Pell Frischmann

Appin Wind Farm

Abnormal Indivisible Load Route Survey

July 2022

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Prepared for

Statkraft UK Ltd.

41 Moorgate
London
EC2R 6PP

Prepared by

Pell Frischmann

93 George Street
Edinburgh
EH2 3ES

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1 Introduction

1.1 Purpose of the Report

Pell Frischmann (PF) has been commissioned by Statkraft UK Ltd. (Statkraft) to undertake a route access review of potential delivery routes for wind turbine Abnormal Indivisible Loads (AIL) associated with the construction and development of Appin Wind Farm, located to the west of Auchenbrack, Thornhill.

The Route Survey Report (RSR) has been prepared to help inform Statkraft on 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 that 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 Statkraft at this point in time.

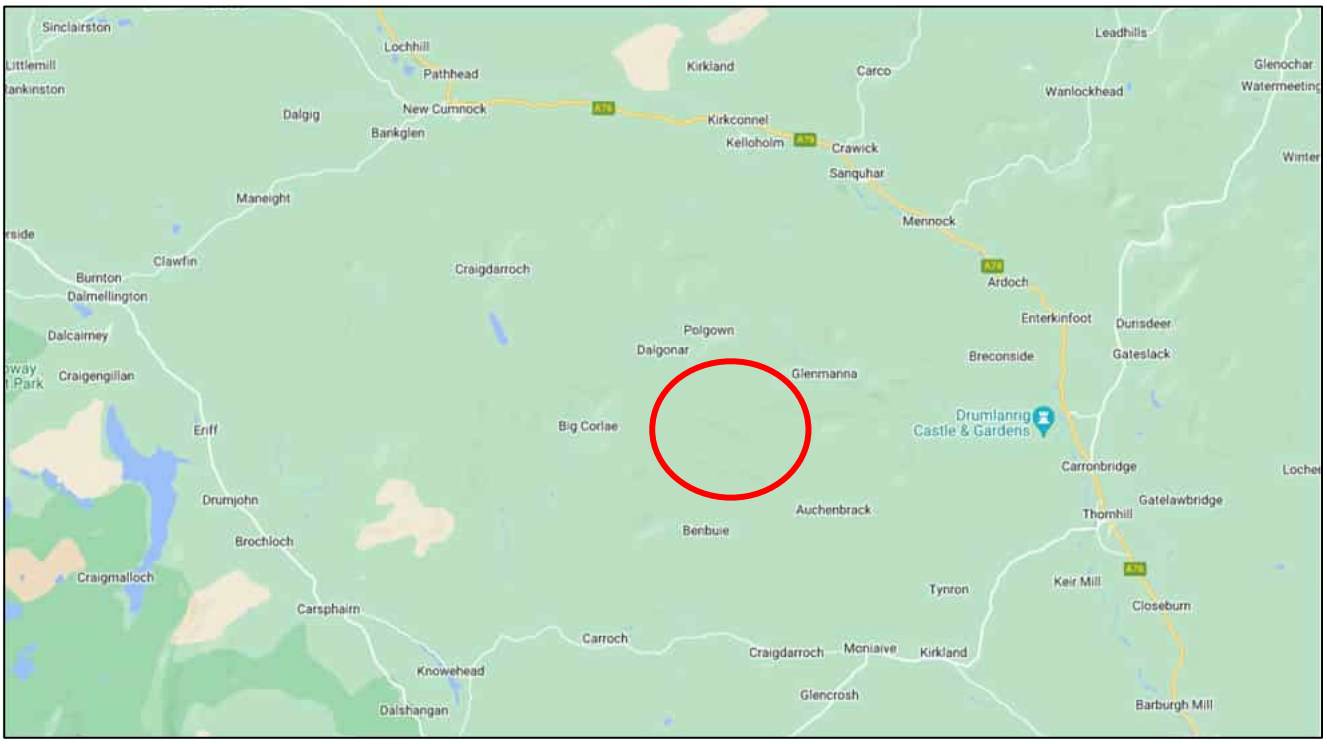
It is the responsibility of the wind turbine supplier to ensure that the entirety of the proposed access route is suitable and meets with their satisfaction. The turbine supplier will be responsible for ensuring that the finalised proposals meet with the appropriate levels of health and safety consideration 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 west of Auchenbrack, Thornhill. Figure 2-1 illustrates the general site location.

Figure 2-1: Site Location Plan



2.2 Candidate Turbine

Statkraft have indicated that they wish to consider the worst case components from the Siemens Gamesa SGRE155, Nordex N163, and Siemens Gamesa SGRE170 turbines at a maximum tip height of 200m for all blade options.

The details of the components have been provided by the turbine manufacturers and are summarised in Table 2-1.

