

13. Traffic and Transport

13.1 Introduction

- 13.1.1 This chapter presents the assessment of the likely significant effects of the Proposed Development with respect to Traffic and Transport. This should be read in conjunction with **Chapter 4: Description of the Proposed Development** and with respect to the relevant parts of **Chapter 7: Noise**, where common receptors have been considered and where there is an overlap or relationship between effects.
- 13.1.2 This chapter describes:
- the legislation, policy and technical guidance that has informed the assessment (Section 13.3);
 - consultation and engagement that has been undertaken and how comments from consultees relating to Traffic and Transport have been addressed (Section 13.5);
 - the methods used for baseline data gathering (Section 13.4);
 - overall baseline (Section 13.4);
 - embedded measures relevant to Traffic and Transport (Section 13.7);
 - the scope of the assessment for Traffic and Transport (Section 13.6);
 - the methodology used within the assessment (Section 13.8);
 - the assessment of Traffic and Transport effects (Section 13.9);
 - the assessment of cumulative (inter-project) effects (Section 13.10); and
 - a summary of the significance conclusions (Section 13.11).
- 13.1.3 Further details related to this chapter can be found in the following appendices:
- Appendix 13A Abnormal Indivisible Load Route Survey;
 - Appendix 13B Accident Assessment;
 - Appendix 13C Programme with expected construction traffic flows; and
 - Appendix 13D Summary of Significance Conclusion.

13.2 Limitations of this Assessment

- 13.2.1 Removal and plantation of forestry has not been considered within the assessment. However, forestry is not thought to significantly affect any of the assessment conclusions.
- 13.2.2 Aside from forestry, there are no other limitations relating to Traffic and Transport that affect the robustness of the assessment of the potential significant effects of the Proposed Development.

13.3 Policy and Legislation

- 13.3.1 This section identifies the legislation, planning policy and technical guidance that have informed the assessment of effects with respect to Traffic and Transport. Further information on policies relevant to the Proposed Development is provided in **Chapter 5: Planning Policy**.

Legislation

- 13.3.2 There is no specific legislation that needs to be considered when determining this assessment.

Planning Policy

- 13.3.3 A summary of the relevant national and local planning policy is given provided within **Table 13-1**.

Table 13-1 Planning policy relevant to the Traffic and Transport assessment

Policy	Policy context
National Planning Framework 4	The National Planning Framework 4 (NPF4) is the long-term spatial strategy for Scotland 2045 covering development and investment in infrastructure and the spatial expression of the Government Economic Strategy. NPF4 replaces NPF3 and the Scottish Planning Policy, and it informs development and investment decisions of the Scottish Government, its agencies, planning authorities, private investors and other bodies. In relation to energy, Policy 11 states that ‘development proposals for all forms of renewable, low-carbon and zero emissions technologies will be supported. These include wind farms including schemes for repowering, extending, expanding and extending the life of existing wind farms. Specific to traffic and transport, Policy 11 requires the design of such project and mitigation to address the impacts on: public access, including impact on long distance walking and cycling routes and scenic routes; road traffic on an adjacent trunk road, including during construction; and cumulative impacts. Policy 13 requires a transport assessment for a development proposal that will generate a significant increase in the number of person trips. Furthermore it states, development proposals for significant travel generating uses will only be supported if they are accompanied by a Travel Plan that sets out arrangements for delivering targets, monitoring and evaluation. Development proposals that have potential to affect the operation and safety of the strategic transport network will need to be fully assessed to determine their impact. Policy 13b states that ‘development proposals will be supported where its transport requirements generated are considered in line with the sustainable travel and investment hierarchies’ and, where appropriate, ‘has taken into account, at the earliest stages of design, the transport needs of diverse groups including users with protected characteristics to ensure the safety, ease and needs of all users, and adequately mitigate any impact on local public access routes’.

Policy	Policy context
Argyll and Bute Local Development Plan 2	Argyll and Bute Local Development Plan 2 (LDP2) has been adopted from 28th of February 2024. The adopted LDP2 has replaced. The draft LDP 2 includes various policy allocation changes as well as new additions that may be of relevance to the Proposed Development and will therefore be considered following its adoption. The following policies within Argyll and Bute Local Development Plan (LDP2) related to transport are: Policy 32 – Active Travel Policy 33 – Public Transport Infrastructure Policy 41 – Electric Vehicle Charging Policy 43 – Safeguarding of Aerodromes Policy 32- Active Travel Where development would have a significant effect on public access whether on a path(s) or under wider rights of access, the developer will be required to submit an Access Plan, the guidance on the expected approach is provided by Nature Scot Guide on preparing Access Plans, which addresses public access issues to the satisfaction of the Council as part of the planning application. Where development would have a significant adverse effect on an existing active travel route, alternative access provision will be sought at the developer's expense either by diverting the route or incorporating it into the proposed development in a way that it is no less attractive, safe or convenient for public use. This should be addressed in the Access Plan. It is expected that the Proposed Development not to have significant effect on public access whether on a path(s) or wider rights of access. Policy 33 – Public Transport Infrastructure Argyll and Bute Council require development to follow a sequential approach, supporting patterns of development which utilise existing or potential public transport corridors as the preferred option. Development proposals which are likely to generate significant levels of journeys between places of residence, shopping, employment, leisure and social facilities, must have regard to siting development in locations which facilitate travel by public transport. Due to the nature of the site and its rural location, no stops are present within the recommended distance for bus stops. Policy 41 – Electric Vehicle Charging In the judgement of the planning authority where development proposals will significantly increase vehicular or pedestrian traffic on substandard private or public approach roads, then developments will be required to contribute proportionately to improvements to an agreed section of the public or private road network. This may be subject to planning conditions or agreements, including Section 75 planning agreements.

Policy	Policy context
	The construction traffic associated with the construction of the Proposed Development is expected to be minimal during the duration of the development of the Proposed Development and almost negligible during the operation of the Proposed Development. Policy 43 – Safeguarding of Aerodromes Development will not be permitted where it would compromise the safe operation of an Aerodrome or Technical Site or constrain their present or future operations. The Proposed Development does not foresee compromise of the safe operation of an Aerodrome or Technical Site of constrain their present or future operations.

13.4 Data Gathering Methodology

Site Access

- 13.4.1 Access is proposed to be taken via the existing An Suidhe Wind Farm access located on the A83, west of Killean. Beyond the point of access off the A83, existing wind farm and forestry access tracks will be used up to the proposed new track.

Study Area

- 13.4.2 The Study Area has been informed by locations of existing quarries and routes to strategic roads to provide wider connections for the transportation of construction materials, plant, equipment, and waste disposal.
- 13.4.3 The Study Area is shown in **Figure 13-1** and focuses on routes for Heavy Goods Vehicles (HGVs) and light vehicles (cars and vans) anticipated during the construction and decommissioning of the Proposed Development.
- 13.4.4 The Study Area includes the A83 from Lochgilphead to Tarbet. The A83 provides a connection to the A816 at Lochgilphead and the A82 at Tarbet. The A83 includes potential routes to nearby quarries and batching plants north and south of the Development Site.
- 13.4.5 Beyond the A83, the A816 and the A82 provide routing options northbound and southbound into the wider network.

Route Options for Construction HGVs

- 13.4.6 At this stage it is expected that aggregates for the Proposed Development will be taken from the up to 9 on-site borrow pits. However, should this not be the case, the assessment has assumed that all aggregates would be delivered from existing quarries and batching plants in the surrounding area.
- 13.4.7 Should aggregates need to be sourced offsite, the quarry which would provide the aggregates would be determined once the construction contractor is appointed. The following two quarries have been identified as potential candidates and have informed the Study Area of this assessment:

- Clachan Quarry – route via the A83 north of the Proposed Development; and
 - Achnaba Quarry – route via the A83 south of the Proposed Development.
- 13.4.8 For purposes of assessment, this EIA Report a worst-case scenario of 100% of the construction traffic would be travelling along the northern route, which is between Clachan quarry and the site for the supply of aggregates. The routes from the quarries to the Development Site is shown in **Figure 13.2**.
- 13.4.9 Section 13.5 describes key local roads that form part of the Study Area, where construction traffic HGVs would route between the two quarries and the Development Site.

