Appendix H AIL Route Survey Report

Pell Frischmann

Bhlaraidh Wind Farm Extension

Abnormal Indivisible Load Route Survey

September 2025

10110704

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Contents

Figures

Tables

Appendices

1 Introduction

1.1 Purpose of the Report

Pell Frischmann Limited (PF) have been commissioned by SSE Renewables (SSE) to undertake a route access review of potential delivery routes for wind turbine Abnormal Indivisible Loads (AIL) associated with the construction and development of Bhlaraidh Wind Farm, located to the west of Levishie, in the Highland Council (THC) administrative area.

This Route Survey Report (RSR) has been prepared to help inform SSE of the likely issues associated with the development of the site with regards to off-site transport and access for AIL traffic. The report identifies the key issues associated with AIL deliveries and notes what remedial works, either in the form of physical works or as traffic management interventions, will be required to accommodate the predicted loads.

The detailed assessment and subsequent designs of any remedial works are beyond the agreed scope of works between PF and SSE at this point in time.

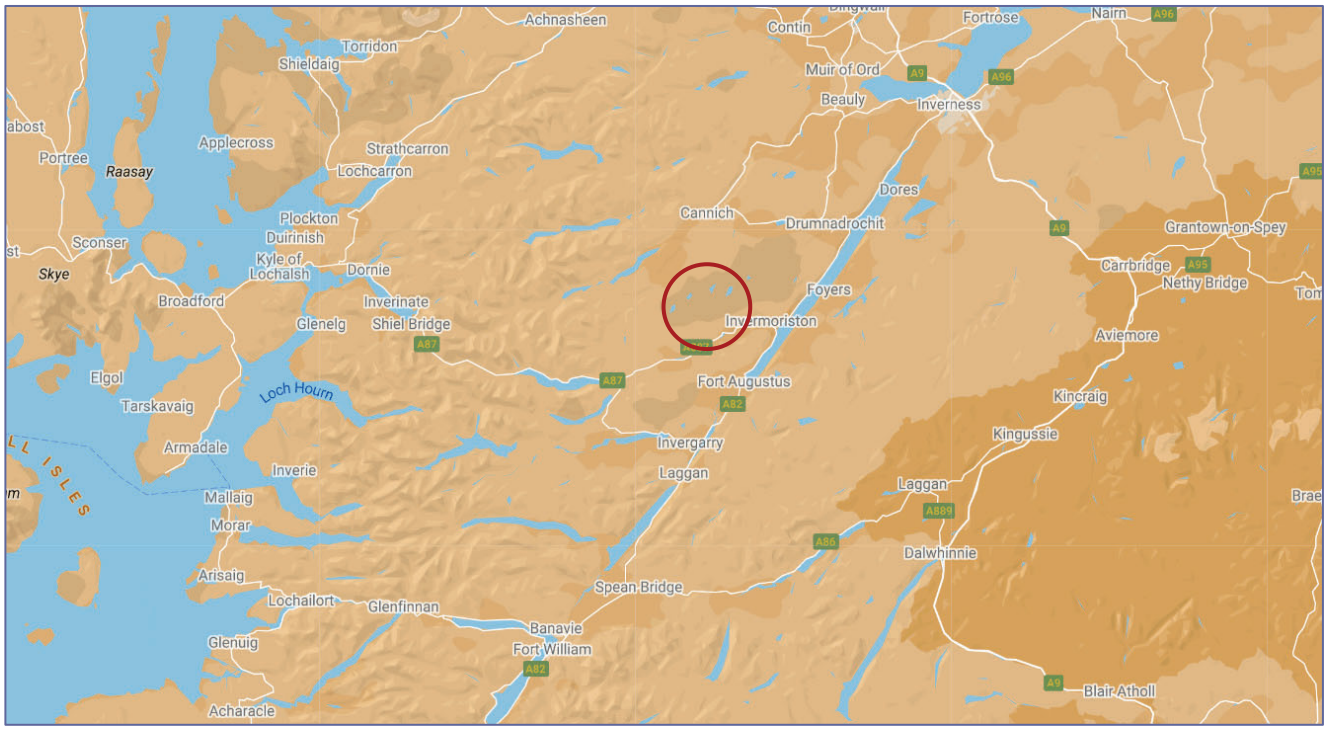
It is the responsibility of the wind turbine supplier to ensure that the entirety of the proposed access route is suitable and meets with their satisfaction. The turbine supplier will be responsible for ensuring that the finalised proposals meet the appropriate levels of health and safety consideration for all road users and that those proposals have been made in accordance with the relevant legislation at the time of delivery.

2 Site Background

2.1 Site Location

The development site is located to the west of Levishie. Figure 2-1 illustrates the general site location.

Figure 2-1: Site Location Plan



2.2 Candidate Turbine

SSE have indicated that they wish to consider the worst case components from the Nordex N163 turbine at a tip height of 240m for the assessment. The details of the components have been provided by Nordex and are detailed in Table 2-1 below.

Table 2-1: Nordex N163 Turbine Components Summary

Component	Length (m)	Width (m)	Height / Min Diameter (m)	Weight (t)
N163 Blade	80.500	4.680	4.130	30.600
Base Tower	12.910	5.300	5.290	55.570
Mid Tower 1	16.140	5.290	5.290	78.200
Mid Tower 2	19.570	5.290	5.280	90.360
Mid Tower 3	20.990	5.280	5.270	90.060
Mid Tower 4	25.560	5.270	5.270	97.570
Mid Tower 5	29.400	5.270	4.270	97.730
Top Tower	30.440	4.270	3.260	99.230

The swept path assessments have been based on the blade and a bespoke composite tower model which combines the largest dimensions (30.440L x 5.300W x 5.290H) to ensure that the worst case kinematic envelope is captured along the route.

2.3 Proposed Delivery Equipment

To provide a robust assessment scenario based upon the known issues along the access route, it has been assumed that all blades would be carried on a dolly clamp trailer. Tower loads would be carried in a 4+7 clamp adaptor style trailer, whereas loads such as the hub, nacelle housing and top towers would be carried on a six-axle step frame trailer.

The figures below illustrate examples of the proposed delivery equipment likely to be used.

Figure 2-2: Dolly Clamp Trailer

Figure 2-3: Tower Clamp Trailer

3 Access Route Review

3.1 Ports of Entry

The nearest feasible and economical Ports of Entry (PoE) are the MOWI Kyleakin Terminal Pier, Kyle Harbour, and Inverness Harbour. Kyleakin Terminal has not previously been used for turbine deliveries, and its constrained quay layout allows offloading only from geared vessels.

3.2 Proposed Access Routes

A split delivery method is proposed. A historic bridge weight restriction on the A87 Trunk Road (T) east of Kyle of Lochalsh has previously required deliveries to be divided, with blades routed via MOWI Port and all other components via Inverness.

For this assessment, the client has requested that Kyleakin Terminal be treated as the PoE for blade deliveries and Inverness Harbour for non-blade components. Both access routes have been evaluated based on this division.

Blade loads would use the following route:

- Loads would exit Kyleakin Terminal Pier turning left onto the A87 (T), taking the first exit at the roundabout and driving over the Skye Bridge and heading east;
- Loads would continue east onto the A887 at Bun Loyne; and
- Loads would remain on the A887 until reaching the site entrance west of Invermoriston.

The blade route is illustrated in Figure 3-1 below:

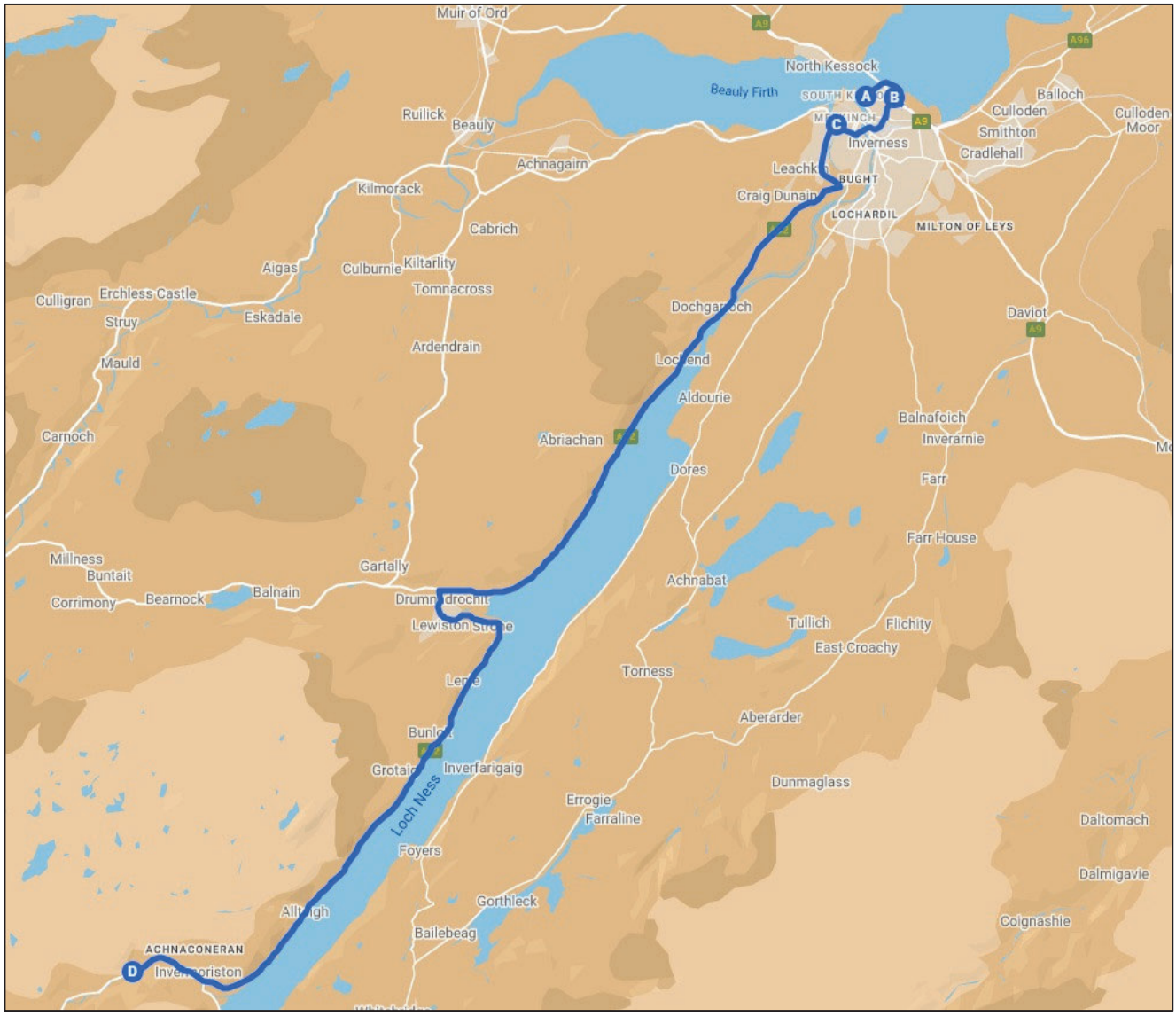
Figure 3-1: Blade Access Route

All other loads would use the following route:

