Appendix B AIL Route Survey Report

Pell Frischmann

Nisthill Wind Farm

Abnormal Indivisible Load Route Survey

August 2022

106319

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1 Introduction

1.1 Purpose of the Report

Pell Frischmann (PF) has been commissioned by Infinergy Limited (Infinergy) to undertake a route survey review of potential delivery routes for wind turbine Abnormal Indivisible Loads (AIL) associated with the construction and development of Nisthill Wind Farm, located to the east of Swannay, Orkney Islands.

The Route Survey Report (RSR) has been prepared to help inform Infinergy on the likely issues associated with the development of the site with regards to off-site transport and access for AIL traffic. This report is based upon a desk top review and identifies the key issues associated with AIL deliveries and notes that remedial works, either in the form of physical works or as traffic management interventions will be required to accommodate the predicted loads. A detailed site visit would still be required to fully assess the impact on the study area road network.

The detailed assessment and subsequent designs of any remedial works are beyond the agreed scope of works between PF and Infinergy 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 with the appropriate levels of health and safety consideration for all road users has 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 east of Birsay, Orkney. Figure 2-1 illustrates the general site location.

Figure 2-1: Site Location Plan

2.2 Candidate Turbine

Infinergy have indicated that they wish to consider the worst case components from the Siemens Gamesa SGRE155 turbine at a maximum tip height of 180m. There are two tower configuration options for the turbine at this tip height (depending upon wind speed) and both have been provided in the tables below.

Table 2-1: Turbine Components Summary – Option 1

Component	Length (m)	Width (m)	Height / Min Diameter (m)	Weight (t)
Blade	76.000	4.500	3.400	23.100
Base Tower	16.474	4.700	4.433	79.355
Mid Tower 1	22.680	4.433	4.427	76.300
Mid Tower 2	27.160	4.427	3.557	68.693
Top Tower	33.610	3.557	3.574	66.933

Table 2-2: Turbine Components Summary - Option 2

Component	Length (m)	Width (m)	Height / Min Diameter (m)	Weight (t)
Blade	76.000	4.500	3.400	23.100
Base Tower	13.180	4.369	4.355	82.880
Mid Tower 1	20.720	4.355	4.300	79.696
Mid Tower 2	29.960	4.300	4.300	81.067
Top Tower	35.850	4.300	3.503	72.485

For the purposes of this RSR, a worst case envelope has been determined using the top width of the first option Base Tower, and the length and bottom width of the second option Mid Tower 2.

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 Superwing Carrier trailer to reduce the need for mitigation in constrained sections of the route.

The base and mid towers would be carried on a 4+7 clamp adaptor style trailer. The hub, nacelle housing, and top towers would be carried on a six-axle step frame trailer.

Figure 2-2: Superwing Carrier Trailer

Figure 2-3: Tower Trailer

3 Access Route Review

3.1 Port of Entry

The proposed Port of Entry (POE) is Hatston Pier north of Kirkwall. Whilst the port has not had extensive use for onshore turbine deliveries, it has been marketed as suitable for offshore renewables projects and has sufficient quay capacity and heavy lift areas required for turbine deliveries.

The port and access route from Hatston have been used for non-turbine abnormal load access in the past for onward deliveries to renewable development sites across Orkney.