Route Options for Abnormal Indivisible Loads

- 13.4.10 The Abnormal Indivisible Load (AIL) Route Survey is presented in the Route Survey Report (RSR) produced by Pell Frischmann (see **Appendix 13A**).
- 13.4.11 **Appendix 13A** reports that Campbeltown Harbour is the only feasible port for the transportation of the candidate wind turbine equipment, due to restrictions on the wider A83 at Inveraray, Tarbert and Arrochar.
- 13.4.12 The AIL route is detailed as follows:
- Loads will exit Campbeltown Harbour and join the A83 northbound;
 - Loads will then turn left south-west of Tarbert to exit the A83 and join the B8024 northbound;
 - Loads will next turn left north of Tarbert to exit the B8024 and re-join the A83 northbound;
 - Loads will then continue through Lochgilphead on the A83 northbound to Inveraray; and
 - Loads will then finally turn left into the Development Site at the existing access junction for An Suidhe Wind Farm.
- 13.4.13 The proposed access route is shown in **Figure 13.3**. The constraints and proposed temporary mitigation solutions have been informed by the Swept Path Analysis (SPA) undertaken.

Desk Study

- 13.4.14 The sources of information used for the Traffic and Transport assessment are listed below in **Table 13-2**.

Table 13-2 Data sources used to inform the Traffic and Transport assessment

Organisation	Data source	Data provided
Department for Transport (DfT)	Road traffic statistics Drakewell c2-Cloud Traffic Data	Baseline traffic data of the roads within the Study Area
Agilysis	CrashMap Pro	Personal Injury Accident data
Google	Google Traffic	Indication of traffic conditions on the road network
Google	Google Street View	Desk study
City link and Westcoast	City link Westcoast	Bus Timetable Information
Sustrans	Argyll and Bute NCN	The National Cycle Network (NCN) in Scotland

Survey Work

- 13.4.15 No additional traffic survey works associated with the Proposed Development have been undertaken.

Overall Baseline

Road Access

- 13.4.16 The existing highway network within the Study Area illustrated in **Figure 13.1** described below. No weight restrictions apply to the sections of the A83 described below.

Northern Route

A83 Site access

- 13.4.17 The A83, in the vicinity of the Development Site access, is a 6m wide single carriageway road that runs in a southwest to northeast direction. The A83 is part of Transport Scotland's trunk road network that connects the A816 to the south and to the A82 to the north. The land surrounding the Development Site access is predominantly forestry and no pedestrian footways nor streetlighting are provided. The road is subject to a 60mph speed limit.

A83 Killean - Inveraray

- 13.4.18 The A83 Inveraray Road is a single carriageway road, approximately 6m wide, running from Killean to Inveraray for approximately 5 miles. Through rural areas, the A83 is subject to the national speed limit and within Inveraray, a 30mph speed limit is in force. The section of the A83 south of the Inveraray town centre is fronted by residential properties with direct access onto the A83. Within the centre of Inveraray, the A83 follows a one-way system around

Inveraray Parish Church and has both residential and commercial properties fronting onto the A83 which are served by on-street parking.

A83 Inveraray - Cairndow

- 13.4.19 The A83 Old Military Road starts from the A819/A83 junction in Inveraray to Cairndow for approximately 10 miles. The road is subject to various speed limits but is predominantly subject to the national speed limit along the single carriageway section. The speed limit is reduced to 40mph north of Inveraray.
- 13.4.20 This section of the A83 is predominantly a rural road with very limited instances where properties and land uses take direct access onto the A83.

A83 Cairndow - Tarbet

- 13.4.21 This section of the A83 trunk road between Cairndow to Tarbet is a single carriageway road approximately 14 miles in length and subject to the national speed limit. The road is predominantly rural in nature and direct access to the A83 from properties and land uses is limited.
- 13.4.22 The national speed limit of 60mph applies to most of this section of the A83 except for a 40mph speed limit in Succoth and 30mph speed limit in Arrochar and Tarbet.
- 13.4.23 The 40mph speed limit section in Succoth serves recreational sites including a car park, villas/lodges or chalets, picnic area and caravan park & campsite. The A83 becomes more urban as it approaches Arrochar, and the surrounding land use includes residential, commercial and retail properties with direct access to the A83.

Southern Route

A83 Site – Lochgilphead

- 13.4.24 This section of Transport Scotland trunk road from Killeen to Lochgilphead is a two-way single carriageway that is subject to a national speed limit of 60mph and runs for approximately 21 miles. The A83 serves a number of settlements including Furnace, Minard, Lochgair and Lochgilphead. The speed limit is reduced to 40mph within all these settlements, except for Lochgilphead, which has a 30mph speed limit.
- 13.4.25 Outside these settlement areas, the nature of the A83 is a highland rural road. The land use surrounding the A83 within Furnace is residential properties that are set back from the road and only limited properties have direct access onto it.
- 13.4.26 The surrounding land use in Minard is largely residential properties and a village hall. Direct vehicular access to the A83 from these properties is also limited.
- 13.4.27 In Lochgair, the land use is a mix of residential and Bed & Breakfast properties, along with a power station. Some properties have parking spaces with direct access to the A83.
- 13.4.28 Lochgilphead is the largest settlement within this section of the A83. The route includes several junctions and serves a mix of retail, commercial, recreational and residential properties with direct access to and on-street parking on the A83.

Public Transport Network

Bus

13.4.29 The site’s accessibility to a bus stop is measured against PAN 75, which advises that a bus stop should be located within 400m of the site. Due to the nature of the site and its rural location, no bus stops are present within the recommended distance. The closest bus stops are located at the Folk Museum at Auchindrain, approximately 1.2 miles south of the Development Site. **Table 13-3** summarises the names and the location of the closest bus stops to the Development Site, as well as the walking distance between them and the Development Site.

Table 13-3 Site Walking Distance to Bus Stops

Bus Stop Location	Name of Stop	Walking Distance
North route		
Argyll Caravan Park	Argyll Caravan Park Stop	2miles
Barn Brae	Barn Brae Stop	4.1miles
Inveraray PA32 8UY	Front Street Stop	4.6miles
Southern route		
Folk Museum	Folk Museum Stop	1.2 miles

Source: Google Maps (2024)

13.4.30 The bus stops shown in **Table 13-4** are served by bus services operated by West Coast Motors. It should be noted that most of these bus services pass through A816 road and A816/Forestry and Land Scotland (FLS) site access track junction.

Table 13-4 Bus Service Summary of Bus Stops Near the Development Site

Bus Service Number	Route	Service Frequency (Weekday)	Bus Operator
428	Inveraray	Every 2 hours	Westcoast motors
926	Glasgow	Every 3 hours	Scottish city link

Source: Westcoast motors (2024) and Citylink (2024)

Rail

13.4.31 There is no direct connection from the Development Site to the existing West Highland railway that provides passenger services from Glasgow to Oban, Mallaig and Fort William. This line calls at Arrochar & Tarbet and Ardlui stations with road connections via the A83 and the A82.

Pedestrian and Cycle Facilities and Public Rights of Way

Pedestrians

- 13.4.32 There are no footways along the existing access track that leads to the Development Site nor along A83 in the proximity of the Development Site. Footways can be observed in the places where road pass through villages but on rest of the A83, footway is discontinued.

Cyclists

- 13.4.33 There are no current cycle facilities within the vicinity of the Proposed Development. The closest National Cycling Network route is Route 78, which starts from Inverneill to the south and ends at Crinan to the north. The distance between the Development Site and Route 78 is approximately 1.4km at its closest point.

Adopted Core paths

- 13.4.34 A review of the adopted core paths has been undertaken using the Argyll and Bute Adopted Core Path online map. Using the online map feature, two core paths have been identified within the vicinity of the Proposed Development. The Core Paths facilitate movements for non-motorised users (NMU), and adjoin proposed new tracks for the Proposed development, these are:
- C119(b) Braevallich, Loch Awe to Furnace; and
 - C119(c) Braevallich Loch Awe to Furnace.
- 13.4.35 **Figure 13.4** show the adopted core paths, existing and proposed tracks. This Figure also shows that the existing Braevallich, Loch Awe to Furnace paths (Core Paths 119(b) and C119(c)) runs along the Lochside serving Furnace, Argyll Caravan Park and Argyll Adventure and continue across the Proposed Development.
- 13.4.36 There are other Core Paths which are outside site boundary leading to C119(b), these are:
- C206(a) Leacainn Walk Furnace;
 - C206(b) Leacainn Walk Furnace;
 - C206(c) Leacainn Walk Furnace; and
 - C206(d) Leacainn Walk Furnace.
- 13.4.37 The adopted Core Paths utilise existing tracks with no segregated NMU facilities or streetlighting present within the vicinity of the site.

