construction traffic has been undertaken. To avoid repetition below, the summary of this assessment of residual effects is presented in **Table 12.17**, which shows that the residual construction effects are minor and not significant.

Cumulative Effects during Construction

12.111 A review of the consented developments (both energy and non-energy related) which have been considered as committed developments and considered in the cumulative assessment are presented in **Appendix 12.1**. Committed development trips associated with the consented Mixed-Use Development at Drum Farm, Drumnadrochit (Planning Ref. 19/02762/FUL and 19/02761/FUL) have been added to the 2027 Future Baseline flows and are presented in **Table 12.9**, as these trips are anticipated to be permanent trips on the traffic network.

12.112 As noted in **Appendix 12.1**, there are two other onshore wind farm developments which have been granted planning consent and which are included in the cumulative assessment.

12.113 As Corriegarth 2 Wind Farm, Bunloinn Wind Farm and Millennium South Wind Farm have not been granted planning consent, and Aberarder Wind Farm will be constructed before construction activities commence, they are not included in assessment sensitivity review.

12.114 Construction trips associated with the consented wind farms are to be temporary on the network and are anticipated to use part of the proposed construction and AIL delivery route during their peak construction periods, which are:

- Bhlaraidh Wind Farm Extension; and
- Dell Wind Farm.

12.115 While it is unlikely that all of these developments would be constructed concurrently and that their peak construction months would align, a combined sensitivity review has been undertaken to inform the roads authorities of possible issues if all three of the sites were to be constructed concurrently.

12.116 The peak flows for the sites were obtained from their respective planning application documents (see **Table 12.15**) and then compared to the 2027 Baseline daily flows (including Committed Development trips) in **Table 12.16**.

Table 12.15: Cumulative Traffic Summary (Loch Liath, Bhlaraidh and Dell Wind Farms)

Ref. No.	Count Location	Loch Liath Wind Farm		Bhlaraidh Wind Farm Extension		Dell Wind Farm	
		Cars & LGVs	HGV	Cars & LGVs	HGV	Cars & LGVs	HGV
1	A887, west of Site Access (near Bun Loyne)	10	0	11	16	18	36
2	A887, east of Site Access*	42	78	33	17	18	36
3	A82, south of Invermoriston	10	0	11	16	18	36
4	A82, east of Invergarry	10	0	11	16	18	36
5	A82, north-west of Spean Bridge	10	0	11	16	18	36
6	A82, Lochybridge	10	0	11	16	18	36
7	A830, east of Blar Mhor Roundabout	10	0	11	16	18	36
8	A82, Fort William	10	0	11	16	18	36
9	A87, south of A87 / A887	0	0	0	0	18	36
10	A87, west of A87 / A887	10	0	2	2	18	36
11	A87, south of Dornie	10	0	2	2	18	36
12	A87, west of Balmacara	10	0	2	2	18	36
13	A87, west of Kyle of Lochalsh	10	0	2	2	18	36
14	A82, south of Drumnadrochit	31	77	33	17	18	36
15	A82, north of Lochend	31	77	33	17	18	36

Table 12.16: Cumulative Traffic Summary: Routes in Study Area

Ref. No.	Count Location	2027 Baseline + Cumulative Wind Farm Trips			% Increase		
		Cars & LGVs	HGV	Total	Cars & LGVs	HGV	Total
1	A887, west of Site Access (near Bun Loyne)	967	237	1,204	4.25%	28.14%	8.22%
2	A887, east of Site Access*	1,020	315	1,335	9.99%	70.62%	20.06%
3	A82, south of Invermoriston	3,301	321	3,622	1.21%	19.50%	2.60%
4	A82, east of Invergarry	3,300	310	3,610	1.21%	20.34%	2.61%
5	A82, north-west of Spean Bridge	3,920	879	4,800	1.02%	6.34%	1.95%

Ref. No.	Count Location	2027 Baseline + Cumulative Wind Farm Trips			% Increase		
		Cars & LGVs	HGV	Total	Cars & LGVs	HGV	Total
6	A82, Lochybridge	6,228	671	6,899	0.64%	8.48%	1.35%
7	A830, east of Blar Mhor Roundabout	9,314	647	9,961	0.42%	8.82%	0.93%
8	A82, Fort William	11,676	760	12,436	0.34%	7.34%	0.74%
9	A87, south of A87 / A887	1,564	154	1,718	1.16%	30.40%	3.24%
10	A87, west of A87 / A887	2,292	286	2,578	1.34%	15.33%	2.73%
11	A87, south of Dornie	2,956	688	3,644	1.04%	5.85%	1.91%
12	A87, west of Balmacara	4,107	306	4,413	0.75%	14.19%	1.57%
13	A87, west of Kyle of Lochalsh	3,641	665	4,307	0.84%	6.06%	1.61%
14	A82, south of Drumnadrochit	4,192	605	4,797	2.00%	27.40%	4.63%
15	A82, north of Lochend	8,017	904	8,921	1.04%	16.82%	2.44%

12.117 The combined traffic flows indicate that there is a large increase in HGV flows along the A887, to the east of the Site, however, with respect to the theoretical road capacity for each of the links as shown in **Table 12.13**, there would be more than sufficient spare road capacity to accommodate this in the event that all three of the sites are constructed at the same time.

Proposed Mitigation

12.118 Any effects of all the sites being constructed at the same time 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 the local roads department and Police Scotland.

12.119 Furthermore, it is not predicted that the potential traffic flow increases could ever occur on the Study Area for the following reasons:

- It is extremely unlikely that the peak traffic conditions will occur at the same time due to differences in construction programmes, material supplies and developer resources; and
- All abnormal load deliveries cannot occur at three separate sites on the same day due to restrictions on the number of loads moving on the network at the same time set by Police Scotland.

Interrelationship between Effects

12.120 The IEMA guidelines also refer to visual effects, noise and hazardous loads associated with traffic generation. Visual effects and noise are addressed in **Chapter 6: Landscape and Visual Amenity** and **Chapter 11: Noise and Vibration**.

Further Survey Requirements and Monitoring

12.121 Site entrance roads will be well maintained and monitored during the operational life of the Proposed Development. Regular maintenance will be undertaken to keep the Site access track drainage systems fully operational and to ensure there are no run-off issues onto the public road network. No further surveys or monitoring is required beyond that proposed within the CTMP.

Summary of Significant Effects

12.122 The Proposed Development would lead to a temporary increase in traffic volumes on the Study Area road network during the construction phase. Traffic volumes would decrease considerably outside the peak period of construction.

12.123 The maximum traffic impact associated with the construction is predicted to occur in Month 8 of the construction programme. During this month, an average of 78 HGV movements is predicted per day and it is estimated that there would be a further 52 car and light van movements per day to transport construction workers to and from the Site.

12.124 The assessment of effects also indicates that traffic flows in the vicinity of the H117 route within the Site are considered adverse effects, prior to the application of mitigation measures.

12.125 No link capacity issues are expected on any of the roads assessed due to the additional movements associated with the Proposed Development. The effects of construction traffic are temporary in nature and are transitory.

12.126 A review of potential cumulative effects found that there would be sufficient spare road capacity to accommodate the Proposed Development, Bhlaraidh Wind Farm Extension and Dell Wind Farm should they be constructed at the same time. Nevertheless, it is assumed that the effects of all sites, plus any others that may come forward and be constructed along similar timescales, would be mitigated through the use of an overarching Traffic Management and Monitoring Plan.

12.127 Following implementation of mitigation through the CTMP, there will be no residual significant effects during construction of the Proposed Development, including cumulatively with other schemes.