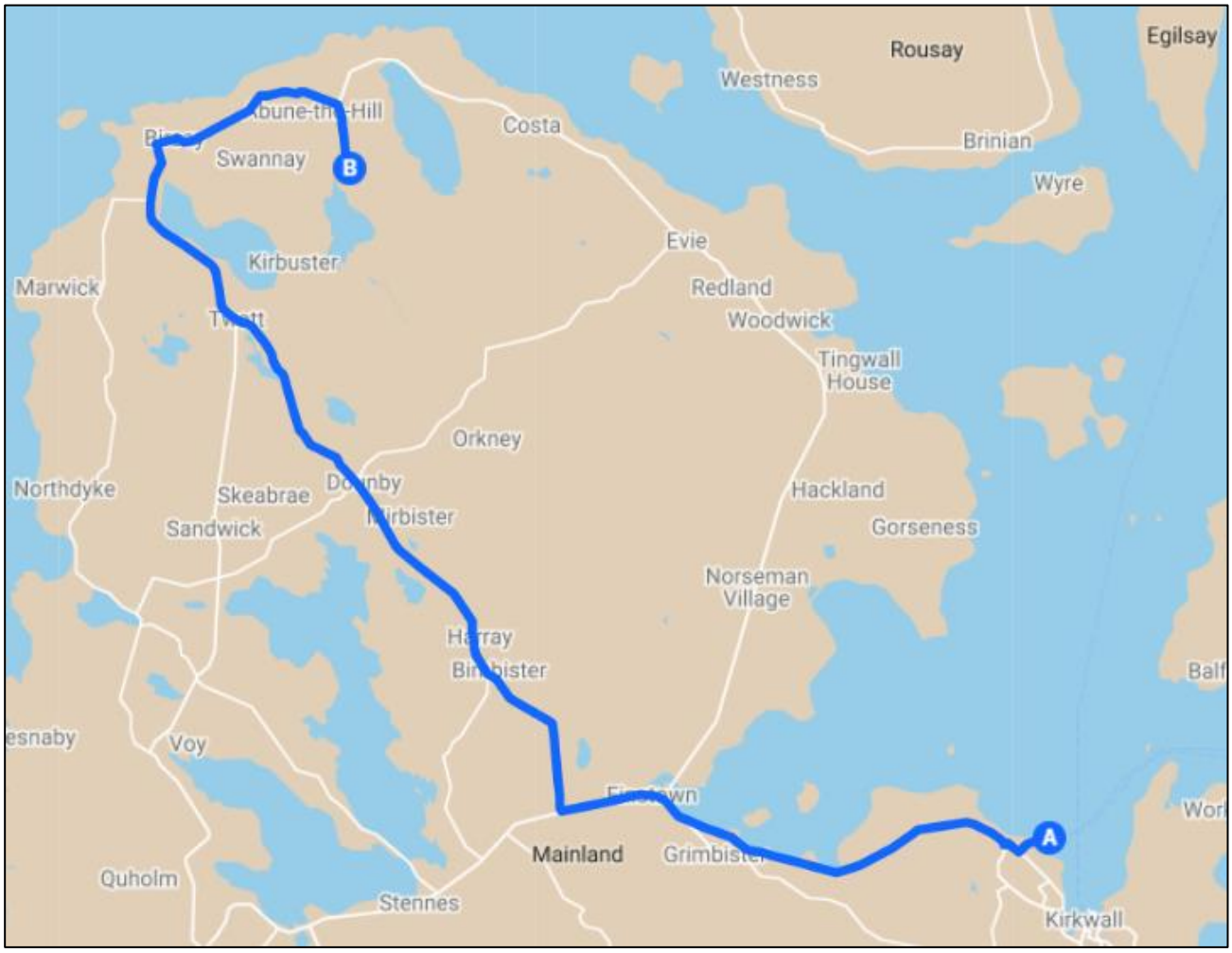
3.2 Proposed Access Route

Two access options have been considered. The route for Option 1 is detailed below:

- Loads would exit onto the docks and proceed westbound through the Hatston Industrial Estate;
- Loads would turn right onto Grainshore Road, undertaking a contraflow manoeuvre and proceeding northwest;
- Loads would continue onto the A965 and proceed northwest;
- Loads would turn right west of Finstown to join the A986 northbound;
- Loads would continue onto the A967 at Twatt and proceed northbound; and
- Loads would turn right onto Wattle Road south of Birsay and proceed to the site access.