- Loads would exit the harbour onto Stadium Road eastbound;
- Loads would travel straight on at Longman Roundabout (making use of the bus-only lane) to join the A82 (T) westbound;
- Loads would turn right at Telford Roundabout to join the A862 westbound;
- Loads would turn left onto King Brude Road southbound;
- Loads would turn right at General Booth Road/A82 (T) roundabout to join the A82 (T) southbound;
- Loads would continue on the A82 (T) southbound to Invermoriston;
- At Invermoriston loads would join the A887 westbound and proceed to the site entrance.

The non-blade route is illustrated in Figure 3-2 below:

Figure 3-2: Tower Access Route



3.3 Route Constraints

The constraints noted during the review are provided in Tables 3-1 and 3-2 below. These cover all constraints from the port access gate through to the site access junction. No consideration of the transport issues within the port or development site have been undertaken and this includes the design of the site access junction. The available OS mapping does not accurately show the road edge at a number of locations along the route. At these locations, an indicative road edge has been provided for illustration only and mitigation should be confirmed during the test run or on a topographical survey base.

Plans illustrating the location of the constraints are provided in Appendix A.

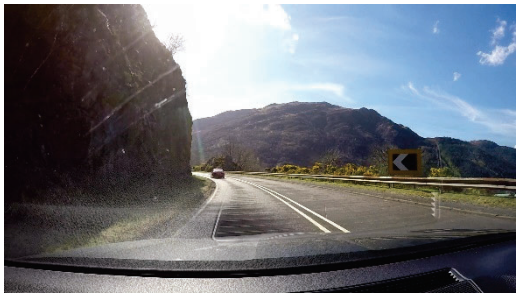
3.3.1 MOWI Kyleakin Terminal Route – Blades Only

Table 3-1: Constraint Points and Details – Kyle of Lochalsh Route

POI	Key Constraint	Details
1	**MOWI Kyleakin Terminal Exit**   	To exit the terminal, loads will travel in contraflow through the one-way system nearest the Vónin Scotland warehouse, heading southeast from the pier. They will leave via the main entrance, turning left onto the A87 (T) and proceeding northeast. The approach road to the terminal entrance is steep. Hauliers should confirm whether tug-assist vehicles are required. The site visit identified that the vertical alignment could prove difficult for the proposed movements, and a full detailed design and vertical assessment will be needed to confirm feasibility. The lane used by the loads must be closed to all other traffic. When approaching the terminal's main entrance, loads will oversail both road verges. A storage container and any other obstacles must be removed. The entrance junction must be upgraded and widened to allow loads to exit without encroaching on the western, privately leased Vónin Scotland warehouse. A load bearing surface should be constructed on the eastern verge, and embankment works carried out. Two road signs, a post, a gate, and fences should be removed. Trees and vegetation should be cleared, and **third party land** to the east is required. Drawing reference: 10110704-PF-SPA-01 (Appendix B).

POI	Key Constraint	Details
2	**A87 (T) Kyleakin Roundabout**  	Loads will take the first exit at the roundabout and head north on the A87 (T). They will oversail the southern verges and footways of the entry arm and the entry arm splitter island where a bollard will be oversailed. Loads will oversail the northwestern footway and verge where three lighting columns and two road signs should be removed. Vegetation should be cleared. **Third party land** is required to the northwest. A load bearing surface should be laid on the exit arm splitter island where two bollards should be removed. After negotiating the junction loads will drive over Skye Bridge. Drawing reference: 10110704-PF-SPA-02 (Appendix B).
3	**A87 (T) Kyle of Lochalsh** 	Loads will head east on the A87 (T) through Kyle of Lochalsh. They will drive through a right bend where they will oversail the northern and southern verges and southern footway. A safety barrier in the northern verge will be oversailed. Vegetation beyond the safety barrier should be trimmed. Drawing reference: 10110704-PF-SPA-03 (Appendix B).
4, 5	**A87 (T) East of Kyle of Lochalsh**  	After exiting Kyle of Lochalsh loads will continue heading east on the A87 (T) through a series of bends. They will oversail both verges. Vegetation in the northern verges should be trimmed. Drawing reference: 10110704-PF-SPA-04 (Appendix B).

POI	Key Constraint	Details
6, 7	**A87 (T) Loch Alsh Viewpoint**  	Loads will continue east on the A87 (T) through several bends. They will oversail the northern verges where vegetation should be trimmed and a series of bollards will be oversailed. The southern safety barrier through the final bend at this location will be oversailed. Drawing reference: 10110704-PF-SPA-05 (Appendix B).
8	**A87 (T) South of Balmacara Square** 	Loads will continue east through a left bend. One road sign should be removed from the northeastern verge where several utility markers will be oversailed. Vegetation should be trimmed. Drawing reference: 10110704-PF-SPA-06 (Appendix B).
9	**A87 (T) Eilean Donan Upper Viewpoint** 	Loads will head south on the A87 (T) through two bends. A topographical survey has been undertaken at this location. Through the first bend loads will oversail both verges. Vegetation in the eastern verge should be trimmed. One set of chevron signs should be removed from the western verge where a safety barrier will be oversailed. Through the second bend a series of bollards in the eastern verge will be oversailed. Trees in the eastern verge should be trimmed. The western safety barrier will be oversailed. Drawing reference: 10110704-PF-SPA-07 (Appendix B).
10	**A87 (T) Southeast of Eilean Donan Castle** 	Loads will continue south through a series of bends, oversailing both verges throughout. A topographical survey has been undertaken at this location. Trees in the eastern verge should be trimmed. Two safety barrier sections in the western verges will be oversailed. Drawing reference: 10110704-PF-SPA-08 (Appendix B).

POI	Key Constraint	Details
11	**A87 (T) North of Letterfearn** 	Loads will continue south on the A87 (T). A topographical survey has been undertaken at this location. The swept path assessment indicates that loads will oversail both verges; however, no physical mitigation is required. Drawing reference: 10110704-PF-SPA-09 (Appendix B).
12, 13	**A87 (T) River Croe Crossing**  	Loads will continue on the A87 (T) through two bends and crossing the River Croe. Through the first bend they will oversail the western verge. Through the second bend they will oversail the western footway and eastern verge. No physical mitigation measures are required.
14	**A87 (T) Invershiel** 	Loads will continue on the A87 (T) through a left bend. A topographical survey has been carried out at this location. A load bearing surface should be laid in the western footway to allow loads to overrun and oversail. Three sets of chevron signs, two bollards and a safety barrier should be removed. Vegetation should be cleared. **Third party land** is required to the west. Loads will oversail the eastern verge with minimal clearance noted to the eastern rock face. Detailed design is required to confirm any necessary requirement for land and rock face reprofiling. One road sign and a wall should be removed. Trees and vegetation should be cleared. **Third party land** is required to the east. Drawing reference: 10110704-PF-SPA-10 (Appendix B).
15	**A87 (T) East of Shiel Bridge** 	Loads will continue on the A87 (T) to the east of Shiel Bridge. They will oversail both verges through the section; however, no physical mitigation is required.

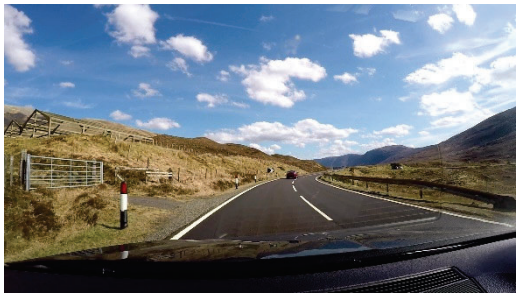
POI	Key Constraint	Details
16, 17	**A87 (T) Southeast of Shiel Bridge**  	Loads will continue on the A87 (T) through two bends. They will oversail the eastern verge through the first bend and the western verge through the second bend. Trees and vegetation in the western verge should be trimmed. The clearance to the western rock face should be confirmed sufficient during the test run. Drawing reference: 10110704-PF-SPA-11 (Appendix B).
18, 19	**A87 (T) South of Loch Shiel**  	Loads will head southeast through two left bends. They will oversail the northeastern verge through the first bend where vegetation should be trimmed. Through the second bend they will overrun and oversail the southern verge where a load bearing surface should be laid. Seven bollards should be removed. Trees should be trimmed. Vegetation in the northern verge through the second bend should be trimmed. Drawing reference: 10110704-PF-SPA-12 (Appendix B).
20	**A87 (T) West of Beinn Bhuidhe** 	Loads will head south through a right bend. They will overrun and oversail the northeastern verge where a load bearing surface should be laid. Two sets of chevron signs, five bollards, a fence and a safety barrier should be removed. Vegetation should be cleared. Trees should be trimmed. **Third party land** is required. Vegetation in the southwestern verge should be trimmed. Drawing reference: 10110704-PF-SPA-13 (Appendix B).