Existing Highway Traffic Flows

- 13.4.38 Baseline traffic flow data has been established using publicly available traffic counts published by the Department for Transport (DfT) and Transport Scotland Drakewell C2-traffic database. These counts detail the annual average daily traffic (AADT) (24-hour), and the proportion of HGVs and other types of vehicles, at appropriate locations within the Study Area.
- 13.4.39 A factor has been applied to convert the AADT 24-hour flow to a 12-hour traffic flow to coincide with the typical 12-hour working days as the working hours are assumed to take place between 07:00 to 19:00 hours. The factor has been derived from Table TRA0308:

'Traffic distribution on all roads by time of day and day of the week, for selected vehicle types in Great Britain' for the latest data available, 2022. The baseline 12-hour traffic flow data is presented in

13.4.40 **Table 13-5** below.

Table 13-5 Baseline traffic flow 12-hour (two-way)

Count ID	Source	Data collection year	Location	Light	HGV	Total Vehicles
10765	DfT	2022	A83 - South of Inveraray	2149	210	2358
50771	DfT	2022	A83 - Ardenavan	4135	310	4446
764	DfT	2022	A83 - Rest & Be Thankful viewpoint	2973	297	3270
40767	DfT	2022	A83 - Between Arrochar and Tarbet	2971	290	3261
ATC08063	Drakewell	2019	A83 - Drishiag	2658	514	3172
JTC08338	Drakewell	2023	A83 -West of Arrochar	3142	329	3471
ATC08090	Drakewell	2023	A83 - West of Tarbet	3366	687	4053
ATC08104	Drakewell	2022	A83 - Arrochar	3063	217	3280
40768	DfT	2022	A83 - Minard	1919	202	2121
20772	DfT	2022	A83 – Lochgilphead	4717	160	4877

Source: Department for Transport (2024)

Existing Accident Records

- 13.4.41 Records of personal injury accidents (PIAs) have been obtained from the CrashMap database which displays collision data collected from the Police. This data is approved by the National Statistics Authority and reported on by the Department for Transport (DfT) each year.
- 13.4.42 Records have been obtained over a five-year period between 2018 and 2022. Crashmap uses published collision data by DfT to populate the map and associated reports. Crashmap is positioned to obtain the provisional estimates for the first six months of the year 2023, however, the estimates are subject to change and does not form a complete record. DfT publishes final report of the annual reported road casualties in September, and provisional estimates for the first six months in November. Therefore, there is provisional estimates up to end of June 2023 and final 2023 report is expected in September 2024.
- 13.4.43 The impact of casualties differs according to the severity of the injuries sustained. Three groups are usually differentiated as follows:
- Fatal: any death that occurs within 30 days from causes arising out of an accident;

- Serious: casualties who require hospital treatment and have lasting injuries, but who do not die within 30 days of an accident; and
- Slight: where casualties have injuries that do not require hospital treatment, or, if they do, the effects of the injuries quickly subside.

- 13.4.44 The accident data for the construction route within the Study Area is summarised within **Table 13-7** for the Northern access route and within **Table 13-8** for the Southern Access route.
- 13.4.45 The accident data has been analysed to determine a rate of accidents per million vehicle kilometres (km) along various sections of the access routes, so a comparison can be made against DfT reported road casualties for Great Britain (GB), presented in DfT table RAS0302. The DfT table RAS0302 presents the national accident rate per billion vehicle kilometres by road classification between 2013 and 2022 and **Table 13-6** summarises data from this in accidents per million vehicle kilometres between 2018 and 2022. The average rate over the five-year period 2018-2022 has been used for comparison in this assessment.

Table 13-6 Accident Rate per Million vehicle kilometres by Road Type, GB 2018-2022

Road Type	2018	2019	2020	2021	2022	Average
Urban A Road	0.43	0.42	0.42	0.42	0.30	0.43
Rural A Road	0.12	0.11	0.11	0.11	0.11	0.12
Motorways	0.041	0.036	0.030	0.035	0.031	0.035

Table 13-7 Accident records on the Northern Access Route

Location	Slight	Serious	Fatal	Total	Accident rate per million vehicle kms	National Average rate per million vehicle kms
Development Site Access to Auchnabreac	0	0	0	0	0.00	0.12
Auchnabreac to Kilmalieu Cemetery	1	1	0	2	0.06	0.12
Kilmalieu Cemetery to Ardgenavan	4	3	0	7	0.07	0.12
Ardgenavan to Rest & Be Thankful	7	8	0	15	0.15	0.12
Rest and Be Thankful to Ardgartan	5	2	0	7	0.14	0.12
Ardgartan to Glenlolin Caravan Park	0	2	1	3	0.12	0.12
Glenlolin Caravan Park to Tarbet	5	2	0	7	0.24	0.12

- 13.4.46 The northern access route covers the A83 from the Development Site access to the junction with the A82 at Tarbet. This access route has been split into six sections between places of interest and settlements for this accident assessment. Three sections of the A83 display an accident rate above the national average for a rural A road. These are two sections of the A83 between Ardgenavan to Ardgartan (via the Rest and Be Thankful viewpoint) and the A83 between the Glenloin caravan park in Arrochar to the A82 junction in Tarbet. On further review, the accidents along these sections of the A83 are located disparately along the link and no accident clusters or patterns are apparent. The Accident Data is provided in **Appendix 13B**.

Table 13-8 Accident records on the Southern Access Route

Location	Slight	Serious	Fatal	Total	Accident rate per million vehicle kms	National Average rate per million vehicle kms
Development Site Access to Minard	5	0	0	5	0.09	0.12
Middle Kames to Minard	3	2	0	5	0.10	0.12
Kilmory Industrial Estate to Middle Kames	5	3	2	10	0.23	0.12
Lochgilphead to Kilmory Industrial Estate	0	0	0	0	0.00	0.12

- 13.4.47 The southern access route covers the A83 from the Development Site access to the junction with the A816 at Lochgilphead. This access route has been split into four sections between places of interest and settlements for this accident assessment. One section of the A83 between Kilory Industrial Estate and Middle Kames displays an accident rate above the national average for a rural A road. On further review, there are no significant accident clusters or patterns which may be exacerbated by the Proposed Development traffic. The Accident Data is provided in **Appendix 13B**.

Future baseline

- 13.4.48 Background traffic growth will occur on the local road network irrespective of whether the Proposed Development is constructed. Projected baseline traffic flows for the expected year of construction peak (anticipated to be Q4 2027) have been calculated by applying growth factors from the National Road Transport forecasts (NRTF)¹.
- 13.4.49 A growth factor of 1.069 for year of 2019, 1.047 for 2021 and 1.041 for 2022 respectively, derived from the NRTF, has been applied to the baseline flows to calculate 2027 traffic flows for Large Goods Vehicles (LGVs) and HGVs in **Table 13-9**.

¹ DETR(1997), National Road Traffic Forecasts 1997.

Table 13-9 2027 Baseline traffic flow 12-hour (two-way)

Count ID	Source	Year	Location	Lights	HGV	Total Vehicles
10765	DfT	2027	A83 - South of Inveraray	2250	220	2469
50771	DfT	2027	A83 - Ardenavan	4330	325	4655
764	DfT	2027	A83 - Near Rest and Be Thankful viewpoint	3113	311	3423
40767	DfT	2027	A83 - Between Arrochar and Tarbet	3110	304	3414
ATC08063	Drakewell	2027	A83 - Drishlag	2841	549	3391
JTC08338	Drakewell	2027	A83 - West of Arrochar	3270	343	3613
ATC08090	Drakewell	2027	A83 - West of Tarbet	3504	715	4219
ATC08104	Drakewell	2027	A83 - Arrochar	3207	228	3434
40768	DfT	2027	A83 – Minard	2009	212	2221
20772	DfT	2027	A83 – Lochgilphead	4840	164	5004

13.5 Consultation and Engagement

Scoping Opinion

- 13.5.1 A request for a Scoping Opinion was initially submitted to the Scottish Ministers in June 2020, and this was followed by a further request on 24th June 2022 as a result of the consideration of larger turbines for the Proposed Development. The Scottish Government Energy Consents Unit (ECU) issued the Scoping Opinion for the latter request on 20th September 2022 (ECU Reference: ECU00004517).
- 13.5.2 At the time of publishing the Scoping Opinion, the consultation response from ABC had not been available to the ECU. A Scoping Opinion Addendum was therefore subsequently issued by the ECU, on 31st May 2023, to provide ABC's consultation responses.
- 13.5.3 A summary of the relevant responses received in the Scoping Opinion in relation to traffic and transport and confirmation of how these have been addressed within the assessment is presented in **Table 13-10**.