Table 2-1: Turbine Components Summary

Component	Length (m)	Width (m)	Height / Min Diameter (m)	Weight (t)
SG155 Blade	76.000	4.500	2.882	25.600
N163 Blade	81.500	4.395	4.110	28.871
SG170 Blade	83.741	4.186	3.500	29.000
SG155 Base Tower	14.342	4.800	4.800	84.513
SG155 Mid Tower 1	19.368	4.800	4.800	81.457
SG155 Mid Tower 2	26.832	4.800	4.793	84.754
SG155 Mid Tower 3	29.977	4.793	4.099	70.462
SG155 Top Tower	30.000	4.099	3.574	56.744

The assessment has been based on all three blade options and a worst case combined tower of 29.977 x 4.8 x 4.793 to provide a worst case envelope. It has been assumed that the top tower can be carried using a step frame trailer and configured to pass under any height restrictions.

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 the SG155 and N163 blades would be carried on a Superwing Carrier trailer to reduce the need for mitigation in constrained sections of the route. The SG170 blades would be carrier on a blade dolly trailer.

Where constraints are significant and there is no other option, a bade lifting trailer has been assumed. This trailer uses a hydraulic titling head to tilt the blade up to 60 degrees and lift the blade over obstructions. This also shortens the blade length in plan view, reducing land and physical mitigation requirements.

The blade lifting trailer cannot be used for the whole route as it has speed restrictions and requires substantial counterbalancing weights which increase its axle loads. In use, the blade lifter is only used for short sections, with a standard road trailer being used for the majority of the route. The blade would then be transferred to the lifting trailer at an off-road location.

It is proposed that blades will use the existing transfer location to the south of Carsphairn and then continue to site. Permission should be sought for the use of this area.

When the blade is in the raised position, all overhead restrictions will need to be removed. This includes overhanging tree canopies and all utility lines.

This allows loads to be either lifted over height constraints and to be marginally shortened in plan view.

The base and mid towers would be carried on a 4+7 clamp trailer. The assessment has included the mid tower with the flange from the base tower. 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: Blade Dolly Trailer

Figure 2-4: Blade Lifting Trailer

Figure 2-5: Tower Trailer

3 Access Route Review

3.1 Port of Entry

It is proposed that the most appropriate Port of Entry (PoE) for this site would be for blade components to be brought into the KGV Docks, Glasgow. Due to the size of the proposed blade options, it is not considered possible to use the Port of Ayr for blade loads. An option to land tower and nacelle components at the Port of Ayr has been investigated.

KGV Docks in Glasgow have been used extensively for wind turbine component deliveries such as Assel Valley, Arecleoch, Kype Muir and Kellburn Wind Farms.

3.2 Proposed Access Route

The proposed access route is detailed below:

- Loads would depart KGV Dock and travel west on Kings Inch Drive before turning left onto Mayo Avenue;
- Loads would join the eastbound M8 and continue to Junction 8;
- Loads would leave the M8 and join the M73 travelling south;
- At Junction 4, loads would join the westbound M74;
- Loads would depart the M74 at Junction 1 and join the M8 westbound before leaving at Junction 22 and join the M77 travelling southbound;
- Loads would continue southbound on the M77 / A77 until Bankfield Roundabout south of Ayr, where they would turn left onto the A713;
- Loads would proceed southbound on the A713 to the south of Carsphairn, where they would turn left onto the B729; and
- Loads would proceed southeast on the B729. At the junction with the Lorg Forest road, loads would turn north and would continue through to the site access junction.