POI	Key Constraint	Details
21	**A87 (T) Southwest of Sgurr Fhuaran** 	Loads will continue on the A87 (T) southbound through a left bend. Trees and vegetation in the eastern verge should be trimmed. Drawing reference: 10110704-PF-SPA-14 (Appendix B).
22	**A87 (T) South of Achnagart Farm** 	Loads will continue on the A87 (T) through two bends, oversailing both verges through both bends. One road sign should be removed from the eastern verge through the first bend where vegetation should be trimmed. The clearance to the northern fence should be confirmed sufficient during the test run or on a topographical survey base. Vegetation in the southern verge through the second bend should be trimmed. Drawing reference: 10110704-PF-SPA-15 (Appendix B).
23	**A87 (T) Northeast of Forcan Ridge** 	Loads will head southeast through a left bend. They will oversail both verges. Trees and vegetation in the northeastern verge should be trimmed. A land search should be completed to confirm the extent of the available adopted boundary to the northeast. Drawing reference: 10110704-PF-SPA-16 (Appendix B).

POI	Key Constraint	Details
24, 25, 26	**A87 (T) West of River Shiel Waterfall**   	Loads will head east on the A87 (T) through three bends. They will oversail the northern safety barrier through the first bend. Through the second bend they will overrun and oversail the northern verge where a load bearing surface should be laid. The northern drainage ditch should be culverted. A safety barrier will be oversailed. Three sets of chevron signs and nine bollards should be removed. Vegetation should be cleared. **Third party land** is required to the north. Loads will oversail the southern verge through the second bend. Vegetation in the northern verge through the second bend should be trimmed. Drawing reference: 10110704-PF-SPA-17 (Appendix B).
27	**A87 (T) East of Eas-Nan-Arm Bridge** 	Loads will continue east on the A87 (T) to the east of Eas-Nan-Arm Bridge. They will oversail both verges; however, no physical mitigation is required.
28	**A87 (T) Battle of Glen Sheil** 	Loads will continue east through a left bend, oversailing the northern verge; however, no physical mitigation is required.

POI	Key Constraint	Details
29	**A87 (T) East of Battle of Glen Sheil Site** 	Loads will continue on the A87 (T) eastbound. They will oversail both verges at this location. The northern wall should be removed. Reprofiling of the northern embankment is required to facilitate oversail. Detailed design on a topographical survey base is required. A retaining structure may be required. Vegetation should be cleared. **Third party land** is required to the north. Drawing reference: 10110704-PF-SPA-18 (Appendix B).
30	**A87 (T) 5 Sisters of Kintail Trailhead** 	Loads will continue on the A87 (T) eastbound at 5 Sisters of Kintail Trailhead. A swept path assessment has been undertaken and indicates that loads will oversail the northern verge and a section of safety barrier in the southern verge. Drawing reference: 10110704-PF-SPA-19 (Appendix B).
31	**A87 (T) North of Sgurr an Lochain** 	Loads will continue on the A87 (T) eastbound through a left bend. They will oversail the northern verge where trees and vegetation should be cleared. A land search should be completed to confirm the extent of the available adopted boundary to the north. Subject to confirmation from the land search, **third party land** requirement to the north may be avoided by utilising the southern verge for overrun. Drawing reference: 10110704-PF-SPA-20 (Appendix B).
32, 33	**A87 (T) South of Beinn Fhada** 	Loads will continue on the A87 (T) eastbound through two bends. They will oversail the western verge through the first bend and the northeastern verge through the second bend. Land searches should be completed to confirm the extents of the adopted boundaries. Should findings confirm **third party land** requirement, overrun of the opposite verge may prove a suitable alternative to avoid private land take. One post should be removed from the western verge through the first bend and trees and vegetation in the northeastern verge through the second bend should be cleared. Drawing reference: 10110704-PF-SPA-21 (Appendix B).
34	**A87 (T) Southeast of Beinn Fhada** 	Loads will head southeast through two bends, oversailing both verges through both bends. Trees and vegetation should be cleared from the northern verge. A land search should be completed to confirm the extent of the available adopted boundary to the north. Drawing reference: 10110704-PF-SPA-22 (Appendix B).

POI	Key Constraint	Details
35	**A87 (T) North of Loch Quoich** 	Loads will continue southeast through two bends. They will oversail the northern verge through the first bend and the southern verge through both bends. Trees and vegetation should be cleared from the northern verge. A land search should be completed to confirm the extent of the available adopted boundary to the north. Drawing reference: 10110704-PF-SPA-23 (Appendix B).
36	**A87 (T) Southwest of Alltbeithe** 	Loads will continue on the A87 (T) through two bends. Through the first bend they will oversail both verges. The western safety barrier will be oversailed. Through the second bend they will oversail the northeastern verge. Drawing reference: 10110704-PF-SPA-24 (Appendix B).
37	**A87 (T) North of Coire nan Eirecheanach** 	Loads will continue on the A87 (T) through three bends. Through the first bend they will oversail the northern verge where trees should be trimmed. Through the second bend they will oversail the southern verge and through the third bend they will oversail the northern verge; however, no further mitigation is required. Drawing reference: 10110704-PF-SPA-25 (Appendix B).
38	**A87 (T) North of Aonach air Chrith** 	Loads will continue on the A87 (T) eastbound through two bends. They will oversail the northern verge through the first bend; however, no physical mitigation is required.
39	**A87 (T) Southwest of Glen Moriston** 	Loads will continue on the A87 (T) through a left bend. They will oversail the northern verge. Drawing reference: 10110704-PF-SPA-26 (Appendix B).

POI	Key Constraint	Details
40, 41	**A87 (T)**  	Loads will continue on the A87 (T) to the southwest of Glen Moriston, oversailing the western verges through two bends; however, no physical mitigation is required.
42, 43, 44	**A87 (T) The Cluanie Inn**  	Loads will continue on the A87 (T) through three bends. Through the first bend they will overrun and oversail the northern verges where a load bearing surface should be laid. One set of chevron signs, one road sign, three bollards and five boulders should be removed. Several bollards will be oversailed. One tree should be trimmed. Loads will oversail the southern verge where two bollards, a post and fence should be removed. **Third party land** is required to the south. Through the second bend loads will oversail the southern verge and safety barrier. Through the third bend they will oversail the northern verge. Drawing reference: 10110704-PF-SPA-27 (Appendix B).

POI	Key Constraint	Details
45, 46	**A87 (T) North of Loch Cluanie**  	Loads will continue on the A87 (T) through a series of bends. Vegetation in the northern verge through the first bend should be trimmed. A tree in the northern verge through the third bend should be trimmed. Drawing reference: 10110704-PF-SPA-28 (Appendix B).
47	**A87 (T) Bun Loyne Park** 	Loads will continue on the A87 (T) through a left bend. They will oversail the western verge where one post should be removed. Once past Loch Cluanie Viewpoint, they will remain eastbound joining the A887. Drawing reference: 10110704-PF-SPA-29 (Appendix B).

POI	Key Constraint	Details
48, 49	**A887 Torgyle Bridge**  	Loads will head north on the A887 through two bends and crossing the River Moriston. A topographical survey has been carried out to be used as basis for the swept path assessment. *A vertical assessment has been undertaken at this location and indicates that loads are able to navigate the bridge with a minimum ground clearance of 425mm. The topographical survey available recorded elevation points along the bridge at 10-meter intervals, which we consider to be too widely spaced to provide an accurate vertical profile. A new topographical survey should be carried out with points taken at approximately 1-meter intervals to ensure reliable results. The vertical assessment is based on an indicative vehicle configuration. The vertical assessment can be found in Appendix D.* Through the first bend loads will oversail the northern verge where no physical mitigation is required. Through the second bend and when driving over the bridge they will overrun and oversail the western verge. A load bearing surface should be laid. Two utility poles, four road signs and a fence should be removed. The western bridge parapet should be lowered. Trees and vegetation should be cleared. **Third party land** is required to the west. Loads will oversail the southeastern verge through the second bend where one set of chevron signs should be removed. Several bollards will be oversailed. Trees should be trimmed. Drawing reference: 10110704-PF-SPA-30 (Appendix B).
50	**A887 Glenmoriston** 	Loads will continue on the A887 northbound through a right bend. A topographical survey has been carried out to be used as basis for the swept path assessment. Reprofiling of the eastern verge is required to accommodate oversail into **third party land**. One utility pole, two road signs and a fence should be removed from the eastern verge where trees and vegetation should be cleared. Drawing reference: 10110704-PF-SPA-31 (Appendix B).

POI	Key Constraint	Details
51, 52	**A887 South of the Glenmoriston Footprints**  	Loads will head northeast through three bends. Through the first bend they will oversail both verges. Trees and vegetation in the eastern verge should be trimmed. Through the second bend loads will oversail the western verge. Through the third bend they will oversail the eastern verge where trees should be trimmed. Drawing reference: 10110704-PF-SPA-32 (Appendix B).
53	**A887 Dundreggan Reservoir** 	Loads will head east on the A887 through two bends. Through the first bend they will oversail both verges. Four bollards should be removed from the southern verge where the safety barriers will be oversailed. Trees and vegetation should be cleared from the southern verge. **Third party land** is required to the south. Through the second bend loads will oversail the northern verge where vegetation should be trimmed. Drawing reference: 10110704-PF-SPA-33 (Appendix B).
54	**A887 Northeast of Dundreggan Reservoir** 	Loads will continue east on the A887 through a right bend. They will oversail both verges; however, no mitigation is required.