Table 13-10 Summary of Scoping Opinion Responses

Consultee	Consideration	How responses are addressed in the EIA
Argyll and Bute Council (ABC) (May 2023)	State that Transport Scotland (TS) should be notified as the Development Site entrance connects directly to the A83. ABC have no objection as long as the Development Site is accessed from the A83 Tarbet – Campbeltown Trunk Road, and there shall be no vehicular access from the B840 East Lochaweside Road.	The magnitude of change on receptors during decommissioning is likely to be less than during construction as a result of access tracks and sub-surface infrastructure remaining in situ. Effects will therefore be similar in nature but of reduced magnitude than during construction. For this reason, and as presented within Section 13.8, decommissioning has been scoped out.
Furnace Community Council (August 2020)	Raised a query whether transportation of turbine components and major parts would occur at night. During such operation, would travel restrictions on the A83 become necessary?	The scheduling of AIL deliveries is expected to be undertaken by the haulier once appointed. The haulier will consult with relevant stakeholders to ensure deliveries are managed to minimise the impact on the highway network.
Scotways (July 2021)	State that Rights of Way (RoW) SA22 and SA25 are affected by site boundary and indicative turbine co-ordinates.	The Proposed Development is outside these RoWs.
Transport Scotland (TS) (July 2020)	TS are satisfied with the assessment approach outlined in the Scoping Report and the scoping out of impacts associated with the operational phase. TS are required to be satisfied that the size of turbines proposed can negotiate the selected route and that their transportation will not have any detrimental effect on structures within the trunk road route path. In addition, TS require a full Abnormal Loads Assessment report including SPAs at pinch points to be appended in the EIA Report. TS requested the Applicant to demonstrate that they can overcome the swing bridge pinch point at Ardrishaig.	A RSR for AILs has been produced by Pell Frischmann (Appendix 13A). The RSR includes SPAs and has identified temporary mitigation solutions required to facilitate the AILs movements. This covers the A83 Ardrishaig Basin bridge and demonstrates that the pinch point can be overcome.

13.6 Scope of the Assessment

Spatial Scope

- 13.6.1 The spatial scope of the assessment of Traffic and Transport covers the Development Site and the Study Area described in **Section 13.4**.
- 13.6.2 These highway links provide comprehensive coverage of the routes surrounding the Development Site. Beyond these roads, traffic from the Proposed Development would access the wider road network, where its effect would be diluted by existing traffic on these routes or would distribute to a point where the effects from traffic would be minimal.

- 13.6.3 The receptors along the highways identified in **Section 13.6** form the scope of the assessment in relation to potentially traffic related effects.

Temporal Scope

- 13.6.4 The temporal scope of the assessment of Traffic and Transport focuses on the period over which the construction of the Proposed Development would be carried out and therefore covers the period between Q4 2026 and Q4 2028.
- 13.6.5 As the Proposed Development nears the end of its operational life, a decision would be taken as to whether or not a life extension, repowering or decommissioning would be required. However, for impact assessment purposes, the EIA Report assumes that the Proposed Development would be decommissioned at the end of its operational life of 35 years. It is expected that access tracks and below ground infrastructure will be left in situ as this is considered to be less environmentally damaging than complete removal. As such, the magnitude of change on receptors is likely to be less during the decommissioning period than during construction as a result of access tracks and sub-surface infrastructure remaining in situ.

Potential Receptors

- 13.6.6 Transport Receptors are the users or beneficiaries of the highways network assets and facilities such as pedestrians, cyclists, equestrians, and drivers who travel within the vicinity of the Proposed Development.
- 13.6.7 The Institute of Environmental Management and Assessment (IEMA) Guidelines: Environmental Assessment of Traffic and Movement (EATM) identifies the following key user groups: Non-Motorised Users (NMU), Public Right of Way (PRoW) users, motorists/freight vehicles, public transport and emergency services. It further identifies sensitive users and locations such as the following that may be affected:
- People at home;
 - People at work;
 - Sensitive and/or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors);
 - Locations with concentrations of vulnerable users (e.g., hospitals, places of worship, schools);
 - Retail areas;
 - Recreational areas;
 - Tourist attractions;
 - Collision clusters and routes with road safety concerns, and
 - Junctions and highway links at (or over) capacity.
- 13.6.8 Adverse effects on core paths have not been assessed in this chapter and are instead covered in **Chapter 14: Socio-economics (including tourism)**.

Likely significant effects

13.6.9 The effects on Traffic and Transport receptors as a result of the Proposed Development which have the potential to be significant are summarised in **Table 13-11**.

Table 13-11 Summary of likely significant effects

Likely Significant Effects	Description	Receptor
Severance of communities	The separation of people from places and other people/places or impeding pedestrian access to essential facilities	People at home People at work Sensitive and/or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors) Locations with concentrations of vulnerable users (e.g. hospitals, places of worship, schools) Retail areas Recreational areas Tourist attractions Junctions and highway links at (or over) capacity
Road vehicle driver and passenger delay	Traffic delays to non-development traffic resulting from: additional turning movements at Site access; additional parked cars narrowing effective road width; increased flows at key intersections; or at side roads where gaps in traffic may be reduced, lengthening delays.	People at home People at work Sensitive and/or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors) Locations with concentrations of vulnerable users (e.g. hospitals, places of worship, schools) Retail areas Recreational areas Tourist attractions Junctions and highway links at (or over) capacity
Non-motorised user delay	Delay in the ability of people to crossroads resulting from changes in traffic volume, composition and speed, the level of pedestrian activity, visibility.	People at home People at work Sensitive and/or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors) Locations with concentrations of vulnerable users (e.g. hospitals, places of worship, schools) Retail areas Recreational areas Tourist attractions

Likely Significant Effects	Description	Receptor
Non-motorised user amenity	The relative pleasantness of a pedestrian journey that may be affected by changes in traffic flow and composition and separation from traffic (including pavement width).	People at home People at work Sensitive and/or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors) Locations with concentrations of vulnerable users (e.g. hospitals, places of worship, schools) Retail areas Recreational areas Tourist attractions
Fear and intimidation on and by road users	Fear and intimidation experienced by receptor groups resulting from change in traffic volume and proximity, including due to narrow pavement widths and lack of protection, traffic composition and speed.	People at home People at work Sensitive and/or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors) Locations with concentrations of vulnerable users (e.g. hospitals, places of worship, schools) Retail areas Recreational areas Tourist attractions
Road user and pedestrian safety	Any impact on the risk of accidents occurring.	People at home People at work Sensitive and/or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors) Locations with concentrations of vulnerable users (e.g. hospitals, places of worship, schools) Retail areas Recreational areas Tourist attractions Collision clusters and routes with road safety concerns Junctions and highway links at (or over) capacity
Large loads	The impact of transportation of abnormal loads.	People at home People at work Sensitive and/or vulnerable groups (including young age; older age; income; health status;

Likely Significant Effects	Description	Receptor
		social disadvantage; and access and geographic factors) Locations with concentrations of vulnerable users (e.g. hospitals, places of worship, schools) Collision clusters and routes with road safety concerns Junctions and highway links at (or over) capacity

Effects Scoped Out

- 13.6.10 The following have been scoped out of further assessment because the potential effects are unlikely to be significant.
- 13.6.11 Potential effects on users of the road network as a result of operational traffic from the Proposed Development:
- The Proposed Development would operate autonomously and would only be visited for inspection on a monthly basis or in the event that a fault occurs.
- 13.6.12 Potential effects on users of the road network as a result of decommissioning traffic from the Proposed Development:
- The effects during the decommissioning of the Proposed Development have not been considered in detail given the unknown conditions of the highway following the 35-year life cycle of the Proposed Development. In all likelihood, traffic growth will continue and traffic movements during decommissioning will be further diluted in comparison to during construction. Furthermore, fewer traffic movements would be generated during decommissioning than during construction as below ground infrastructure and access tracks will remain in situ and therefore the magnitude of any change is likely to be less than during construction. Decommissioning effects are therefore scoped out of further assessment. However, a separate assessment of effects could be conducted nearer the time of decommissioning should there be any concerns in respect of decommissioning.
- 13.6.13 Hazardous loads – No hazardous loads are anticipated in relation to the Proposed Development.
- 13.6.14 Adverse effects on core paths have not been assessed in this chapter and are instead covered in **Chapter 14: Socio-economics, Tourism and Recreation**.