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

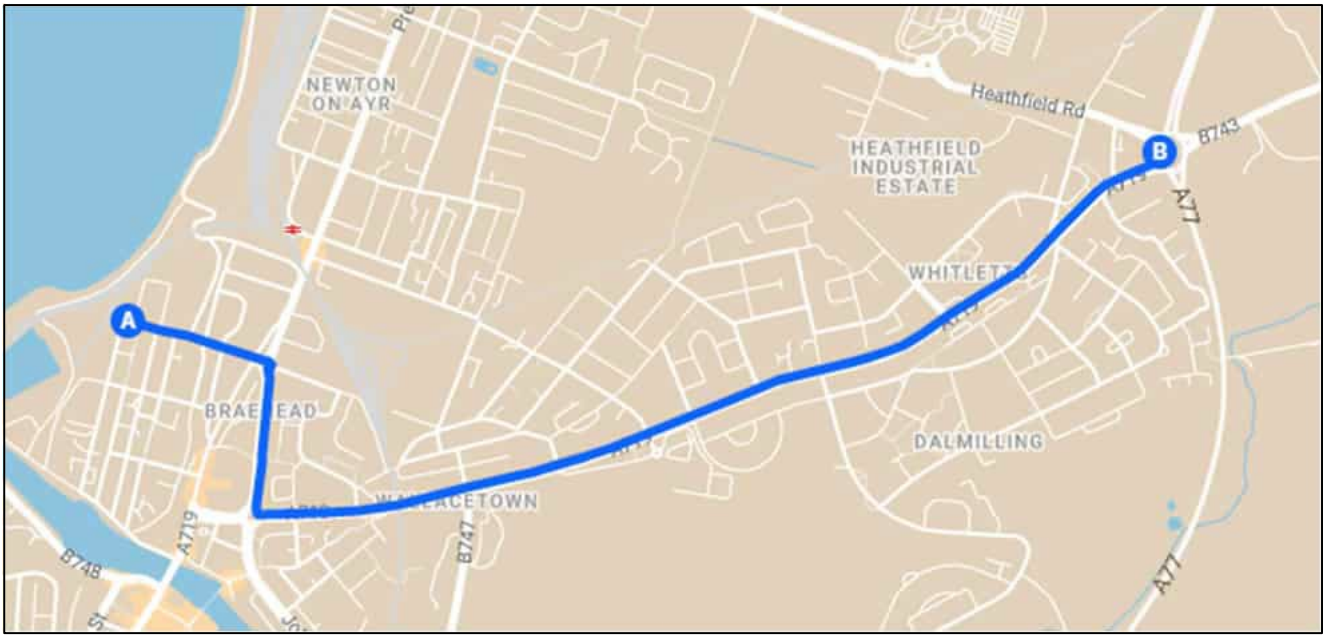
Figure 3-1: Proposed Access Route

The proposed tower access route is as follows:

- Loads would depart the Port of Ayr and continue east on Waggon Road;
- Loads would turn right onto Allison Street and then left onto Whitletts Road; and
- Loads would continue east on Whitletts Road to Whitletts Roundabout where they would turn right onto the A77 and join the main route.

The proposed tower route is illustrated in Figure 3-2.

Figure 3-2: Proposed Tower Access Route



3.3 Route Constraints

The constraints noted on the site visit are detailed in the table 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.

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

Table 3-1: Constraint Points and Details

POI	Key Constraint	Details
1	**KGV Port Access Gate - Blade Only** 	Loads will exit the port via the AIL access gate onto Kings Inch Drive. A swept path assessment has been undertaken for all blade options. **SG155**: Blades will over-sail the southern verge on exiting the port. Blades will cross the central island of the junction where the existing over-run should be utilised and will proceed westbound. Two road signs on the exit splitter island would need to be removed to enable over-sail. **N163**: Mitigation as per the SG155 albeit with larger areas. **SG170**: Mitigation as per the N163 albeit with slightly larger areas. Swept path assessment SK01 is included in Appendix B.
2	**Kings Inch Drive Roundabout 1 - Blade Only** 	Loads will proceed ahead taking the second exit onto Kings Inch Drive. A swept path assessment has been undertaken for all blade options. **SG155**: Blades will over-sail the southern verge on the approach arm where one lighting column should be removed. Blades will over-sail the north-eastern verge and footway on the approach arm. Blades will over-sail the southern edge of the central island and southern verge of the exit arm, however no works are required. **N163**: Mitigation as per the SG155 with the additional requirement to remove one lighting column from the northeastern verge. It is recommended that a land ownership search is completed. **SG170**: Mitigation as per the SG155 with the additional requirement to removed trees, and one VMS sign. **Third party land** required. Loads suspension to be raised to allow oversail of the roundabout island. Swept path assessment SK02 is included in Appendix B.

POI	Key Constraint	Details
3	**Kings Inch Drive Roundabout 2 - Blade Only** 	Loads will proceed ahead at the junction, taking the second exit. A swept path assessment has been undertaken for all blade options. **SG155**: No physical mitigation measures will be required, though loads will need access to all lanes. **N163**: Mitigation as per the SG155. **SG170**: Mitigation as per the SG155. Swept path assessment SK03 is included in Appendix B.
4	**Kings Inch Drive / Mayo Avenue Junction - Blade Only** 	Loads will turn left at the junction and will enter the M8 spur road. A swept path assessment has been undertaken for all blade options. **SG155**: Blades will over-sail the northern central reserve where escorts should hold oncoming vehicles during load movements. Blades will over-sail the splitter island where three traffic signal heads and one call post should be laid down and the guard rail and one bollard should be oversailed. Blades will over-sail the eastern verge where one VMS road sign, one road sign, one lighting column and one pedestrian call post should be removed. Vegetation should be cleared back. **N163**: Mitigation as per SG155 albeit with larger areas. **SG170**: Mitigation as per N163 with the additional requirement to overrun the central reserve on approach to the junction and the central reserve on exit. Load bearing surfaces should be laid and two road signs should be removed. Swept path assessment SK04 is included in Appendix B.
5	**Mayo Avenue Bend Leading to M8 Junction 25A - Blade Only** 	Loads would continue on the slip road and join the M8 heading southeast. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the north-eastern verge where the ground clearance for load over the safety barrier should be confirmed during the test run. **N163**: Mitigation as per the SG155. **SG170**: Mitigation as per the SG155. Swept path assessment SK05 is included in Appendix B.