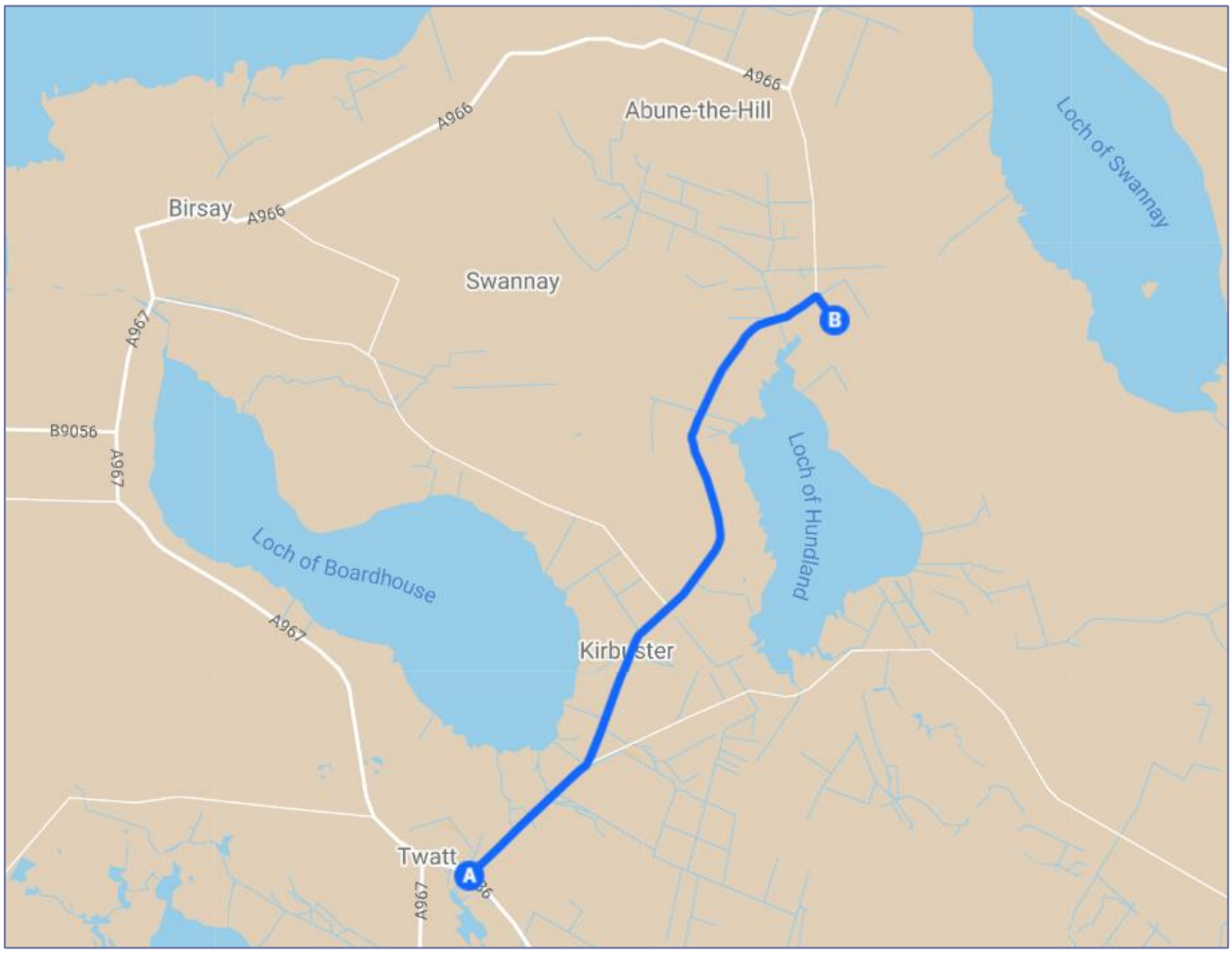
The proposed access route for Option 1 is illustrated in Figure 3-1.

Figure 3-1: Proposed Access Route Option 1



The access route for Option 2 is the same as Option 1, with the exception that loads turn right at Twatt and proceed northeast on Hundland Road, passing Kirbuster. This option avoids the bends on the A967 and A966. The section from Twatt to site is illustrated in Figure 3-2.

Figure 3-2: Proposed Access Route Option 2



3.3 Route Constraints

The constraints noted on the desktop review are detailed in the table below for Option 1. The constraints associated with Option 2 are illustrated in Table 3-2.

The POI in both tables 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.