13.7 Embedded measures

- 13.7.1 A range of environmental measures have been embedded into the Proposed Development. **Table 13-12** outlines how these embedded measures will influence the Traffic and Transport assessment.

Table 13-12 Summary of the embedded environmental measures

Receptor	Potential changes and effects	Embedded measures	Compliance mechanism
Construction			
All	Vehicles could carry mud and debris onto the carriageway	Wheel washing facilities will be installed on-site. Sheeting installed prior to leaving site.	Planning condition/Draft Construction Traffic Management Plan (CTMP)
All	Changed traffic flows on local roads	Specific travel routes to and from site are defined for delivery vehicles.	Planning condition/Draft CTMP
All	Possible impact on Road Safety due to increased traffic flows on highway network	No existing accident problem identified. HGVs to use identified route.	Planning condition/Draft CTMP

- 13.7.2 In addition to the measures mentioned in **Table 13-12**, the following measures have been incorporated to manage the daily delivery profiles and control construction vehicle movements and routing of HGVs to/from the construction site:
- Upon commencement, all deliveries, operatives and visitors to the construction site will report to the security gate. This will be communicated to all early works contractors at their pre-start meeting;
 - The main contractor will develop a logistics plan highlighting the access point for the project, loading bay, pedestrian/vehicular segregation, welfare, storage, security and material handling that would be enforced following full site establishment;
 - Approved haul routes to the construction site will be identified and protocols put in place to ensure that HGV drivers adhere to these routes;
 - All contractors will be provided with a site induction pack containing information on delivery routes and restrictions on routing;
 - Temporary signage will be erected along the identified construction routes to warn people of construction activities and associated construction vehicles;
 - An integral part of the progress meetings held with all trade contractors is the delivery schedule pro-forma. All contractors will be required to give details of proposed timing of material deliveries to the construction site;
 - A CTMP and compliance monitoring therein will be included within all trade contractor tender enquiries to ensure early understanding and acceptance/compliance with the rules that would be enforced for the Proposed Development;
 - Under no circumstances will HGVs be allowed to lay-up in surrounding roads;
 - Roads will be maintained, and road sweeper deployed as required; and
 - A wheel wash facility will be installed on-site during the construction period to reduce mud and debris being deposited onto the local road network.

- 13.7.3 Given the rural location of the construction site in relation to the public transport network, the opportunity for contractors to travel to work by public transport is not a viable choice. The distance of the construction site from the established cycle network and lack of footway connections to local amenities and establishments also means that travel by alternative sustainable modes is unlikely to be chosen by contractors. However, car-sharing will be promoted. To identify and support travel choice initiatives, a site travel information pack and car-sharing club could be developed and distributed to construction staff.

13.8 Assessment methodology

- 13.8.1 The generic project-wide approach to the assessment methodology is set out in **Chapter 2: EIA Approach**, and specifically in **Sections 2.5 to 2.9**. However, whilst this has informed the approach that has been used in this Traffic and Transport assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of this Traffic and Transport assessment.

Methodology for the prediction of effects

- 13.8.2 This assessment will be based on EATM and will provide a comparison (in percentage terms) between estimated future baseline traffic flows on potentially affected roads within the Study Area (receptors) with and without the predicted traffic generated by the Proposed Development.

General approach

- 13.8.3 The guidance that is followed when assessing the potential significance of road traffic effects is summarised in EATM (IEMA, 2023), which states the following:
- “At an early stage, it is useful to identify particular groups or locations which may be sensitive to changes in traffic conditions.” (Paragraph 2.5); and
 - “The detailed assessment of impacts is...likely to concentrate on the period during which the absolute level of an impact is at its peak, as well as the hour at which the greatest level of change is likely to occur.” (Paragraph 3.10).
- 13.8.4 EATM provides two rules that are used to establish whether an environmental assessment of traffic effects should be carried out on receptors:
- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%); and
 - Rule 2: Include sensitive areas where traffic flows are predicted to increase by 10% or more.
- 13.8.5 EATM outlines that predicted traffic flow increases which are below 10% are generally not considered to be significant as daily variations in background traffic flow may fluctuate by this amount. Therefore, changes in traffic flows below this level will not be assessed. Consideration will also be given to the duration of the impact within the assessment.

Environmental Effects Assessed

EATM²² sets out the following environmental effects that should be considered:

Severance of communities

- 13.8.6 The EATM states that when assessing severance, the assessor should:
- Consider the highway characteristics and features;
 - Consider the traffic flow and composition;
 - Define the facilities to which access is potentially impaired;
 - Define the facility catchment areas from which users may be drawn; and
 - Estimate the populations within those areas - both in total, and vulnerable groups (by which severance may be more impactful).
- 13.8.7 There is no predictive formula which give simple relationships between traffic factors and levels of severance. EATM states that while not prescriptive, the thresholds for changes in traffic flow of 30%, 60% and 90% can be regarded as a starting point to estimate corresponding 'slight', 'moderate' and 'substantial' changes in severance. In general, marginal (slight) changes in traffic flow are, by themselves, unlikely to create or remove severance.

Road vehicle driver and passenger delay

- 13.8.8 EATM states that delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system. The capacity of a road or a particular junction can be determined by establishing the ratio of flow to capacity (RFC).
- 13.8.9 Delay might be found more commonly at site entrances, passing development sites, where parked cars may share road space, at key intersections along a route, and at side roads where the ability to find gaps in traffic may be reduced.

Non-motorised user delay

- 13.8.10 Given the range of local factors and conditions which can influence non-motorised users, EATM does not recommend that thresholds be used as a means to establish the significance of non-motorised user delay but recommend that reasoned judgements be made instead.
- 13.8.11 Generally, increases in traffic may lead to greater delay, though is dependent on the level of non-motorised users' activity in the area, their visibility at crossings, and wider physical conditions of the Development Site. In densely populated areas it may be necessary to quantify the number of non-motorised users impacted via survey.

Non-motorised amenity

- 13.8.12 The EATM states that non-motorised user amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, composition, and separation from traffic, which includes consideration to exposure to noise and air pollution.
- 13.8.13 EATM notes that changes in pedestrian, cyclist and equestrian amenity may be considered significant where the traffic flow is halved or doubled, with the former leading to a positive effect and the latter a negative effect.

Fear and intimidation on and by road users

13.8.14 The EATM notes that the extent of fear and intimidation is dependent on:

- The total volume of traffic;
- The heavy vehicle composition;
- The speed these vehicles are passing; and,
- The proximity of traffic to people – and/or the feeling of the inherent lack of protection created by factors such as a narrow pavement median, a narrow path or a constraint (such as a wall or fence) preventing people stepping further away from moving vehicles.

13.8.15 The EATM instructs that assessment should be defined by the degree of hazards to pedestrians by average traffic flow over an 18-hour heavy vehicle flow and average speed over an 18-hour day in miles per hour.

13.8.16 A weighting system is applied to the guidelines to assign scores for each highway link of consideration.

13.8.17

13.8.18 **Table 13-13** provides an example of a scoring system that can be adapted to reflect local conditions.

Table 13-13 Fear and intimidation degree of hazard

Average traffic flow 18-hour day - all vehicles/hour 2-way (a)	Total 18-hour heavy vehicle flow (b)	Average vehicle speed (c)	Degree of Hazard score
+1800	+3000	->40	30
1200-1800	2000-3000	30-40	20
600-1200	1000-2000	20-30	10
<600	<1000	<20	0

13.8.19 The total score from all three elements is combined to provide a 'level' of fear and intimidation. **Table 13-14** provides an example.

Table 13-14 Level of Fear and intimidation

Level of Fear and Intimidation	Total hazard score (a)+(b)+(c)
Extreme	71+
Great	41-70
Moderate	21-40
Small	0-20

13.8.20 The magnitude of impact is approximated with reference to the changes in the level of fear and intimidation from baseline conditions, see **Table 13-15**.

Table 13-15 Fear and intimidation Magnitude of Impact

Magnitude of Impact	Change in step/traffic flows (AADF) from Baseline conditions
High	Two step changes in level
Medium	One step change in level, but with: >400 vehicle increase in average 18hr two-way all vehicle flow; and/or >500 Heavy Vehicle increase in total 18hr Heavy Vehicles flow.
Low	One step change in level, with: <400 vehicle increase in average 18hr two-way all vehicle flow; and/or <500 Heavy Vehicle increase in total 18hr Heavy Vehicles flow.
Negligible	No change in step changes

- 13.8.21 EATM notes that special consideration should be given to areas where there are likely to be problems, such as high-speed sections of road, locations of turning points and accesses. Consideration should also be given to areas frequented by school children, the elderly and other vulnerable groups.