POI	Key Constraint	Details
6	**M8 Junction 8 / M73 Transition - Blade Only** 	Loads will leave the M8 at Junction 8 and continue onto the M73 heading south. No physical mitigation measures will be required, though loads will need access to all lanes.
7	**M73 / M74 Junction 4 Transition - Blade Only** 	Loads will leave the M73 and continue onto the M74 travelling west. No physical mitigation measures will be required, though loads will need access to all lanes.
8	**M77 Slip Road - Blade Only** 	Loads will take the slip road and join the M77 at this location. No physical mitigation measures will be required, though loads will need access to all lanes.
9	**Dutch House Roundabout - Blade Only** 	Loads will turn left at the roundabout and continue on the A77. A swept path assessment has been undertaken for all blade options. **SG155**: No physical mitigation measures will be required, though loads will need access to all lanes. **N163**: No physical mitigation measures will be required, though loads will need access to all lanes. **SG170**: No physical mitigation measures will be required, though loads will need access to all lanes. Swept path assessment SK06 is included in Appendix B.

POI	Key Constraint	Details
10	**Sandyford Toll Roundabout - Blade Only** 	Loads will continue south through the roundabout. A swept path assessment has been undertaken for all blade options. **SG155**: Blades will over-sail the central reserve on the entry arm where the blade tip will over-sail the bollards and safety barrier. Oncoming traffic on the other carriageway should be held Blades will over-sail the eastern verge where the three lighting columns should be removed. Blades will then over-sail the eastern splitter island, however no physical works are required. Blades will over-sail the eastern side of the central island where one set of chevron signs should be removed. **N163**: Mitigation as per the SG155 with the additional requirement to removed one more set of chevrons from the roundabout. **SG170**: Mitigation as per the N163. Swept path assessment SK07 is included in Appendix B.
11	**Port of Ayr Exit Gate - Tower Only** 	Tower loads will exit the Port of Ayr and continue onto Waggon Road.
12	**Allison Street Junction - Tower Only** 	Loads will turn right onto Allison Street. It is proposed that tower loads will contraflow the junction. A swept path assessment has been undertaken for the tower. Loads will over-sail the southern footway on entry where one traffic signal and a section of guardrail should be removed. Loads will then over-sail the southern splitter island where one bollard and one traffic signal should be removed. Loads will over-sail the western verge on exit, however no works are required. Swept path assessment SK08 is included in Appendix B.
13	**Whitletts Road Junction - Tower Only** 	Loads will turn left onto Whitletts Road. They will over-run and over-sail the central reserve where a load bearing surface should be laid and one lighting column removed. A swept path assessment has been undertaken and indicates that loads will over-sail the footway on the inside of the left turn. Swept path assessment SK09 is included in Appendix B.

POI	Key Constraint	Details
14	**Whitletts Road Railway Bridge - Tower Only** 	There is a historic weight restriction crossing Whitletts Road Railway Bridge. Consultation with Network Rail and the Ayrshire Road Alliance should be completed to confirm whether the proposed loads will be affected by the restrictions.
15	**Whitletts Roundabout**  	Blade loads will continue south through the roundabout and tower loads will contraflow the roundabout heading south. A swept path assessment has been undertaken for all blade options. **SG155**: Blade loads will over-sail the eastern verge on the northern entry arm where one traffic signal head should be removed. Tower loads will over-run and over-sail the western entry arm central reserve where a load bearing surface should be laid. Two road signs and one lighting column should be removed. **N163**: Mitigation as per the SG155 with the additional requirement to oversail the central reserve on approach where one road sign should be removed. **SG170**: Mitigation as per the N163 plus the requirement to remove two traffic signals from the eastern edge of the roundabout. Swept path assessment SK10 is included in Appendix B.
16	**A77 Holmeston Roundabout** 	Loads will proceed across the junction, taking the second exit onto the A77 southbound. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the eastern verge on the entry arm where the blade tip will over-sail the pedestrian barrier. Two lighting columns should be removed. Loads will over-sail the central island, but no works are required. **N163**: Mitigation as per the SG155 with the additional requirement to overrun the central island and two sets of chevrons should be removed. A load bearing surface should be laid. **SG170**: Mitigation as per the N163 without the requirement for a load bearing surface. Swept path assessment SK10 is included in Appendix B.