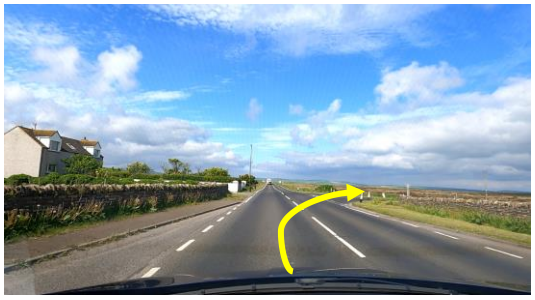
Plans illustrating the location of the constraints are provided in Appendix A.

Table 3-1: Constraint Points and Details – Access Option 1

POI	Key Constraint	Details
1	**Hatston Pier**  	Loads will manoeuvre on the pier and proceed westbound through the Hatston Industrial Estate. Blade loads must be brought into the south-eastern end of the quay as they are unable to negotiate the right-hand turn should they be landed at the north-western end. All other loads can be landed at any point of the quay. Through the Industrial Estate there are two sets of road humps and loads should proceed with caution to avoid suspension damage and straining of retaining devices.
2	**Hatston Pier / Grainshore Road Junction** 	Loads will turn right at the junction to exit the Industrial Estate and join Grainshore Road westbound. *The OS mapping does not identify the junction splitter islands. Indicative outlines have been provided for illustrative purposes only and should be confirmed during the test run.* A swept path assessment has been undertaken and indicates that the blade tip will over-sail the south-eastern verge of Hatston Industrial Estate Road where two lit road signs and one lighting column should be removed. **Third party land** will be required. The blade tip will over-sail two bollards on the splitter island on turning at the junction where one lit road sign should be removed. Loads will over-sail the inside of the turn at the junction where two lighting columns, one lit road sign, one stone sign and one road sign should be removed. **Third party land** will be required. Swept path assessment SK01 is included in Appendix B.

POI	Key Constraint	Details
3	**Grainshore Road / A965 Merge** 	Loads will continue onto the A965 westbound, undertaking a **contraflow** manoeuvre through the one-way system. A swept path assessment has been undertaken and indicates that loads will over-run the splitter island on entry to the single carriageway where a load bearing surface should be laid and two bollards removed. Loads will over-sail both verges of the single carriageway. Two lit road signs and one bollard should be removed from the south-western verge. Four lit road signs should be removed from the north-eastern verge. Swept path assessment SK02 is included in Appendix B.
4	**A965 Crossiecrown** 	Loads will continue on the A965 westbound. A swept path assessment has been undertaken and indicates that no physical mitigation measures will be required, though loads will occupy the entire width of the carriageway. Swept path assessment SK03 is included in Appendix B.
5	**A965 Quanterness Cottages** 	Loads will continue on the A965 westbound. A swept path assessment has been undertaken and indicates that loads will over-sail the inside verge of the bend, though no physical mitigation measures will be required. Swept path assessment SK04 is included in Appendix B.
6	**A965 Rennibister**  	Loads will continue on the A965 westbound. A swept path assessment has been undertaken and indicates that loads will over-sail the inside verge of the bend, though no physical mitigation measures will be required. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges. Swept path assessment SK05 is included in Appendix B.

POI	Key Constraint	Details
7	**A965 Holm Point**  	Loads will continue on the A965 westbound. Loads will oversail both sides of the carriageway, however no physical works are required.
8	**A965 North of Grimbister** 	Loads will continue on the A965 westbound. Loads will oversail the inside of the bend, however no physical works are required.
9	**A965 Finstown Pier** 	Loads will continue on the A965 westbound. A swept path assessment has been undertaken and indicates that the blade tip will over-sail the outside verge of the bend where one lighting column should be removed. Loads will over-sail the inside verge, though no physical mitigation measures will be required. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges. Swept path assessment SK06 is included in Appendix B.
10	**A965 Thickbigging, Finstown** 	Loads will continue on the A965 westbound. A swept path assessment has been undertaken and indicates that loads will over-sail the inside verge of the first left-hand bend, though no physical mitigation measures will be required. Swept path assessment SK07 is included in Appendix B.