POI	Key Constraint	Details
55	**A887 Site Entrance** 	Blade loads will turn left into the site access junction, having approached from the west. All other loads will turn right into the site access junction, having approached from the east. The access junction should be upgraded in accordance with The Highland Council and turbine manufacturer standards. Suitable visibility splays will be required. **Third party land** may be required for junction upgrades. Loads bearing areas are required to accommodate both sets of loads. Land reprofiling is required to complete construction. One road sign, two bollards, one storage shed, a fence, gate and all other obstacles should be removed. Trees and vegetation should be cleared. Drawing reference: 10110704-PF-SPA-34 (Appendix B).

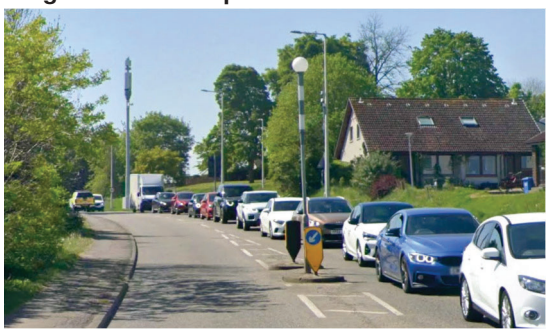
3.3.2 Inverness Route – Non-Blade Loads

The route has been assessed for non-blade loads only.

Table 3-2: Constraint Points and Details – Non-Blade Loads Only

POI	Key Constraint	Details
56	**Inverness Harbour Exit** 	Loads will turn left and head northeast on Longman Drive. A swept path assessment has been undertaken and indicates that loads will overrun and oversail the southwestern footway on exiting the harbour where a load bearing surface should be laid. The clearance to the fencing is minimal and it may be prudent to remove the fencing to provide more room for maneouvre. Loads will oversail the northern footway on the inside of the left turn where vegetation should be trimmed. Loads will overrun and oversail the south eastern footway where a load bearing surface should be laid and vegetation should be cleared. Drawing reference: 10110704-PF-SPA-35 (Appendix B).
57	**Longman Roundabout** 	Loads will continue straight onto the A82 Trunk Road (T) at Longman Roundabout heading westbound. Use of the buses-only lane is required. Loads will oversail the entry splitter island and central roundabout island. One traffic signal and six bollards should be removed. Drawing reference: 10110704-PF-SPA-36 (Appendix B).
58	**Harbour Road Roundabout** 	Loads will continue straight at Harbour Road Roundabout remaining on A82 (T) heading westbound. Loads will oversail the eastern footways of the entry and exit arms where no physical mitigation is required. One lighting column, two road signs and one set of chevron signs should be removed from the central roundabout island to allow loads to oversail. Drawing reference: 10110704-PF-SPA-37 (Appendix B).
59	**Rose Street Roundabout** 	Loads will continue straight at Rose Street Roundabout remaining on A82 (T) heading westbound. The central island should be lowered to allow loads to oversail. Two road signs and one bollard should be removed. Drawing reference: 10110704-PF-SPA-38 (Appendix B).

POI	Key Constraint	Details
60	**Shore Street Roundabout** 	Loads will continue straight at Shore Street Roundabout remaining on the A82 (T) heading westbound. They will oversail the southern footways where trees should be trimmed and one traffic signal and a pedestrian guardrail should be removed. Drawing reference: 10110704-PF-SPA-39 (Appendix B).
61	**Telford Roundabout** 	Loads will turn right at Telford Roundabout onto the A862 heading northwest. A topographical survey has been undertaken at this location. Loads will oversail the southeastern footway of the entry arm. A load bearing surface should be laid on the entry arm splitter island to allow loads to overrun and oversail. Two traffic signals, one road sign, one bollard and a pedestrian guardrail should be removed. One road sign and a pedestrian guardrail should be removed from the northern footway of the exit arm. Drawing reference: 10110704-PF-SPA-40 (Appendix B).
62	**A862 Telford Street Pedestrian Crossing** 	Loads will continue northwest on A862 through a pedestrian crossing. Loads will overrun the splitter island at the crossing. Three traffic signals, two bollards and sections of steel railing should be removed and a load bearing surface should be laid.
63	**A862 Telford Street / Carsegate Road Roundabout** 	Loads will continue straight at the A862 Telford Street / Carsegate Road roundabout remaining on Telford Street. Four road signs should be removed from the roundabout island where vegetation should be trimmed. Loads will oversail both footways of the exit arm and the exit arm splitter island. Trees in the southern verge should be trimmed. Drawing reference: 10110704-PF-SPA-41 (Appendix B).

POI	Key Constraint	Details
64	**A862 Muirtown Swing Bridge** 	Loads will continue westbound on A862 over Muirtown Swing Bridge. A historic weight limit has been in place on this structure in previous years. Consultation to be made with THC and Scottish Canals to confirm the structural feasibility of the bridge considerate of the loads, once the haulier has been selected.
65	**A862 / King Brude Road Junction** 	Loads will turn left from the A862 onto King Brude Road heading south. A topographical survey has been undertaken at this location. Load bearing surfaces should be laid on the three southern splitter islands at the junction where three traffic signals, one lighting column, five bollards and a pedestrian guardrail should be removed. Loads will overrun and oversail the eastern footway at the junction where a load bearing surface should be laid and one lighting column should be removed. Two traffic signals and a pedestrian guardrail should be removed from the southern footway. Drawing reference: 10110704-PF-SPA-42 (Appendix B).
66	**King Brude Road Splitter Island 1** 	Loads will continue south on King Brude Road over a central splitter island. They will overrun the central splitter island where one lighting column and two bollards should be removed and a load bearing surface should be laid.
67	**King Brude Road Splitter Island 2** 	Loads will continue south on King Brude Road over a central splitter island. They will overrun the central splitter island where one lighting column and two bollards should be removed and a load bearing surface should be laid.

POI	Key Constraint	Details
68	**General Booth Road Splitter Island 1** 	Loads will continue south on General Booth Road over a central splitter island. Loads will overrun the central splitter island where one lighting column and two bollards should be removed and a load bearing surface should be laid.
69	**General Booth Road Splitter Island 2** 	Loads will continue south on General Booth Road over a central splitter island. They will overrun the central splitter island where one lighting column and two bollards should be removed and a load bearing surface should be laid.
70	**General Booth Road Splitter Island 3** 	Loads will continue south on General Booth Road over a central splitter island. They will overrun the central splitter island where one lighting column and two bollards should be removed and a load bearing surface should be laid.
71	**General Booth Road Splitter Island 4** 	Loads will continue south on General Booth Road over a central splitter island. They will overrun the central splitter island where one lighting column and two bollards should be removed and a load bearing surface should be laid.
72	**General Booth Road / A82 (T) Roundabout** 	Loads will turn right in contraflow at the General Booth Road / A82 (T) roundabout onto the A82 heading southwest. Two lighting columns should be removed from the western verge where vegetation should be trimmed. Drawing reference: 10110704-PF-SPA-43 (Appendix B).

POI	Key Constraint	Details
73	**A82 (T) South of Dochgarroch** 	Loads will continue southwest on the A82 (T). They will oversail both verges at this location. Trees in the eastern verge should be trimmed. Drawing reference: 10110704-PF-SPA-44 (Appendix B).
74	**A82 (T) West of Dores Beach** 	Loads will continue southwest on the A82 (T) through two bends. They will oversail the western verge through the first bend and eastern verge through the second bend. Trees and vegetation in the western verge should be trimmed. Drawing reference: 10110704-PF-SPA-45 (Appendix B).
75	**A82 (T) South of Balchraggan** 	Loads will continue southwest on the A82 (T). They will oversail the eastern verge where vegetation should be trimmed. Drawing reference: 10110704-PF-SPA-46 (Appendix B).
76	**A82 (T) South of Balchraggan** 	Loads will continue southwest on the A82 (T), oversailing both verges. Trees in the eastern verge and vegetation in the western verge should be trimmed. Drawing reference: 10110704-PF-SPA-47 (Appendix B).
77	**A82 (T) Bends Northwest of Achnabat** 	Loads will continue on the A82 (T) through two bends. *The available OS mapping is not considered accurate. An indicative road edge has been provided for illustration only and all mitigation should be confirmed on a topographical base plan.* Through the first bend loads will oversail both verges. Minimal clearance was noted to the western rock face. The clearance should be confirmed sufficient during the test run or on a topographical survey base. Through the second bend loads will oversail the eastern safety barrier where trees should be trimmed. Drawing reference: 10110704-PF-SPA-48 (Appendix B).

POI	Key Constraint	Details
78	**A82 (T) Bends Northwest of Achnabat** 	Loads will continue southwest on the A82 (T). *The available OS mapping is not considered accurate. An indicative road edge has been provided for illustration only and all mitigation should be confirmed on a topographical base plan.* One road sign should be removed from the eastern verge. Trees in the eastern verge and vegetation in the eastern and western verges should be trimmed. Minimal clearance was noted to a wall in the eastern verge. The clearance to the wall should be confirmed sufficient during the test run. Drawing reference: 10110704-PF-SPA-49 (Appendix B).
79	**A82 (T) Bends East of Achmony** 	Loads will continue on the A82 (T) through a series of bends. *The available OS mapping is not considered accurate. An indicative road edge has been provided for illustration only and all mitigation should be confirmed on a topographical base plan.* Trees in the southern verges should be trimmed. The clearance to the northern rock face should be confirmed sufficient during the test run or on a topographical survey base. Vegetation should be trimmed. Drawing reference: 10110704-PF-SPA-50 (Appendix B).
80	**A82 (T) / A887 Junction, Invermoriston** 	Loads will turn left at the junction and cross the bridge. The location is extremely constrained for the proposed components. A topographical survey has been undertaken at this location and used as a basis for the assessment. A load bearing surface should be laid on a traffic island located before the left turn to allow loads to drive over it. Two bollards should be removed from the island. Loads will overrun and oversail the northern footway at the junction where a load bearing surface should be laid. One lighting column, a stone wall and all decorative planters should be removed. Vegetation should be cleared. Parking should be suspended during deliveries. 200mm clearance was noted to a building to the north. **Third party land** is required. A load bearing surface should be laid on the western footway of the bridge where loads will overrun and oversail. 200mm clearance was noted to the western bridge parapet. Loads will oversail the eastern stone wall and bridge parapet using trailer suspension. A metal railing, fence, two road signs, two lighting columns and a park bench should be removed from the eastern footway and verge. Trees should be cleared. 600mm clearance was noted to the southeastern Glen Urquhart war memorial. It is recommended that early discussions are held with the local authority. **Third party land** is required. Drawing reference: 10110704-PF-SPA-51 (Appendix B).