POI	Key Constraint	Details
17	**A77 Bankfield Roundabout** 	Loads will take the first exit at the roundabout and will proceed southbound on the A713. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the entry arm splitter island where one road sign should be removed. Loads will then over-sail the eastern verge on the entry arm, however no works are required. Loads will over-sail the eastern verge of the central island where one set of chevron signs should be removed. They will then over-sail the exit arm splitter island where one road sign and one lighting column should be removed. Loads will over-sail the eastern verge of the exit arm where one road sign, vegetation and one lighting column should be removed. **N163**: Mitigation as per the SG155 albeit with larger areas required. **SG170**: Mitigation as per the SG155 albeit with larger areas required. Swept path assessment SK12 is included in Appendix B.
18	**A713 Ailsa Hospital Junction** 	In order to minimise mitigation works it is proposed that loads should contraflow through the junction. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the third central traffic island. The lit road sign should be removed from the final traffic island. Loads will over-sail the south western verge, however no works are required **N163**: Mitigation as per the SG155. **SG170**: Mitigation as per the SG155. Swept path assessment SK13 is included in Appendix B.
19	**A713 Boneston Bridge** 	**Loads will traverse over Boneston Bridge on approach the bend. This has historically had a weight restriction however works have been completed by Vattenfall as part of the South Kyle development.** It is our understanding that blade loads are suitable for the route. The towers may be subject to design alterations by the manufacturer prior to delivery. It is recommended that once the candidate turbine is chosen and the haulier selected, final loaded design details are provided to Ayrshire Roads Alliance for review and to allow them to confirm that feasibility of the load movements across the bridge. A review with utility providers is recommended to ensure that all overhead utilities have sufficient clearance for 5m plus and allowance for flashover / protection for all normal temperature ranges.

POI	Key Constraint	Details
20	**A713 Holybush Bends**  	Loads will continue east through the bends at Holybush. Loads will occupy the entire road through the section. Throughout the route, the tree canopy needs to be trimmed to provide a clear 5m head height. Trimming of the tree canopy can be subject to ecological constraints and it is suggested that early consultation with the Ayrshire Roads Alliance is undertaken to agree cutting times and permits. Mitigation is the same for all proposed loads.
21	**A713 Craigs Road Bend** 	Loads will proceed around the right hand bend and continue southbound on the A713. **SG155**: Throughout the route, the tree canopy needs to be trimmed to provide a clear 5m head height. Trimming of the tree canopy can be subject to ecological constraints and it is suggested that early consultation with the Ayrshire Roads Alliance is undertaken to agree cutting times and permits. Loads will over-sail and over-run the splitter island where a load bearing surface should be laid along with the removal of four bollards, two road signs and one chevron sign. Loads will over-run and over-sail the eastern verge through the right bend where a load bearing surface should be laid. Four chevron signs should be removed along with all traffic bollards. Loads will over-run and over-sail the verge on the inside of the right bend where a load bearing surface should be laid in over-run areas. Trees, fence and vegetation should be removed. **Third party land is required.** It is recommended that a topographical survey is completed and the swept path assessment repeated. **N163**: Mitigation as per the SG155 albeit with larger areas required. **SG170**: Mitigation as per the SG155 albeit with larger areas required. Swept path assessment SK14 is included in Appendix B.

POI	Key Constraint	Details
22	**A713 Right Bend North West of Holehouse Cottage** 	Loads will continue on the A713 at this location. A swept path assessment has been undertaken for all blade options. **SG155**: On approach to the right bend, loads will over-sail the northern and southern verges where two sets of chevron signs on the north should be removed and the bollards over-sailed and vegetation should be trimmed on the south. **N163**: Mitigation as per the SG155 with the additional requirement to remove a third bollard and a load bearing surface should be laid in the north eastern verge to allow overrun. The land should be reprofiled. **SG170**: Mitigation as per the N163 with larger areas required. Potential **third party land** required to construct the proposed mitigation. Swept path assessment SK15 is included in Appendix B.
23	**A713 Right Bend at Holehouse Cottage** 	Loads will continue on the A713 at this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges where vegetation should be trimmed. **N163**: Mitigation as per the SG155 with the additional requirement for two utility poles, three road signs and the bollards to be removed. **SG170**: Mitigation as per the N163 with the additional requirement to overrun the eastern verge where a load bearing surface should be laid and the land will need to be reprofiled. **Third party land may be required** to enable the mitigation works. Swept path assessment SK16 is included in Appendix B.
24	**A713 Holehouse Junction** 	Loads will continue on the A713 at this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges through the bend where the bollards will be over-sailed in the western verge. **N163**: Mitigation as per the SG155. **SG170**: Mitigation as per the SG155. Swept path assessment SK17 is included in Appendix B.