POI	Key Constraint	Details
11	**A965 Finstown** 	Loads will continue on the A965 westbound. Loads will occupy the entire carriageway, but no works are required. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges.
12	**A965 / A986 Junction** 	Loads will turn right at the junction to exit the A965 and join the A986 northbound. A swept path assessment has been undertaken and indicates that the blade tip will over-sail the south-eastern verge of the A965 where the bus shelter should be removed. Loads will over-run and over-sail the inside verge of the turn where a load bearing surface should be laid and the stone wall, fence, one road sign, bin, and several bollards removed. **Third party land** will be required. Loads will over-sail both verges of the A986 following the junction, though no physical mitigation measures will be required. Swept path assessment SK08 is included in Appendix B.
13	**A986 Slap of Setter** 	Loads will continue on the A986 northbound. A swept path assessment has been undertaken and indicates that the blade tip will over-sail the outside verge of the bend prior to the private access, though no physical mitigation measures will be required. Loads will then over-run and over-sail the outside verge following the private access where a load bearing surface should be laid and one boulder removed. A land search to confirm ownership at this location is suggested. Loads will over-sail the inside verge of the bend where the vegetation should be trimmed. Swept path assessment SK09 is included in Appendix B.

POI	Key Constraint	Details
14	**A986 Southeast of Bimbister**  	The vertical profile of the road at this location is pronounced and should be reviewed during the test run stage to ascertain if tar wedges will be required to prevent grounding. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges.
15	**A986 Southeast of Bimbister** 	Loads will continue on the A986. Loads will oversail both sides of the carriageway, however no physical works are required. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges.
16	**A986 Bimbister**  	Loads will continue on the A986 northbound. A swept path assessment has been undertaken and indicates that loads will over-sail the inside verge of the left-hand bend where the vegetation should be trimmed. The blade tip will over-sail the outside verge, though no physical mitigation measures will be required. Loads will over-sail both verges following the left-hand bend, though no physical mitigation measures will be required. Loads will over-run and over-sail the outside verge of the right-hand bend where a load bearing surface should be laid and the ditch culverted. The vegetation should be cleared. Loads will over-sail the inside verge, though no physical mitigation measures will be required. Swept path assessment SK10 is included in Appendix B.

POI	Key Constraint	Details
17	**A986 Left Bend, Harray** 	Loads will continue on the A986. Loads will oversail both sides of the carriageway, however no physical works are required. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges.
18	**A986 Burn of Netherbrough, Harray** 	Loads will continue on the A986. Loads will occupy the entire carriageway, however no physical works are required.
19 & 20	**A986 Appietown**  	Loads will continue on the A986 northbound. A swept path assessment has been undertaken and indicates that loads will over-sail the inside verge of the right-hand bend where the vegetation should be trimmed. Loads will over-sail the outside verge, though no physical mitigation measures will be required. Loads will over-sail the inside verge of the following left-hand bend where one road sign should be removed and the trees trimmed. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges. Swept path assessment SK11 is included in Appendix B.
21	**A986 Brough** 	The vertical profile of the road at this location is pronounced and should be reviewed during the test run stage to ascertain if tar wedges will be required to prevent grounding.

POI	Key Constraint	Details
22	**A986 Parro Shun** 	Loads will continue on the A986. Loads will oversail both sides of the carriageway, but no works are required. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges.
23 & 24	**A986 Velzian, Dounby**   	Loads will continue on the A986 northbound. A swept path assessment has been undertaken and indicates that loads will over-sail both verges of the first slight left-hand bend, though no physical mitigation measures will be required. The blade tip will over-sail the fence and gate on the outside verge of the following right-hand bend where **third party land** will be required. Loads will over-sail the inside verge, though no physical mitigation measures will be required. Loads will over-sail the inside verge of the final left-hand bend, though no physical mitigation measures will be required. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges. Swept path assessment SK12 is included in Appendix B.