Road user and pedestrian safety

- 13.8.22 This is informed by a review of existing collision patterns and trends based upon the existing personal injury collision records and the forecast increase in traffic.
- 13.8.23 The EATM guidance suggest that in addition to collision analysis of STATS19 – personal injury road traffic accidents data, that the ‘Safe System’ approach should be adopted. The approach is broadly as follows:
- Identify the study area using historic crash data;
 - Undertake evidence-led, objective modelling techniques to establish a baseline road safety level for the roads within the study area on which the impact thresholds are exceeded in relation to either non-motorised users or motorised user traffic. This analysis can be carried out using tools such as the International Road Assessment Programme (iRAP)² Star Ratings protocols or similar tools produced by individual highways authorities; and
 - Assess the effects of additional development traffic for all users (including vulnerable groups), across the whole width of the highway corridor. This model should also assess the effect of any changes to the baseline road network, such as the provision of access junctions.

Other Effects

- 13.8.24 The IEMA EATM Guidance also refer to visual effects, noise and hazardous loads. Visual effects and noise are addressed in Chapter 6 Landscape and Visual Amenity and Chapter 3 Noise and Vibration of the IEMA Guidance respectively.

² iRAP star rating is measuring the level of safety across more than 50 attributes that reflect the risk for its road users (vehicle occupants, motorcyclists, cyclists and pedestrians. 1-Star roads have the higher risk and 5-Star roads the lowest risk.

Receptor sensitivity

- 13.8.25 As set out in EATM, the impact of traffic is dependent upon a wide range of factors which include the volume of traffic, traffic speeds and operational characteristics and traffic composition (such as percentage of HGVs) and future cumulative development traffic. The perception of changes in traffic varies according to factors such as:
- Existing traffic levels;
 - The location of traffic movements;
 - The time of day;
 - Temporal and seasonal variation of traffic;
 - Design and layout of the road and pavement;
 - Crossing points;
 - Landscape/townscape character, designated status, land use activities adjacent to the route; and
 - Ambient conditions of adjacent land-uses.
- 13.8.26 Each highway link included in the assessment has been assigned a sensitivity in accordance with EATM on the sensitivity groups based on professional judgement. This is based on the proximity of sensitive receptors to the highway link and the highway environment.
- 13.8.27 **Table 13-16** summarises the rationale used to determine the sensitivity against the corresponding receptors as part of the assessment, as contained in EATM. Professional judgement is also used to determine the sensitivity of the receptor.

Table 13-16 Receptor Sensitivity

Sensitivity	Description / Reason	Receptor
High	Schools, colleges, playgrounds, accident cluster areas, retirement homes, urban/residential roads without footways that are used by pedestrians and cyclists.	Occupants of land-uses alongside the highway link and users of the highway link
Medium	Congested junctions/highway links, places of worship, doctors' surgeries, hospitals, retail with highway frontage, roads with narrow footways, unsegregated cycleways, tourist attractions, community centres, parks and recreation facilities.	Occupants of land-uses alongside the highway link and users of the highway link
Low	Places of worship, public open space, nature conservation areas, listed buildings, tourist attractions and residential areas with adequate footway provision.	Occupants of land-uses alongside the highway link and users of the highway link
Negligible	Receptors with negligible sensitivity to traffic flows and receptors sufficiently distant from affected roads and junctions and no/very limited numbers of pedestrians/cyclists.	Users of the highway link

- 13.8.28 Sensitivity judged as ‘High’ or ‘Medium’ results in Rule 2 (sensitive areas where traffic flows are predicted to increase by 10% or more) being considered for that link. Sensitivity judged as ‘Low’ or ‘Negligible’ results in Rule 1 being considered for that link where traffic flows are predicted to increase by more than 30% or where the number of HGVs is predicted to increase by more than 30%.

Magnitude of Change

- 13.8.29 EATM recognises that professional judgement should be used as part of the assessment and states the following:
- “There are no simple rules or formulae that define appropriate assessment thresholds and therefore there is a need for interpretation and judgement on the part of the competent traffic and movement expert, backed up by data or quantified information wherever possible. Such judgements will include the assessment of the numbers of people experiencing an impact and the sensitivity of those people, as well as the assessment of the damage to various natural or cultural resources.” (Paragraph 3.12).
- 13.8.30 Based on the Rule 1 and Rule 2 and the sensitivity of the receptors, **Table 13-17** shows the magnitude of change applied to the environmental effects to help identify levels of significance. The indicators to assess the magnitude of change are based on advice included within EATM and professional judgement.

Table 13-17 Magnitude of Change

Transport effect	Magnitude of change			
	High	Medium	Low	Negligible
Severance	Change in total traffic or HGV flows over 91%.	Change in total traffic or HGV flow of 61-90%.	Change in total traffic or HGV flows of 31-60%.	Change in total traffic or HGV flows of less than 30%.
Driver delay	High increase in queuing at junctions and/or congestion on road links.	Medium increase in queuing at junctions and/or congestion on road links.	Low increase in queuing at junctions and/or congestion on road links.	Low or no increase in queuing at junctions and/or congestion on road links.
Non-Motorised users	Assignment based on a variety of factors including general level of pedestrian activity, visibility and physical conditions such as traffic flow, traffic composition, crossing points and pavement width/separation from traffic. EATM also advises consideration of factors included in the Transport for London’s Healthy Streets Indicators.			
Non-motorised user delay	Assessed based on pedestrian delay experienced when crossing highways links considering a range of factors including crossing type, pedestrian flows, traffic levels, visibility and general highway condition.			
Fear and Intimidation	Assigned based on the levels scoring systems provided in EATM (which is dependent on 18hr average traffic flow; 18hr average HGV traffic flow and vehicle speed) extreme 71+; great (41-70); moderate (21-40) and small (0-20)			
	Two step change in level score of	Change in level score of fear and	One step change in level score of	No change to step in level score of

Transport effect	Magnitude of change			
	High	Medium	Low	Negligible
	fear and intimidation	intimidation and >400 average 18hr vehicle increase or >500 HGV 18hr vehicle increase.	fear and intimidation and <400 average 18hr vehicle increase or <500 HGV 18hr vehicle increase.	fear and intimidation
Road safety	Assignment informed by a review of existing collision patterns and trends based upon the existing personal injury accident records and the forecast increase in traffic.			
Hazardous/Large Loads	Assigned based on the nature of the load and number of trips and the result of hazard and accident assessment.			

Significance criteria

- 13.8.31 The classification of a likely Traffic and Transport effect is derived by considering the sensitivity of the receptor (derived from **Table 13-19**) against the magnitude of change (derived from **Table 13-17**) as defined in **Table 13-18** below. The shading indicates those significance ratings that are deemed to be 'significant' effects.

Table 13-18 Significance Evaluation Matrix

		Receptor sensitivity				
		Very High	High	Medium	Low	Negligible
Nature of Impact (Magnitude / Probability / Reversibility etc)	Very High	Major (Significant)	Major (Significant)	Major (Significant)	Moderate (Probably Significant)	Minor (Not significant)
	High	Major (Significant)	Major (Significant)	Major (Significant)	Moderate (Probably Significant)	Negligible (Not significant)
	Medium	Major (Significant)	Major (Significant)	Moderate (Probably Significant)	Minor (Not significant)	Negligible (Not significant)
	Low	Moderate (Probably Significant)	Moderate (Probably Significant)	Minor (Not significant)	Minor (Not significant)	Negligible (Not significant)
	Negligible	Minor (Not significant)	Negligible (Not significant)	Negligible (Not significant)	Negligible (Not significant)	Negligible (Not significant)

- 13.8.32 Major and Moderate effects are considered to be significant, whilst Minor and Negligible effects are considered to be Not significant.

13.9 Assessment of effects

- 13.9.1 The sensitivity of highway links in the Study Area provided in **Table 13-19**.