POI	Key Constraint	Details
25, 26	**A713 Holehouse Railway Bridge**  	Loads will continue on the A713 over the railway bridge at this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the verge on the inside of the initial left bend, however no works are required. Loads will over-run and over-sail the western verge on approach to the bend where a load bearing surface should be laid in over-run areas. Bollards, one road sign, fence and vegetation should be removed. **Third party land is required.** Land reprofiling will be required. Loads will over-sail both verges through the following left and right bends where loads will over-sail bollards and three sets of chevron sign should be removed. Vegetation should be removed. **N163**: Mitigation as per the SG155 albeit with larger areas required. **SG170**: Mitigation as per the SG155 albeit with larger areas required. Swept path assessment SK18 is included in Appendix B.
27	**A713 Bends near Smithston** 	Loads will continue on the A713 at this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges of the carriageway through this location and loads will over-run the north eastern verge where a load bearing surface should be laid. The drainage ditch should be culverted. Vegetation should be cleared. Traffic bollards and one chevron sign should be removed. **N163**: Mitigation as per the SG155 minus the requirement to overrun the verge. Two utility poles, two road signs and bollards should be removed. Two bollards and one utility pole should be removed from the south western verge. **SG170**: Mitigation as per the SG155 with the additional requirement to remove two more chevron signs, two road signs and three utility poles. Two bollards and one utility pole should be removed from the south western verge. Swept path assessment SK19 is included in Appendix B.
28	**A713 Old Smithston** 	Loads will continue on the A713 at this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the western verge, however no works are required. **N163**: Loads will oversail the eastern verge where two utility poles should be removed. **SG170**: Mitigation as per the N163 with the additional requirement to oversail the western verge. Swept path assessment SK20 is included in Appendix B.

POI	Key Constraint	Details
29	**A713 Carnochan** 	Loads will continue on the A713 at this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-run and over-sail the western verge where a load bearing surface should be laid. Detailed design is required to confirm whether the verge will require strengthening. Traffic bollards and three sets of chevron signs should be removed. Loads will over-sail the eastern verge where the utility pole, stone wall and vegetation should be removed. Road deterioration was noted during the site visit. Early discussions should be held with the Ayrshire Roads Alliance to ensure that this is repaired prior to deliveries. **N163**: Mitigation as per the SG155 with the additional requirement to remove another chevron sign from the western verge and **third party land** will be required. **SG170**: Mitigation as per the N163 albeit with larger over-run areas required. Swept path assessment SK21 is included in Appendix B.
30	**A713 Polnessan** 	Loads will continue on the A713 at this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the north eastern verge where loads will over-sail the bollards. Loads will then over-sail the western verge where vegetation should be cleared. **N163**: Mitigation as per the SG155. **SG170**: Mitigation as per the SG155 with the additional requirement to overrun the eastern verge where a load bearing surface should be laid and a speed camera, utility pole, three road signs and bollards should be removed. Swept path assessment SK22 is included in Appendix B.
31	**A713 Polnessan** 	Loads will continue on the A713 at this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges of the carriageway where the blade tip will over-sail the traffic bollards. **N163**: Mitigation as per the SG155. **SG170**: Mitigation as per the SG155 with the additional requirement to oversail into **third party land** on the inside of the bend where traffic bollards should be removed. Swept path assessment SK23 is included in Appendix B.

POI	Key Constraint	Details
32	**A713 Bends South of Polnessan** 	Loads will continue on the A713 at this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges of the carriageway, however no works are required. **N163**: Mitigation as per the SG155. **SG170**: Mitigation as per the SG155 with the additional requirement to remove one road sign from the western verge. Swept path assessment SK24 is included in Appendix B.
33	**A713 Bends South of Polnessan** 	Loads will continue on the A713 at this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges of the carriageway, however no works are required. **N163**: Mitigation as per the SG155. **SG170**: Mitigation as per the SG155 with the additional requirement to overrun the western footway where a load bearing surface should be laid and one lighting column should be removed. Swept path assessment SK25 is included in Appendix B.
34	**A713 Patna** 	Loads will continue through the village of Patna. There are a number of traffic cushions within Patna and care should be taken when transiting the section. Parking should be suspended during load movements through this bend and the following bend. A Temporary Traffic Regulation Order (TTRO) may be required and engagement with the Ayrshire Roads Alliance will be required. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges of the carriageway, however no works are required. **N163**: Mitigation as per the SG155 with the additional requirement to overrun the western verge where a load bearing surface should be laid and one lighting column should be removed along with vegetation and **third party land** is required. **SG170**: Mitigation as per the N163 however the requirement for overrun is removed due to differences in blade trailers used. Swept path assessment SK26 is included in Appendix B.