POI	Key Constraint	Details
25 & 26	**A986 Howan**  	Loads will continue on the A986 northbound. A swept path assessment has been undertaken and indicates that loads will over-sail both verges of the first right-hand bend. Vegetation should be trimmed on the inside verge. The blade tip will over-sail the fence, gates and stone bridge parapet on the outside verge of the second right-hand bend where **third party land** will be required. Loads will over-sail the inside verge where the vegetation should be trimmed. Swept path assessment SK13 is included in Appendix B.
27 & 28	**A986 Greeny**   	Loads will continue on the A986 northbound. A swept path assessment has been undertaken and indicates that loads will over-sail both verges through the bends. Vegetation should be trimmed on the inside verges of both bends. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges. Swept path assessment SK14 is included in Appendix B.

POI	Key Constraint	Details
29 & 30	**A986 Twatt Farm**   	Loads will continue on the A986 northbound. A swept path assessment has been undertaken and indicates that loads will over-sail the inside verge of the left-hand bend where the vegetation should be trimmed. The blade tip will over-sail the outside verge of the following right-hand bend where one road sign should be removed. Loads will over-sail the inside verge where the vegetation should be trimmed. Loads will over-sail the south-western verge following the bends, though no physical mitigation measures will be required. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges. Swept path assessment SK15 is included in Appendix B.
31	**A967 Twatt** 	Loads will continue on the A967 northbound. A swept path assessment has been undertaken and indicates that loads will over-sail the outside verge of the bend where load bearing surfaces should be laid. Loads will over-sail the inside verge where one road sign should be removed and vegetation trimmed. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges. Swept path assessment SK16 is included in Appendix B.
32	**A967 North of Twatt** 	The vertical profile of the road at this location is pronounced and should be reviewed during the test run stage to ascertain if tar wedges will be required to prevent grounding.

POI	Key Constraint	Details
33	**A967 Castlehill** 	Loads will continue on the A967 northbound. A swept path assessment has been undertaken and indicates that loads will over-sail the western verge prior to the bends, though no physical mitigation measures will be required. Loads will over-sail both verges through the left-hand bend. The vegetation should be trimmed on the inside verge. Loads will over-sail both verges following the bend, though no physical mitigation measures will be required. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges. Swept path assessment SK17 is included in Appendix B.
34	**A967 Stanger**  	Loads will continue on the A967 northbound. A swept path assessment has been undertaken and indicates that loads will over-sail both verges prior to the bends, though no physical mitigation measures will be required. Loads will over-sail both verges through the right-hand bend. The fence should be removed from the inside verge where **third party land** will be required. Loads will over-sail both verges through the following left-hand bend. The vegetation should be trimmed on the inside verge. Swept path assessment SK18 is included in Appendix B.
35	**A967 Wheebin** 	Loads will continue on the A967 northbound. A swept path assessment has been undertaken and indicates that the blade tip will over-sail the fence and gate on the outside verge of the bend where the vegetation should be trimmed. **Third party land** will be required. Loads will over-sail the inside verge where the fence and stone posts should be removed. **Third party land** will be required. Swept path assessment SK19 is included in Appendix B.

POI	Key Constraint	Details
36	**A967 Bursay Community Hall** 	Loads will continue on the A967 northbound. Loads will over-sail both sides of the carriageway where one road sign should be removed on the eastern verge. The vertical profile of the road at this location is pronounced and should be reviewed during the test run stage to ascertain if tar wedges will be required to prevent grounding. Swept path assessment SK20 is included in Appendix B.
37	**A967 Boardhouse**  	Loads will continue on the A967 northbound. A swept path assessment has been undertaken and indicates that the blade tip will over-sail the stone wall and gate on the outside verge of the bend prior to the private access. **Third party land** will be required. Loads will over-run and over-sail the outside verge following the private access where a load bearing surface should be laid and vegetation cleared. Loads will over-sail the inside verge where the vegetation should be trimmed. Swept path assessment SK21 is included in Appendix B.
38	**A967 / Wattle Road Junction** 	Loads will continue ahead at the junction. A swept path assessment has been undertaken and indicates that loads will oversail the inside of the bend where **third party land** is required. On road sign and vegetation will need to be cleared. On the outside of the bend, a minor load bearing surface is required in the verge. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges. Swept path assessment SK22 is included in Appendix B.
39	**A967 North of Barony Mill** 	The vertical profile of the road at this location is pronounced and should be reviewed during the test run stage to ascertain if tar wedges will be required to prevent grounding.