POI	Key Constraint	Details
81	**A82 (T) Drumnadrochit** 	Loads will continue on the A82 (T) at this location heading south. The bollards should be removed from the traffic island and a load bearing surface should be laid to allow overrun by vehicles.
82	**A82 (T) Drumnadrochit Health Centre Roundabout** 	Loads will continue straight through the roundabout in contraflow. A topographical survey has been undertaken and used as a basis for the assessment. Loads will oversail the northern verge and southern footway of the entry arm. A load bearing surface should be laid on the central island to allow loads to overrun and oversail. One set of lit chevron signs should be removed. Loads will oversail the southern footway of the exit arm. Drawing reference: 10110704-PF-SPA-52 (Appendix B).
83	**A82 (T) Leaving Drumnadrochit** 	Loads will oversail the footway on the inside of the left bend. Pedestrians should be prevented from using the footway during load movements. Drawing reference: 10110704-PF-SPA-53 (Appendix B).
84	**A82 (T) East of Drumnadrochit** 	Loads will head east through a series of bends. They will oversail both verges throughout; however, no physical mitigation is required.
85	**A82 (T) Strone Cottage** 	Loads will head south through a right bend. They will overrun and oversail the eastern footway where a load bearing surface should be laid. A crash barrier should be removed. They will oversail the western verge where trees and vegetation should be trimmed. It would be beneficial t o repeat the assessment using a topographical survey to confirm the works required. Drawing reference: 10110704-PF-SPA-54 (Appendix B).

POI	Key Constraint	Details
86, 87	**A82 (T) Bends Southwest of Urquhart Castle**  	Loads will head southwest on the A82 (T) through a series of bends. *The available OS mapping is not considered accurate. An indicative road edge has been provided for illustration only and all mitigation should be confirmed on a topographical base plan.* Trees and vegetation in the eastern verges should be trimmed. Several bollards in the eastern verges will be oversailed. The western rock face should be reprofiled. Detailed design on a topographical survey base is required to confirm the scope of earthworks. Three road signs and three bollards should be removed from the western verges. Trees and vegetation should be cleared from the western verges. **Third party land** is required. Drawing reference: 10110704-PF-SPA-55 (Appendix B).
88	**A82 (T) East of Ancarraig Lodges** 	Loads will continue southwest through a left bend, oversailing the eastern verge. *The available OS mapping is not considered accurate. An indicative road edge has been provided for illustration only and all mitigation should be confirmed on a topographical base plan.* Reprofiling of the eastern rock face may be required. A topographical survey is required to confirm the scope of earthworks. Trees and vegetation should be trimmed. Drawing reference: 10110704-PF-SPA-56 (Appendix B).
89, 90	**A82 (T) East of Balbeg**  	Loads will continue southwest through a series of bends. *The available OS mapping is not considered accurate. An indicative road edge has been provided for illustration only and all mitigation should be confirmed on a topographical base plan.* Trees and vegetation in both verges should be trimmed. Clearance to the western rock face should be confirmed sufficient during the test run. Drawing reference: 10110704-PF-SPA-57 (Appendix B).

POI	Key Constraint	Details
91	**A82 (T) East of Grotaig** 	Loads will continue southwest through a series of bends. *The available OS mapping is not considered accurate. An indicative road edge has been provided for illustration only and all mitigation should be confirmed on a topographical base plan.* Reprofiling of the western rock face may be required. A topographical survey should be undertaken to confirm the extent of earthworks. Trees in the eastern verge and vegetation in the western verge should be trimmed. Drawing reference: 10110704-PF-SPA-58 (Appendix B).
92. 93	**A82 (T) Alltsigh**  	Loads will continue southwest through a series of bends. They will oversail both verges; however, no physical mitigation is required.
94	**A82 (T) Bends East of Achnaconeran** 	Loads will continue southwest through a series of bends. *The available OS mapping is not considered accurate. An indicative road edge has been provided for illustration only and all mitigation should be confirmed on a topographical base plan.* Trees and vegetation in the western verges should be trimmed. Several bollards in the eastern verges will be oversailed. Vegetation in the eastern verges should be trimmed. Drawing reference: 10110704-PF-SPA-59 (Appendix B).

POI	Key Constraint	Details
95	**A82 (T) Bends East of Invermoriston** 	Loads will continue southwest through a series of bends. *The available OS mapping is not considered accurate. An indicative road edge has been provided for illustration only and all mitigation should be confirmed on a topographical base plan.* Clearance to the western rock face should be confirmed sufficient during the test run. Trees in the western verge and vegetation in both verges should be trimmed. Drawing reference: 10110704-PF-SPA-60 (Appendix B).
96	**A82 (T) / A887 Junction, Invermoriston** 	Loads will turn right at the junction and continue onto the A887. They will oversail both footways at the junction. After the junction they will overrun and oversail the western footway where a load bearing surface should be laid and trees should be trimmed. Drawing reference: 10110704-PF-SPA-61 (Appendix B).
97	**A887 Invermoriston** 	Loads will head west, oversailing both verges; however, no physical mitigation is required.
55	**A887 Site Entrance** 	All loads will turn right into the site access junction, having approached from the east. The access junction should be upgraded in accordance with THC and turbine manufacturer standards. Suitable visibility splays will be required. **Third party land** may be required for junction upgrades. Drawing reference: 10110704-PF-SPA-34 (Appendix B).

3.4 Swept Path Assessment Results and Summary

The detailed swept path drawings for the locations assessed are provided in Appendix B for review. The drawings illustrate tracking undertaken for the worst case loads at each location. The colours illustrated on the swept paths represent:

- Grey – Ordnance Survey (OS) / topographical base mapping;
- Cyan – Indicative road edge;
- Green – Vehicle body swept path;
- Red – Wheel swept path;
- Magenta – Load swept path.

Where mitigation works are required, the extents of the overrun and oversail areas are illustrated and fully detailed on the SPA drawings. Additional land areas to those indicated in the SPA drawings may be required to facilitate the construction of the proposed physical mitigation measures depending on the Site conditions and topography. The extent of any additional areas required to construct the mitigation works highlighted within this study and the detailed design of said mitigation works is beyond the scope of this study and should be confirmed on detailed topographical survey data.

Please note that where SPAs have been undertaken using OS base mapping, Bing-sourced satellite imagery and/or historic topographical data, there can be errors in these data sources. Please note that PF cannot accept liability for errors on the data sources. Where applicable, OS mapping has been augmented with satellite imagery for illustration only. The accuracy of this mapping cannot be confirmed by PF.

Please note that turbine supplier guidance suggests that the minimum road width for the safe transport of AIL components is 4.5 m. All public roads and on-site access tracks should comply with this standard unless a relaxation has been agreed with suppliers.

The need to widen public roads will require engagement with the relevant road authority and may constitute permanent or temporary surfacing.

3.5 Third Party Land and Land Ownership

A review of third party land should be undertaken by the client to ensure that no additional land rights are required to enable deliveries or mitigation works. PF accept no responsibility for the accuracy of land ownership assumptions, all of which should be confirmed across the entire access route by a qualified land agent.

The limits of road adoption can vary depending upon the location of the site and the history of the road agencies involved. The adopted area is generally defined as land contained within a defined boundary where the road agency holds the maintenance rights for the land. In urban areas, this usually defined as the area from the edge of the footway across the road to the opposing footway back edge.

In rural areas the area of adoption can be open to greater interpretation as defined boundaries may not be readily visible. In these locations, the general rule is that the area of adoption is between established fence / hedge lines or a maximum 2m from the road edge. This can vary between areas and location.

3.6 Weight Review

A review of the structures on the proposed access route has been undertaken via the ESDAL (Electronic Service Delivery for Abnormal Loads) database. No constraints were identified at this time, using the Highways Agency website www.esdal.com. This, however, does not confirm the suitability or otherwise of the structures and a full review of these structures will be required with the relevant agencies via the contacts in the database when the candidate turbine has been confirmed. For information, the relevant ESDAL contacts in relation to the proposed development are noted in Table 3-2 below.

Table 3-3: ESDAL Contacts

Organisation	Email Address
Police Scotland	OSDAbnormalLoadsScotland@scotland.police.uk
Bear North West	NWAbnormalLoad@bearscotland.co.uk
Amey North East	abnormal-loadne@amey.co.uk
Network Rail	AbLoadsESDAL@networkrail.co.uk
Historic Rail Estate	rsgbrb@jacobs.com
Scottish Canals	SCAbnormal.Loads@scottishcanals.co.uk
Transport Scotland	AbnormalLoads@transport.gov.scot
The Highland Council	abnormal.loads@highland.gov.uk

The responses from the ESDAL search are contained in Appendix C, where no response has been received, it is assumed that no constraints are in place at this time.