POI	Key Constraint	Details
35	**A713 Patna** 	Loads will continue on the A713 at this location. Loads will occupy the entire carriageway and will over-sail the parking bays where parking should be suspended. A Temporary Traffic Regulation Order (TTRO) may be required and engagement with the Ayrshire Roads Alliance will be required.
36	**A713 Waterside Bends** 	Loads will continue on the A713 at this location. Loads will over-sail the northern verge through left bend where vegetation and trees should be cleared. Loads will over-sail the footway on the inside of the right bend.
37	**A713 South of Waterside** 	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.
38	**A713 Cutler** 	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.
39	**A713 Left Bend West of Burnton** 	Loads will continue on the A713 at this location. Loads will over-sail the northern verge through this bend where vegetation and trees should be cleared.

POI	Key Constraint	Details
40	**A713 Buchan's Bridge** 	Loads will continue southbound on the A713. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges of the carriageway. Loads will over-sail the north eastern verge where a set of chevron signs should be removed. A land search should be completed to confirm the extent of road adoption at this location. **N163**: Mitigation as per the SG155 with the additional requirement for the suspension to be raised to allow oversail of the bridge parapet to the south of the road. Potential **third party land** required. **SG170**: Mitigation as per the N163 with **third party land** required to the south west of the road. Swept path assessment SK27 is included in Appendix B.
41	**A713 Dalmellington** 	Traffic cushions have been placed on the road surface. Loads to transit the section with care.
42	**A713 Left Bend, Dalmellington** 	Loads will continue on the A713 at this location. Traffic cushions have been placed on the road surface. Loads to transit the section with care. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the northern verge where one bollard should be removed. **N163**: Mitigation as per the SG155 with the additional requirement to remove one lighting column from the northern footway. **SG170**: Mitigation as per the N163. Swept path assessment SK28 is included in Appendix B.

POI	Key Constraint	Details
43	**A713 Dalmellington** 	Loads will continue on the A713 at this location. A swept path assessment has been undertaken for all blade options. **SG155**: Temporary parking restrictions are required to allow loads to utilise the entire carriageway through the section. A Temporary Traffic Regulation Order (TTRO) may be required and engagement with the Ayrshire Roads Alliance will be required. **N163**: Mitigation as per the SG155. **SG170**: Mitigation as per the SG155 with the additional requirement to oversail both footways through the bend. Swept path assessment SK29 is included in Appendix B.
44	**A713 North of Kirn Bridge** 	Loads will proceed southbound on the A713. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the north eastern verge where loads will over-sail the bollards and one road sign should be removed. Loads will over-sail the south western verge where the vegetation should be trimmed. A land search should be completed to confirm the extent of adopted boundary at this location. **N163**: Mitigation as per the SG155 with the additional requirement to remove another road sign from the north eastern verge and potential **third party land** is required. The land to the south west of the road should be reprofiled and **third party land** will be required. **SG170**: Mitigation as per the N163 albeit with larger areas required. Swept path assessment SK30 is included in Appendix B.
45	**A713 Kirn Bridge** 	Loads will proceed southbound on the A713. Works have been completed to allow South Kyle deliveries. The parapets have been adjusted to suit these deliveries. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the north eastern verge where loads will over-sail the stone parapet. Clearance over parapet should be confirmed during test run. Blade tip will over-sail the fence. A set of chevron signs should be removed. Land review recommended. **Third party land required.** Loads will over-sail the south western verge where a test run should confirm the over-sail of the parapet wall. **Third party land required.** It is recommended that the swept path assessments are repeated on a topographical base plan. **N163**: Mitigation as per the SG155 albeit with larger areas required. **SG170**: Mitigation as per the SG155 albeit with larger areas required. Swept path assessment SK31 is included in Appendix B.

POI	Key Constraint	Details
46	**A713 West of Snabb Cairn** 	Loads will continue southbound on the A713. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the north eastern verge where the bollards will be over-sailed. One set of chevron signs should be removed. Loads will over-sail the western verge where a section of fence should be removed. Vegetation and trees should be cleared. **Third party land is required.** **N163**: Mitigation as per the SG155 albeit with larger areas required. **SG170**: Mitigation as per the SG155 albeit with larger areas required. Swept path assessment SK32 is included in Appendix B.
47	**A713 North of Mossdale** 	Loads will continue southbound through the bends. 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. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges of the carriageway where the loads will over-sail the bollards on the west and one set of chevron signs should be removed. **Third party land** is required to the east of the road. **N163**: Mitigation as per the SG155 with the additional requirement to remove one more road sign from the western verge where **third party land** is required. **SG170**: Mitigation as per the N163. Swept path assessment SK33 is included in Appendix B.
48	**A713 Moosdale Bridge** 	Loads will pass over the humped back bridge. The vertical clearance to these for low loads should be reviewed at the test run stage. It is strongly recommended that a full overhead utility search is carried out along the route prior to deliveries to ensure that height clearances are suitable for normal temperature ranges.