Table 13-19 Sensitivity of Highway Links (Baseline Situation)

Highway Link	Rationale	Receptor sensitivity	Assessment (Rule 1/2)
A83- Inveraray	The A83 through Inveraray is subject to a 30mph speed limit with footways (in parts) provided either side of the carriageway within Inveraray village. Residential, commercial and religious land uses front onto the A83. No accident clusters along the route.	Medium	Rule 2
A83-Drishraig	A83 at this location is a single carriageway subject to the national speed limit. This section of the A83 is rural in nature with commercial forestry the predominant surrounding land use. There are very limited instances where direct access is taken onto the A83.	Negligible	Rule 1
A83- Ardgenavan	The A83 is subject to the national speed limit (60mph) at this location. Land uses around the A83 are predominantly agricultural/forestry. No footways are present either side of the carriageway. No significant facilities, or land use that prompts crossing of the carriageway. Limited number of direct accesses onto the A83.	Negligible	Rule 1
A83- Rest and Be Thankful viewpoint	A83 is a two-lane single carriageway subject to the National Speed Limit travelling near the Rest and Be Thankful viewpoint. Road link has no significant land use either side of the carriageway and is mostly forest. A junction is provided which serves the with B828 and tourist viewpoint.	Low	Rule 1
A83 West of Arrochar	A83 at this location is a single carriageway subject to the national speed limit. This section of the A83 is rural in nature with commercial forestry the predominant surrounding land use. There are very limited instances where direct access is taken onto the A83. A pedestrian footway is provided on the eastern side of the carriageway providing a connection between Arrochar and Ardgartan.	Low	Rule 1
A83- Arrochar	A83 enters a into a village setting in Arrochar where the road is subject to a 30mph speed limit and footways are provided on both sides of the carriageway. Both residential and commercial properties front onto the A83 and take direct access. Other amenities including a petrol station with a forecourt and bus stops are also present.	Medium	Rule 2

Highway Link	Rationale	Receptor sensitivity	Assessment (Rule 1/2)
A83- Between Arrochar and Tarbet	60mph A road two lane single carriageway travelling near to the Tarbet village. Road link has no significant land use either side of the carriageway and is mostly forest. A limited number of residential and commercial properties front onto the A83. Footways are available where the road passes through the residential zones.	Low	Rule 1
A83-West of Tarbet	60mph A road two lane single carriageway travelling near to the Tarbet village. Road link has no significant land use either side of the carriageway and is mostly forest. A limited number of residential and commercial properties front onto the A83. Footways are available where the road passes through the residential zones.	Low	Rule 1
A83 - Minard	The A83 is subject to a 40mph speed limit through Minard. Residential properties take direct access onto the A83 and both pedestrian footways and streetlighting are provided on at least one side of the carriageway. Minard Village covers a small geographical area and has a low density of housing, therefore the number of direct accesses and pedestrian and vehicular trips generated along the A83 through this section is assumed to be very low.	Low	Rule 1
A83 – Lochgilphead	The A83 is subject to a 30-mph speed limit through Lochgilphead. Numerous residential and commercial properties front onto the A83. Pedestrian footways and crossing locations are provided and on street parking bays are located adjacent to properties.	Medium	Rule 2

Construction traffic

- 13.9.2 Where possible, construction operations will be carried out concurrently, thus minimising the overall length of the construction programme. **Appendix 13C** provides an indicative construction programme. Approximately 24 months in length has been assumed for the purpose of this assessment.
- 13.9.3 **Table 13-20** shows the predicted traffic generation during construction phase of the Proposed Development. The highest traffic generation is expected to occur in month 13 as outlined below.

Table 13-20 Predicted Traffic Generation During Construction Phase

Activity	Total trips (excluding for turbine bases) during the full construction period	The highest trips (excluding concrete for turbine bases) – month 13
Delivery of temporary compound fencing and huts	56	-
Delivery of plant and equipment	60	-
Road stone for temporary compounds	563	-
Culvert and bridge materials	184	13
Stone for crane hardstanding	6602	604
Stone for Control Building compound	1782	222
Stone for Met mast Crane hardstanding	36	
Concrete for permanent Met masts	6	
Delivery of Met masts	6	
Concrete for Control Building compound, transformer/generator plinths	144	14
Geogrid	80	5
Delivery of Control building equipment	120	-
Cabling	38	7
Sand	954	65
Turbine bases (concrete)	7040	640
Delivery of shuttering	44	4
Delivery of Reinforcing steel	162	15
Base rings	16	2
Concrete for WTG transformer foundation	2	-
Crane delivery	4	0
WTG backfill	2772	252
Delivery of Turbines (abnormal loads only on delivery)	440	176

Activity	Total trips (excluding for turbine bases) during the full construction period	The highest trips (excluding concrete for turbine bases) – month 13
Crane removal	4	-
Delivery of WTG transformer and externals	16	-
Removal of plant and compound equipment	60	-
Total trips	21,191	2019

Construction traffic distribution

- 13.9.4 Based on the construction program there would be a peak of 92 HGV movements two-way during a 12-hour weekday. This peak is predicted to occur during months 12 and 13 of an anticipated 20-month construction programme. The construction programme and anticipated flows are presented within **Appendix 13C**.
- 13.9.5 The final construction route is subject to agreements to source of aggregate, route selection identified by the appointed contractor and agreement by relevant local highways authorities. For the purpose of this assessment a worst-case scenario has been used where 100% of construction traffic uses the northern route between the site and Clachan quarry. This worst-case scenario equates to a construction traffic peak of 92 HGVs using the northern route along the A83 during a 12-hour weekday.

Construction Effects

- 13.9.6 **Table 13-21** shows the percentage change in traffic flows in 2027, with construction traffic on the local road network. The EATM screening exercise is also presented within this table. Percentage increases that exceed the relevant EATM threshold of assessment rule will be subject to further assessment. Any increase that is below the EATM threshold would not be taken forward for further assessment.

Table 13-21 Forecast baseline traffic 2027 (12-hour) with predicted construction traffic

Highway link	EATM screening rule	2027 Base		2027 + construction traffic		% change	
		Total	HGVs	Total	HGVs	Total	HGVs
A83 - Inveraray	Rule 2	2420	215	2512	307	4%	43%
A83 - Drishaig	Rule 1	3327	539	3419	631	3%	17%
A83 - Ardenavan	Rule 1	4561	318	4653	410	2%	29%
A83- Rest and Be Thankful viewpoint	Rule 1	3355	304	3447	396	3%	30%

Highway link	EATM screening rule	2027 Base		2027 + construction traffic		% change	
		Total	HGVs	Total	HGVs	Total	HGVs
A83 - West of Arrochar	Rule 1	3544	336	3636	428	3%	27%
A83 - Arrochar	Rule 2	3365	223	3457	315	3%	41%
A83 - Between Arrochar and Tarbet	Rule 1	3345	298	3437	390	3%	31%
A83 - West of Tarbet	Rule 1	4138	701	4230	793	2%	13%

- 13.9.7 **Table 13-21** identifies that the percentage increase in HGV traffic is above the 30% threshold (Rule 1) on highway links at the A83- Rest and be thankful viewpoint and A83- between Arrochar and Tarbet. Further assessment is therefore required at these locations.
- 13.9.8 **Table 13-21** also shows that highway links A83-Inveraray and A83- Arrochar have a percentage change of 43% and 41% respectively for HGV traffic. Increases in total traffic at the two receptors is below the threshold for Rule 2 where a receptor is included for further assessment where traffic flows increased by 10% or more. However, based on IEMA guidance for Rule 2, further assessment should also be undertaken where there are significant changes in the composition of traffic. Due to the significant increases in HGV traffic at these locations further assessment has also been undertaken.

Further assessment

- 13.9.9 Further assessment of environmental effects for the A83-Inveraray and A83-Arrochar is summarised in **Table 13-22** below.