POI	Key Constraint	Details
40	**A967 / A966 Junction** 	Loads will turn right onto the A966 at the junction. A swept path assessment has been undertaken and indicates that a large over-run surface is required in **third party land** to the west. One road sign, one pole and fencing will need to be removed. On the inside of the junction, loads will oversail into **third party land** where fencing and a private sign will need to be removed. A minor load bearing surface will be required in the northern verge. Swept path assessment SK23 is included in Appendix B.
41 & 42	**A966 Garthsetter Bends**   	Loads will continue through a sinuous section of the A966. A swept path assessment has been undertaken and indicates that over-run areas are required in **third party land** at two locations and in the verge in a further two sections. Fencing and boundary walls will need to be removed. One road sign will also need to be relocated. Swept path assessment SK24 is included in Appendix B.
43	**A966 / Hundland Road Junction** 	Loads will continue ahead on the A966. A swept path assessment has been undertaken and indicates that loads will oversail fencing that will need to be relocated. **Third party land** rights will be required. It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges. The vertical profile of the road at this location is pronounced and should be reviewed during the test run stage to ascertain if tar wedges will be required to prevent grounding. Swept path assessment SK25 is included in Appendix B.

POI	Key Constraint	Details
44 & 45	**A966 Bends**   	Loads will continue through a further sinuous section of the A966. A swept path assessment has been undertaken and indicates that over-run areas are required at four locations and that these, together with oversail areas, will require **third party land** rights. Fencing and boundary walls will need to be removed. Swept path assessment SK26 is included in Appendix B.
46	**A966 Bends**  	Loads will continue ahead, proceeding eastbound. A swept path assessment has been undertaken. This indicates that the optimum solution at this constrained bend would be for a temporary plated trackway to be provided across **third party land.** Fencing would need to be removed and the proposed route would follow the line of the overhead utility line. **A third party land right** is required on approach to the bend and fence relocation works will be required. Swept path assessment SK27 is included in Appendix B.

POI	Key Constraint	Details
47	**Swannay Junction**  	Loads will turn right at the junction onto the minor road. A swept path assessment has been undertaken and indicates that a large over-run surface area is required in **third party land.** Existing fencing and gates would need to be removed. Swept path assessment SK28 is included in Appendix B.
48	**Hundland Road East of Abune-the-Hill**  	It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges.
49	**Hundland Road Junction** 	Loads will turn left on the minor road at the junction. A swept path assessment has been undertaken and indicates that a large over-run area will be required on the western verge of the minor road, requiring the removal of existing fencing and **third party land rights.** The minor road will need to be widened to a minimum of 4.5m to comply with turbine supplier standards from the junction to the proposed site access. Swept path assessment SK29 is included in Appendix B.

Table 3-2: Constraint Points and Details – Access Option 2

POI	Key Constraint	Details
50	**A986 / Hundland Road Junction** 	Loads will turn right at the junction and will proceed northeast on Hundland Road. A swept path assessment has been undertaken and indicates that third party land will be required in the northern corner of the junction where an over-run surface is required, and the ditch should be culverted. The fence and vegetation should be removed. **Third party land** is required. Loads will oversail the southwestern verge of the A986 where the blade tip will over-sail the fence into **third party land.** Loads will over-run and over-sail the inside of the junction where a load bearing surface should be laid and the vegetation trimmed. Swept path assessment SK30 is included in Appendix B.
51	**Hundland Road / Durkadale Road Junction**  	Loads will continue ahead at the junction, remaining on Hundland Road. A swept path assessment has been undertaken and indicates that loads will over-sail the south eastern verge where vegetation should be trimmed. A load bearing surface is required on the western verge and the culvert should be extended. Loads will oversail into **third party land** and the fence should be removed. Swept path assessment SK31 is included in Appendix B.
52	**Hundland Road, Kirbuster** 	It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges.