3.7 Summary Issues

It is strongly suggested that following a review of the RSR, the Client should undertake the following prior to the delivery of the first abnormal loads, to ensure load and road user safety:

- A review of axle loading on structures along the entire access route with the various road agencies is undertaken immediately prior to the loads being transported in case of last-minute changes to structures;
- A review of clear heights with utility providers and the transport agencies along the route to ensure that there is sufficient space to allow for loads plus sufficient flashover protection (to electrical installations);
- That any verge vegetation and tree canopies which may foul loads is trimmed prior to loads moving;
- That a review of potential roadworks and or closures is undertaken once the delivery schedule is established in draft form;
- That a test run is completed to confirm the route and review any vertical clearance issues; and
- That a condition survey is undertaken to ascertain the extents of road defects prior to loads commencing to protect the developer from spurious damage claims.

4 Summary

4.1 Summary of Access Review

PF have been commissioned by SSE to prepare an RSR to examine the issues associated with the transport of AIL turbine components to Bhlaraidh Wind Farm Extension.

This report identifies the key points and issues associated with the proposed routes and outlines the issues that will need to be considered for successful delivery of components.

This report has been based upon the worst case of components from the Nordex N163 turbine sections and has been undertaken on the basis of a Dolly Clamp blade trailer as requested by the client.

The report is presented for consideration to SSE. Various road modifications, structural reviews, and interventions are required to successfully access the site. A number of areas have been identified where topographical surveys are required to confirm the feasibility of the routes.

4.2 Further Actions

The following actions are recommended to pursue the transport and access issues further:

- Undertake further topographical surveys and reassess the highlighted sections;
- Prepare detailed mitigation design proposals to help inform the land option / consultee discussions;
- Obtain the necessary land options;
- Undertake discussion with the affected utility providers and roads agencies;
- Obtain the necessary statutory licences to enable the mitigation measures; and
- Develop a detailed operational Transport Management Plan to assist in transporting the proposed loads.

Appendix A Points of Interest

An electronic version of the POI plan can be found here:

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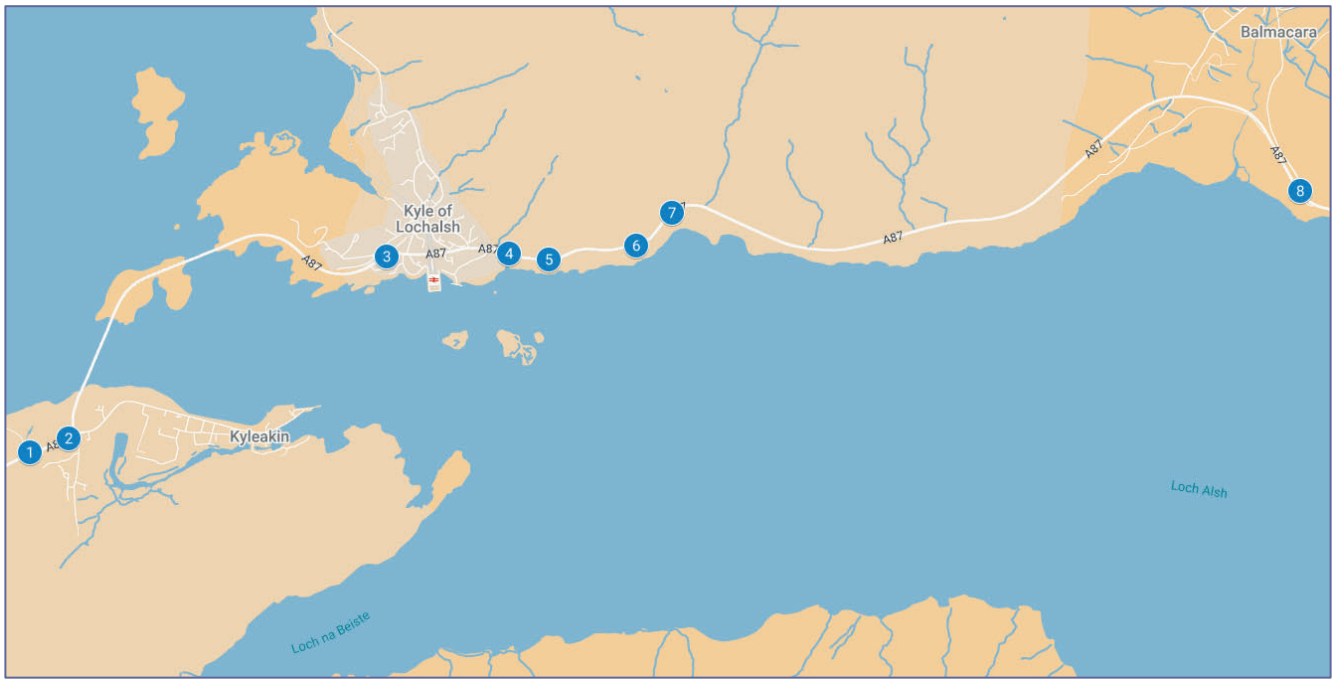