Table 13-22 Further assessment of environmental effects

Highway link	A83 – Inveraray	A83- Arrochar	A83- Rest and be thankful viewpoint	A83- Between Arrochar and Tarbet
Severance of communities	Slight effect with Low magnitude of change. Slight effect level due to change in total traffic flows is less than 30%. Change in HGV flows is more than 30% thus magnitude of change is Low.	Slight effect with Low magnitude of change. Slight effect level due to change in total traffic flows is less than 30%. Change in HGV flows is more than 30% thus magnitude of change is Low.	Slight effect with Low magnitude of change. Slight effect level due to change in total traffic flows is less than 30%. Change in HGV flows is more than 30% thus magnitude of change is Low.	Slight effect with Low magnitude of change. Slight effect level due to change in total traffic flows is less than 30%. Change in HGV flows is more than 30% thus magnitude of change is Low.
Road vehicle driver and passenger delay	Slight effect with Low magnitude of change Slight effect. This is linked to the increase in traffic. As the change in total traffic flows is less than 30%, a low increase in queueing at junctions and/or congestion on road links.	Slight effect with Low magnitude of change Slight effect. This is linked to the increase in traffic. As the change in total traffic flows is less than 30%, a low increase in queueing at junctions and/or congestion on road links.	Slight effect with Low magnitude of change Slight effect. This is linked to the increase in traffic. As the change in total traffic flows is less than 30%, a low increase in queueing at junctions and/or congestion on road links.	Slight effect with Low magnitude of change Slight effect. This is linked to the increase in traffic. As the change in total traffic flows is less than 30%, a low increase in queueing at junctions and/or congestion on road links.
Non-motorised user delay	Slight effect with Low magnitude of change	Slight effect with Low magnitude of change	Slight effect with Low magnitude of change	Slight effect with Low magnitude of change
Fear and intimidation on and by road users	Moderate level of fear with negligible magnitude of impact. Degree of hazard scores are calculated below: Average traffic flow 18hr day – all vehicles /hour 2 ways (a) is +1800 = degree of hazard score of 30 Total 18 hr heavy vehicle flow (b) is less than 1000 = degree of hazard score of 0	Moderate level of fear with negligible magnitude of impact. Degree of hazard scores are calculated below: Average traffic flow 18hr day – all vehicles /hour 2 ways (a) is +1800 = degree of hazard score of 30 Total 18 hr heavy vehicle flow (b) is less than 1000 = degree of hazard score of 0	Great level of fear with negligible magnitude of impact. Degree of hazard scores are calculated below: Average traffic flow 18hr day – all vehicles /hour 2 ways (a) is +1800 = degree of hazard score of 30 Total 18 hr heavy vehicle flow (b) is less than 1000 = degree of hazard score of 0	Moderate level of fear with negligible magnitude of impact. Degree of hazard scores are calculated below: Average traffic flow 18hr day – all vehicles /hour 2 ways (a) is +1800 = degree of hazard score of 30 Total 18 hr heavy vehicle flow (b) is less than 1000 = degree of hazard score of 0

Highway link	A83 – Inveraray	A83- Arrochar	A83- Rest and be thankful viewpoint	A83- Between Arrochar and Tarbet
	Average vehicle speed (c) of 30mph = degree of hazard score of 10 Total degree of hazard score (a)+(b)+(c) = 40 or equals to Moderate One step change in the level of fear and intimidation from baseline condition with an <500 increase in HGVs. Magnitude of impact is Low.	Average vehicle speed (c) of 30mph = degree of hazard score of 10 Total degree of hazard score (a)+(b)+(c) = 40 or equals to Moderate. One step change in the level of fear and intimidation from baseline condition with an <500 increase in HGVs. Magnitude of impact is Low.	Average vehicle speed (c) of 60mph = degree of hazard score of 30 Total degree of hazard score (a)+(b)+(c) = 60 or equals to Moderate. One step change in the level of fear and intimidation from baseline condition with an <500 increase in HGVs. Magnitude of impact is Low.	Average vehicle speed (c) of 30mph = degree of hazard score of 10 Total degree of hazard score (a)+(b)+(c) = 40 or equals to Moderate. One step change in the level of fear and intimidation from baseline condition with an <500 increase in HGVs. Magnitude of impact is Low.
Road user and pedestrian safety	No accident cluster	No accident cluster	No accident cluster	No accident cluster

13.10 Assessment of Cumulative Effects

- 13.10.1 A cumulative effects assessment (CEA) was undertaken for the Proposed Development which considers the combined impacts with other developments on the same receptor or resource (inter-project effects). With respect to the Traffic and Transport assessment the following projects have been identified as sharing the same routeing and/or receptors:
- Creag Dubh Wind Farm (consented);
 - Blarghour Wind Farm (consented);
 - An Càrr Dubh (application);
 - Glasvaar (application);
 - Blarghour Variation (application); and
 - Ladyfield Renewable Energy Park (application).
- 13.10.2 Upon review of the application documents of the projects listed above, it was identified that the An Càrr Dubh and Ladyfield project programmes do overlap with the Proposed Development and will therefore share construction traffic routes and receptors. An assessment of the cumulative transport effects is presented below in **Table 13-23**.
- 13.10.3 Application documents for the remaining projects either do not specify a project start date or there is no projected programme overlap with the Proposed Development.

Capacity Review

- 13.10.4 Theoretical road capacity has been assessed based on road type in Table 5/3/1 in the NESA Manual in DMRB Volume 15, Section 1, Part 5 (July 2005). Network Evaluation from Surveys and Assignments (NESA) is a computer programme for the traffic and economic appraisal of road schemes in Scotland. Table 5/3/1 in the NESA Manual lists default link speed and capacities for each of the 40 road categories in NESA, including urban roads, rural roads and motorways.

Table 13-23 Cumulative transport effects

Highway link	EATM screening rule	2027 Base		2027 Base + committed development + Proposed Development construction traffic		% change		Road type	NESA Table 5/3/1 Capacity		Capacity
		Total	HGVs	Total	HGVs	Total	HGVs		Hourly one direction (veh/hr/direction)	AADT per direction (conversion factor from peak hour to AADT = 14.0089)	
A83- Inveraray	Rule 2	2420	215	2878	673	16%	68%	Urban road, 30mph road	800	11,207	Well within capacity
A83- Ardgenavan	Rule 1	4561	318	4663	420	2%	24%	Rural road, 60mph	1200	16,811	Well within capacity
A83 – Minard	Rule 1	2176	208	2178	210	0%	1%	Urban road, 40mph	1600	22,414	Well within capacity
A83- Lochgilphead	Rule 2	5004	164	5006	166	0%	1%	Urban road, 30mph	800	11,207	Well within capacity

- 13.10.5 **Table 13-23** shows that at receptors within Ardgenavan, Minard and Lochgilphead increases in traffic are below the respective thresholds for further assessment (Rule 1: 30% increase in total traffic or HGVs, Rule 2: 10% increase in total traffic in sensitive areas). At the A83 in Inveraray the increase in total traffic exceeds the threshold for Rule 2. Cumulative traffic generation at this receptor is comprised of peak traffic during the concrete pour at the Ladyfield site (274 HGVs), peak traffic from the An Càrr Dubh site (99 HGVs) and peak traffic from the Proposed Development.
- 13.10.6 It should be considered that the flows presented in this cumulative assessment present a worst-case scenario whereby peak construction traffic flows are presented together. A review of application documents has identified that the peak monthly traffic for Ladyfield Renewable Energy Park is month 11 in late 2026 and month 6 for An Càrr Dubh in mid-2027.
- 13.10.7 The peak months for construction traffic generation for the Proposed Development is expected to be during months 12 and 13 in late 2027/early 2028. As such the concrete pour for Layfield Renewable Energy Park will sit outside the projected construction programme for the Proposed Development.
- 13.10.8 **Table 13-23** indicates that there are spare highways capacity to accommodate the Proposed Development traffic and therefore no mitigation measures are required.

13.11 Conclusions of Significance Evaluation

- 13.11.1 The significance evaluation indicates that the magnitude of change resulted of the Proposed Development is ranging from Negligible to Low. The significance level is also ranging from Negligible to Minor (and therefore **not significant**). A summary of the results of the preliminary Traffic and Transport assessment is provided in **Table 13-24 below** and in **Appendix 13D**.

Table 13-24 Summary of significance of effects

Receptor and summary of predicted effects	Sensitivity/ importance/ value of receptor ¹	Magnitude of change ²	Significance ³
A83 Inverary	Medium	Low	Minor (Not significant)
A83- Drishaig	Negligible	Negligible	Negligible (Not significant)
A83- Ardgenavan	Negligible	Negligible	Negligible (Not significant)
A83- Rest and Be Thankful viewpoint	Low	Low	Minor (Not significant)
A83- West of Arrochar	Low	Negligible	Negligible (Not significant)
A83-Arrochar	Medium	Low	Minor (Not significant)
A83- Between Arrochar and Tarbet	Low	Low	Minor (Not significant)
A83-West of Tarbet	Low	Negligible	Negligible (Not significant)

- 13.11.2 The sensitivity/importance/value of a receptor is defined using the criteria set out in **Table 13-16** and is defined as negligible, low, medium and high.
- 13.11.3 The magnitude of change on a receptor resulting from activities relating to the development is defined using the criteria set out in **Table 13-17** and is defined as negligible, low, medium and high.
- 13.11.4 The significance of the environmental effects is based on the combination of the sensitivity/importance/value of a receptor and the magnitude of change and is expressed as major (significant), moderate (potentially significant) or Minor/Negligible (Not Significant), subject to the evaluation methodology outlined in Section 13.8.

13.12 References

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