POI	Key Constraint	Details
53	**Hundland Road Bend at Kirbuster Museum** 	Loads will proceed through the bend on Hundland Road, passing the museum at Kirbuster. A swept path assessment has been undertaken and indicates that loads will over-sail the western verge where vegetation should be trimmed. Loads will over-run and over-sail the inside of the bend where a load bearing surface should be laid. The fence and vegetation should be removed. **Third party land** is required. Swept path assessment SK32 is included in Appendix B.
54	**Hundland Road Bend, North of Wattle** 	Loads will proceed through the bend on Hundland Road. A swept path assessment has been undertaken and indicates that loads will over-run and over-sail both sides of the carriageway where load bearing surfaces should be laid and the vegetation should be removed. Swept path assessment SK33 is included in Appendix B.
55	**Hundland Road Bend** 	Loads will proceed through the bend on Hundland Road. A swept path assessment has been undertaken and indicates that loads will over-run and over-sail both sides of the carriageway where load bearing surfaces should be laid and the vegetation should be removed. Swept path assessment SK34 is included in Appendix B.
56	**Hundland Road West of Loch of Hundland** 	It is strongly recommended that a full overhead utility search is carried out along the route to ensure that height clearances are suitable for normal temperature ranges.
57	**Hundland Road Bend 2** 	Loads will proceed through the bend on Hundland Road. A swept path assessment has been undertaken and indicates that loads will over-run and over-sail the inside of the right bend where a load bearing surface should be laid. The fence and vegetation should be removed. **Third party land** is required. Loads will oversail the western verge, but no works are required. Swept path assessment SK35 is included in Appendix B.

POI	Key Constraint	Details
58	**Hundland Road Bend 3** 	Loads will proceed through the bend on Hundland Road. A swept path assessment has been undertaken and indicates that loads will over-sail both sides of the carriageway where the fence should be removed and **third party land** is required. Swept path assessment SK36 is included in Appendix B.
59	**Hundland Road Bend 4** 	Loads will proceed through the bend on Hundland Road. A swept path assessment has been undertaken and indicates that loads will over-sail both sides of the carriageway where the bridge parapet should be oversailed and the fence removed. **Third party land** is required. Swept path assessment SK37 is included in Appendix B.
60	**Option 2 Access Junction** 	Loads will turn right into a new access junction for the wind farm. The junction will require a new access track and junction to be constructed and this should be undertaken in line with OIC and turbine supplier design guidance. A swept path assessment has been undertaken and indicates that a load bearing surface should be laid and **third party land** is required. The fence and vegetation should be removed upon exiting the exiting road. A section of fence should be removed either side of the existing road where the proposed alignment crosses and new access gates should be provided. Vertical check required for blade tip on approach. Swept path assessment SK38 is included in 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 in Appendix B illustrate tracking undertaken for the worst case loads at each location.

The colours illustrated on the swept paths are:

- Grey / Black – OS / Topographical Base Mapping;
- Green – Vehicle body outline (body swept path);
- Red – Tracked pathway of the wheels (wheel swept path); and
- Purple – The over-sail tracked path of the load where it encroaches outwith the trailer (load swept path).

Where mitigation works are required, the extents of over-run and over-sail areas are illustrated on the swept path drawings.

Please note that where assessments have been undertaken using Ordnance Survey (OS) base mapping, there can be errors in this data source.

Where provided by the client, topographical data has been utilised. Please note that PF cannot accept liability for errors on the data source, be that OS base mapping or client supplied data.

3.5 Land Ownership

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 Summary Issues

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

- Select a preferred access route between Options 1 and 2;
- That any necessary topographical surveys are undertaken and the swept path results repeated;
- 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 has been commissioned by Infinergy to prepare a Route Survey Report to examine the issues associated with the transport of AIL turbine components to Nisthill Wind Farm.

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

The report is presented for consideration to Infinergy. Various road modifications, structural reviews, and interventions are required to successfully access the site. If these are undertaken, access to the consented wind farm site is considered feasible.

4.2 Further Actions

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

- Prepare detailed mitigation design proposals to help inform the land option / consultee discussions;
- Weight review to be undertaken via the ESDAL contacts database;
- 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.