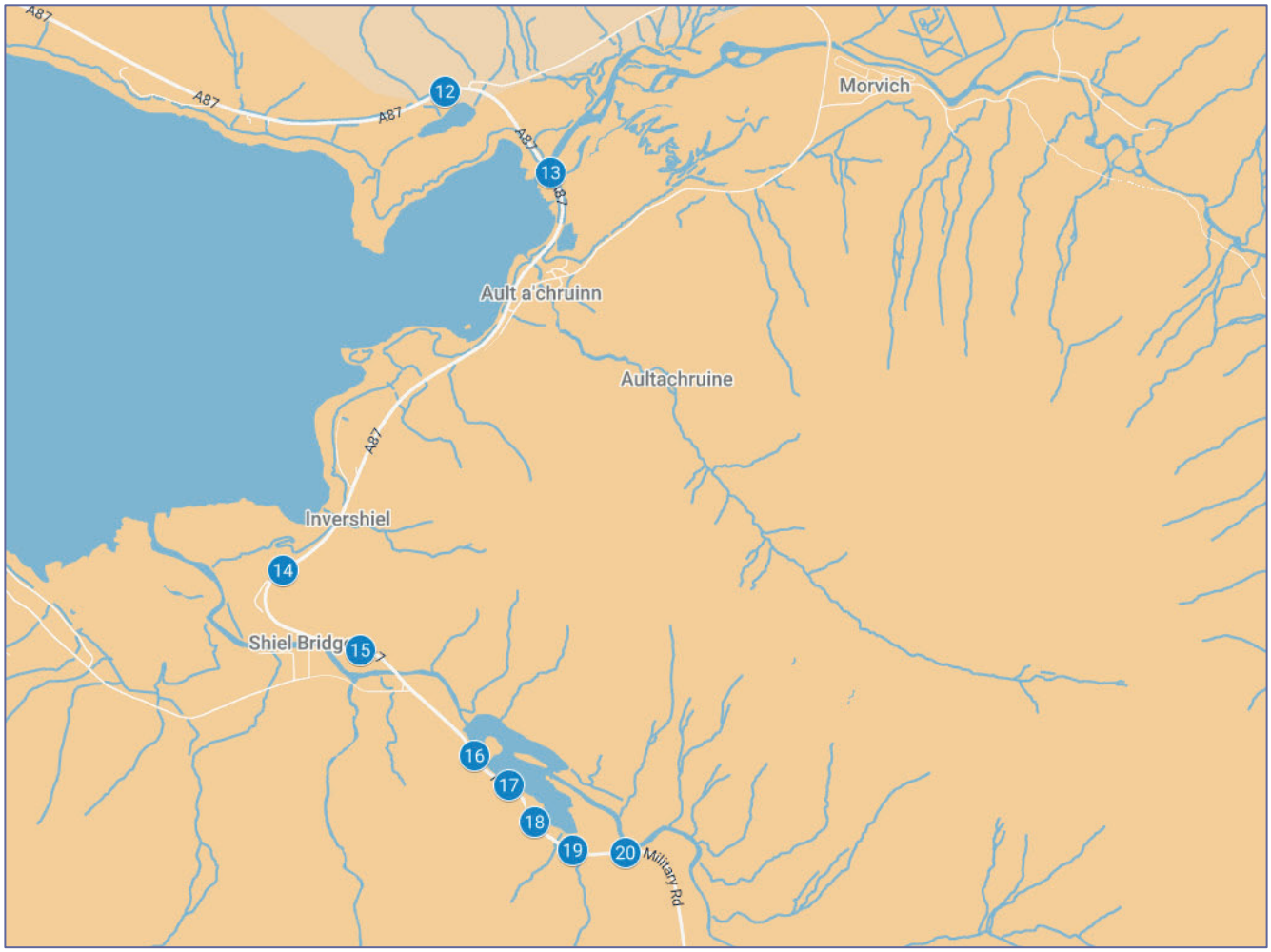
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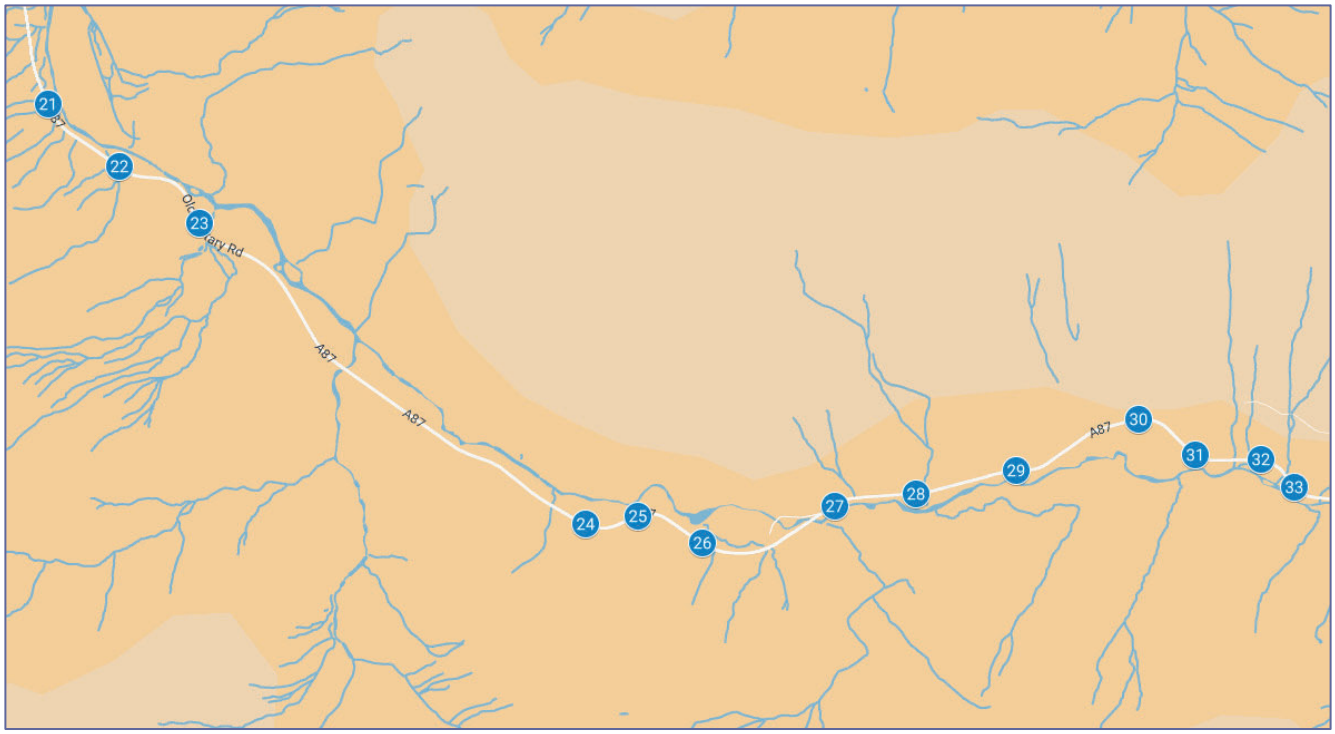
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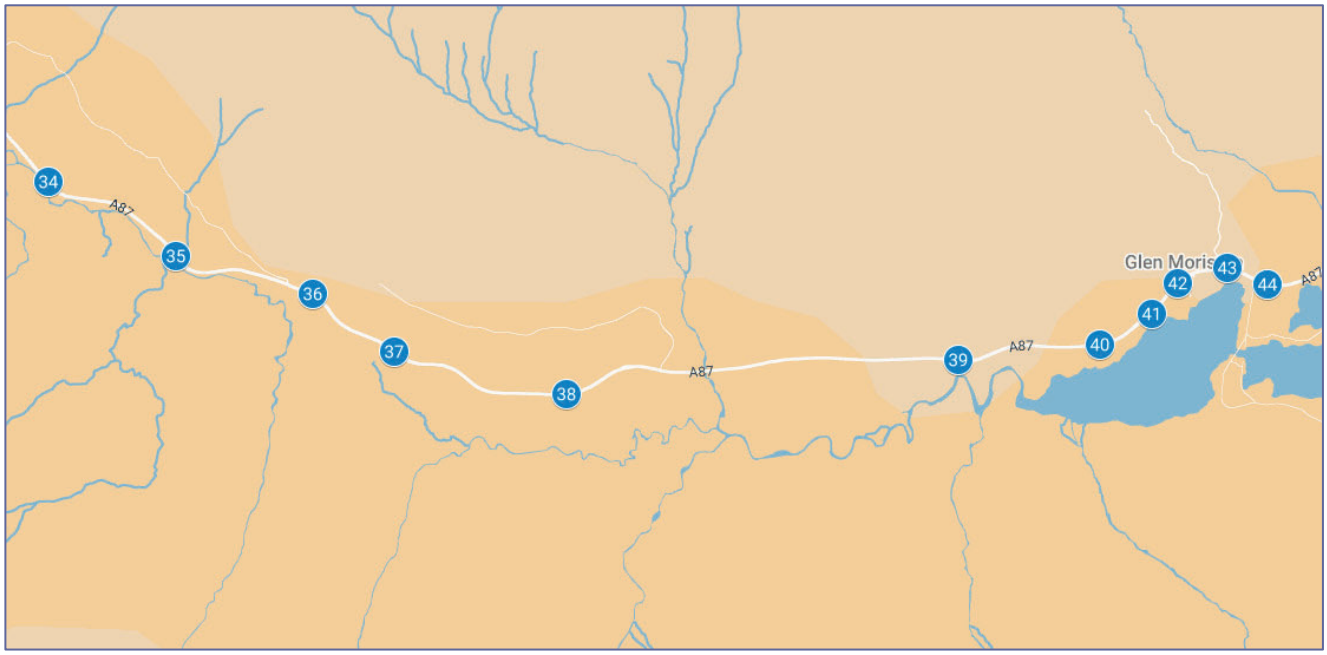
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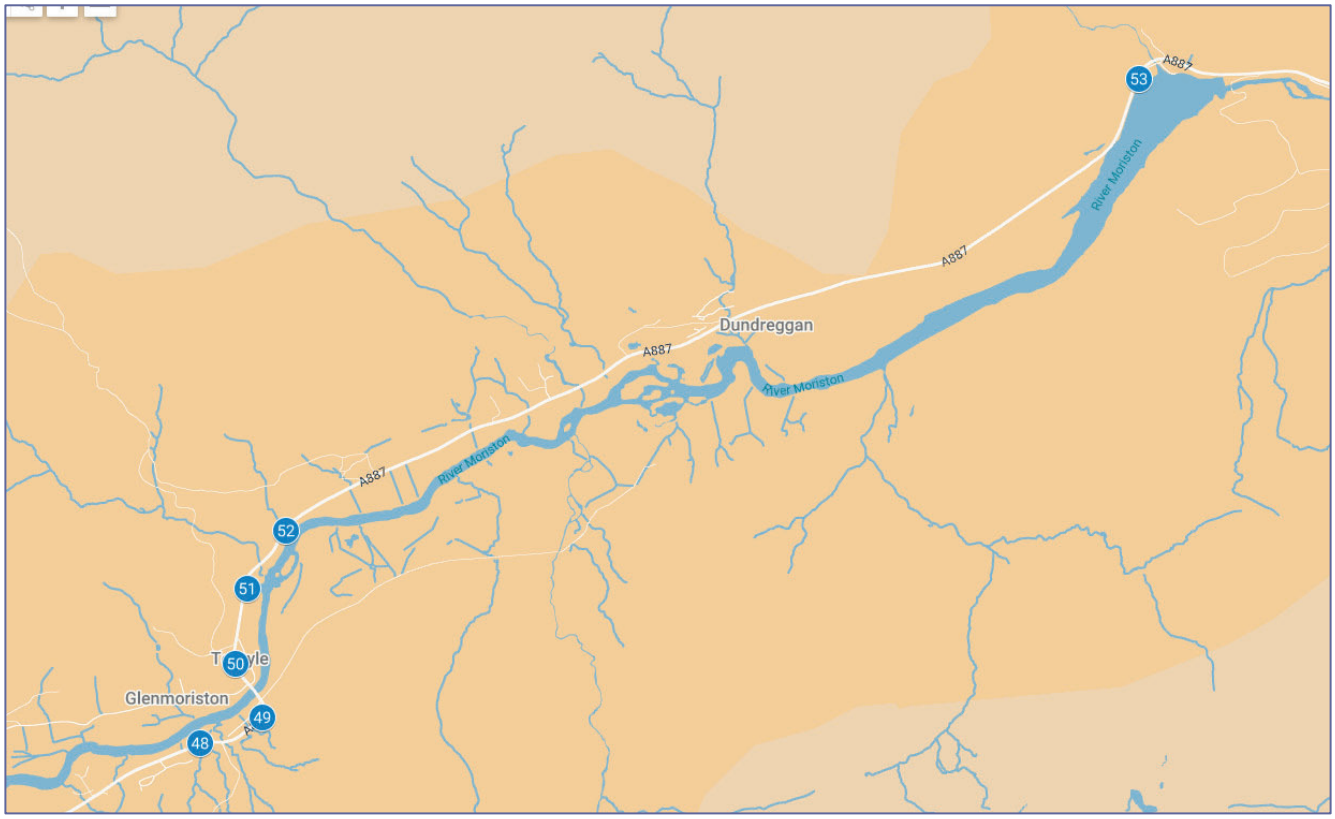
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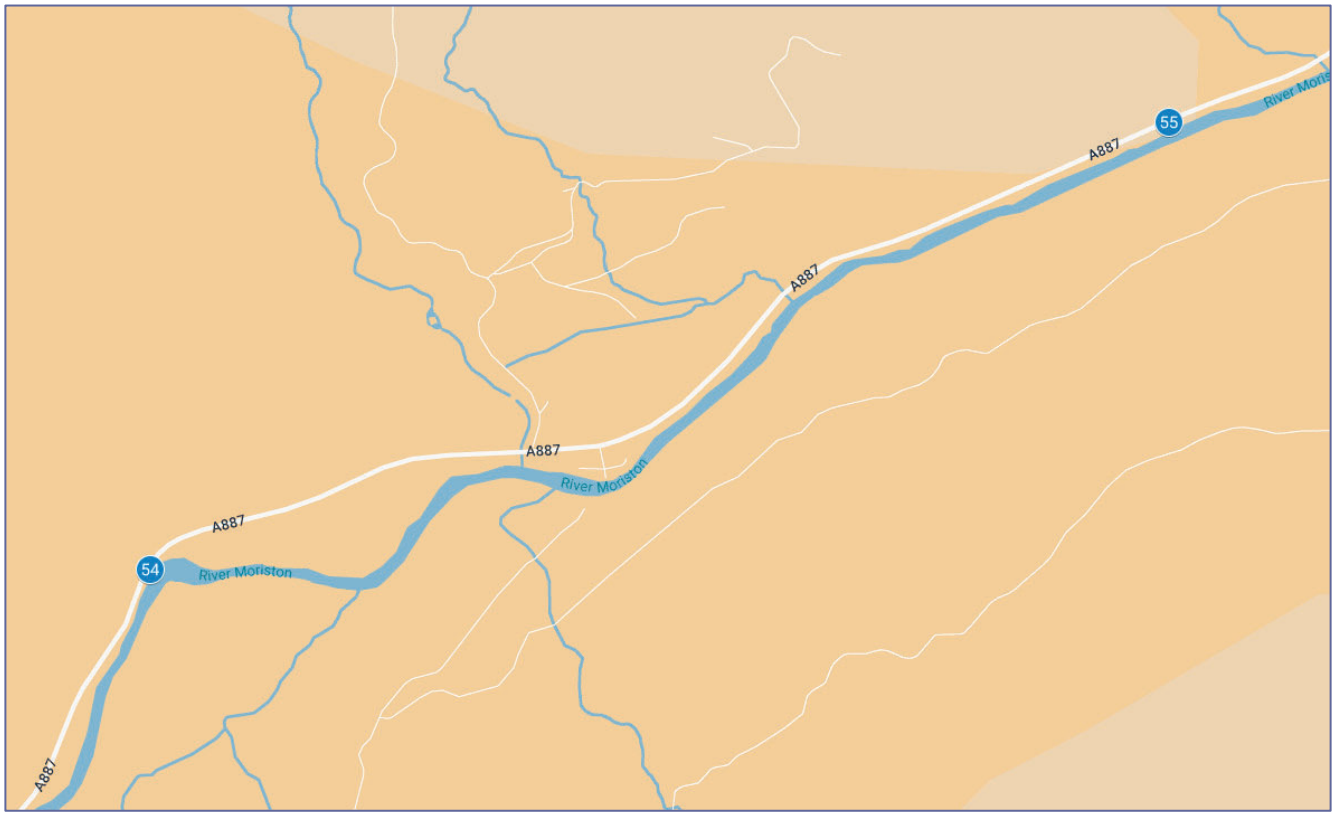
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Millburn Rd
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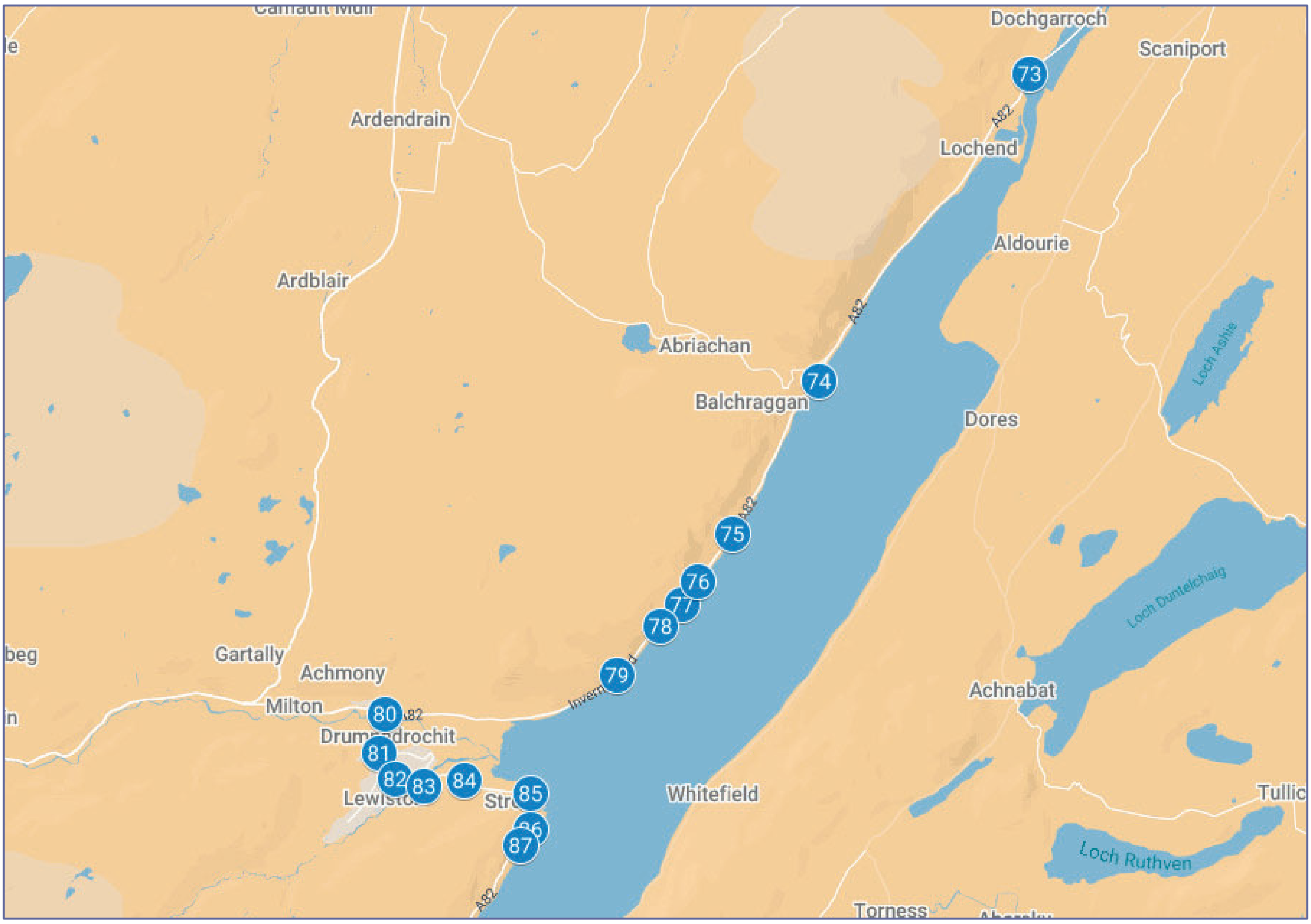
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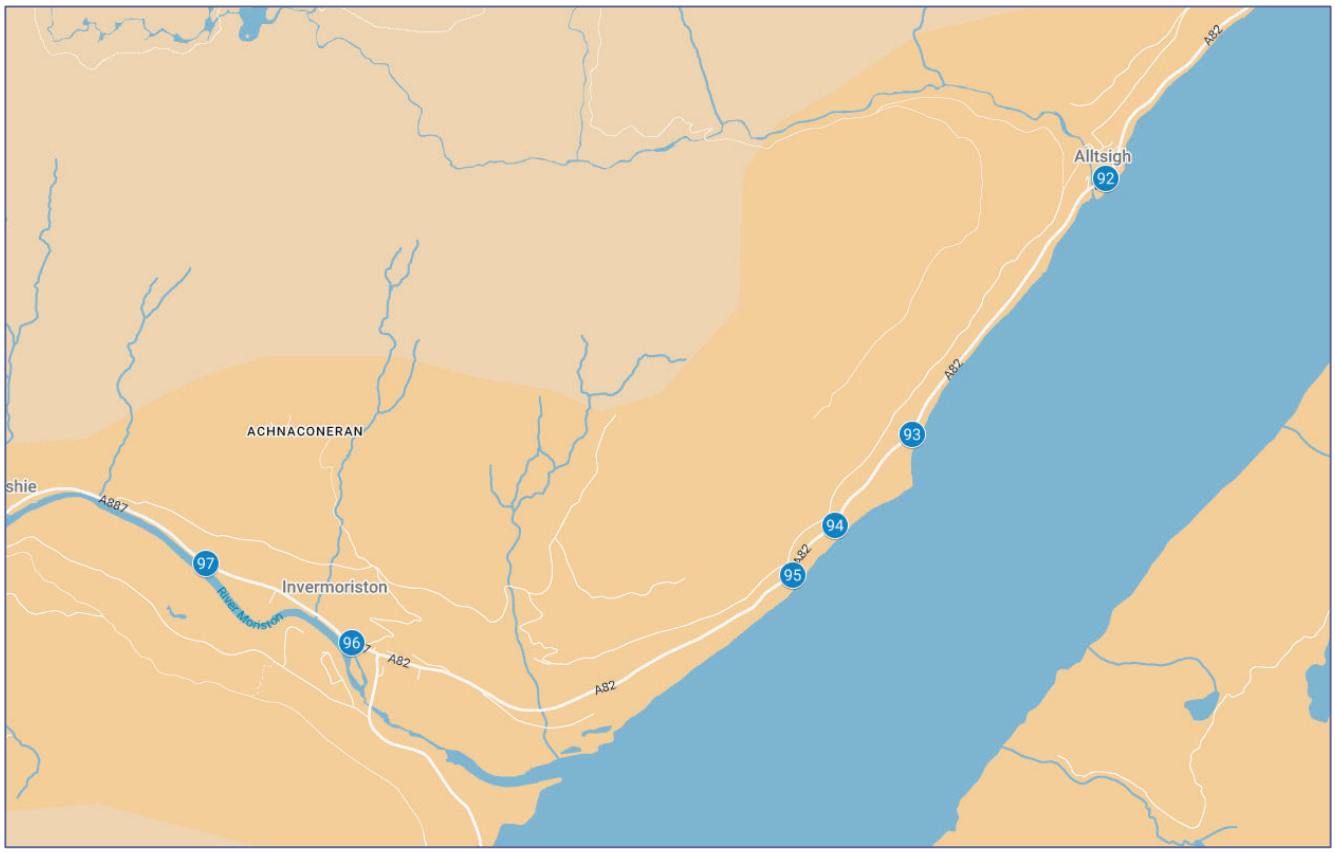
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