POI	Key Constraint	Details
49	**A713 Mossdale** 	Loads will continue southbound through the bends. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges of the carriageway where loads will over-sail the bollards on the eastern verge. **N163**: Mitigation as per the SG155 with the additional requirement to oversail the stone wall in the eastern verge and trees should be removed. **Third party land** is required on both sides of the road. One road sign and trees should be removed from the western verge. **SG170**: Mitigation as per the N163. Swept path assessment SK34 is included in Appendix B.
50	**A713 South of Mossdale** 	Loads will continue southbound through the bends. *The OS mapping does not identify the road edge. An indicative road edge has been provided for illustration only and all mitigation should be confirmed through a test run.* Oncoming traffic should be held in advance of this section to improve manoeuvrability. A swept path assessment has been undertaken for all blade options. **SG155**: No physical works are required however loads will over-sail both verges of the carriageway. **N163**: Mitigation as per the SG155 with the additional requirement to remove two road signs from the north eastern verge. **SG170**: Mitigation as per the N163 with the additional requirement to undertake land searches on both sides of the road to confirm the extent of adopted boundary available. Swept path assessment SK35 is included in Appendix B.
51	**A713 at Bryan's Heights** 	Loads would continue ahead through the bend. The clearances to overhead power lines throughout the route should be reviewed with the utility provider prior to loads moving to ensure that there is sufficient head height and flashover protection for all temperature ranges. **SG155**: Loads will over-run and over-sail the north eastern verge on the outside of the right bend where three chevron signs, bollards and two telegraph poles should be relocated. **Third party land is required**, and a load bearing surface should be laid in over-run areas. A topographical survey is required. **N163**: Mitigation as per the SG155 with the additional requirement to oversail into **third party land** on the inside of the right bend. **SG170**: Mitigation as per the N163 with an additional overrun area to the north east of the road. Swept path assessment SK36 is included in Appendix B.

POI	Key Constraint	Details
52	**A713 at Bryan's Heights** 	Loads would continue ahead through the bend. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges of the carriageway where one sign should be removed from the western verge and one utility pole from the eastern verge should be removed. **N163**: Mitigation as per the SG155 with the additional requirement to remove one extra utility pole within the eastern verge and a land search should be completed for the oversail area to the west of the road. **SG170**: Mitigation as per the N163 minus the requirement to oversail the western verge. Swept path assessment SK37 is included in Appendix B.
53	**A713 Craig Bridge** 	Loads will continue southbound through the bends. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both sides of the carriageway where bollards should be over-sailed in the north eastern verge north of the bends. A land search is recommended to confirm adopted extents in the south west verge. **N163**: Mitigation as per the SG155. **SG170**: Mitigation as per the SG155 with the additional requirement to removed one utility pole from the western verge and **third party land** is required. Swept path assessment SK38 is included in Appendix B.
54	**A713 Glenmuck** 	Loads will continue on the A713 at this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the north eastern verge where one utility pole should be removed. A land ownership review is suggested. **N163**: Mitigation as per the SG155 with a further area of oversail required into the northern verge. **SG170**: Mitigation as per the N163 with a further area of oversail required into the northern and southern verges. Swept path assessment SK39 is included in Appendix B.

POI	Key Constraint	Details
55	**A713 Glenmuck** 	Loads will continue on the A713 at this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the north eastern verge before the first bend, however no physical works are required. Loads will over-sail both verges through the left bend where loads will over-sail the bollards. The proximity to the utility stay wire should be confirmed on a topographical survey. Loads will then over-sail both verges through the right bend where the bollards should be over-sailed and vegetation cleared. **N163**: Mitigation as per the SG155 with the additional requirement to remove the stay wire from the northern verge on entry. **SG170**: Mitigation as per the N163 with the additional requirement to overrun the outside of the right bend where a load bearing surface should be laid and the bollards, fence and trees should be removed. **Third party land** will be required. Vegetation should be cleared from the south western verge along with one road sign and a land search should be completed. Swept path assessment SK40 is included in Appendix B.
56	**A713 Glenmuck** 	Loads will continue on the A713 at this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges where the vegetation should be cleared on the western verge. **N163**: Mitigation as per the SG155. **SG170**: Mitigation as per the SG155. Swept path assessment SK41 is included in Appendix B.
57	**A713 Bend north of Carsphairn** 	Loads will continue on the A713 at this location. Loads will occupy the entire carriageway however no mitigation is required.
58	**A713 Carsphairn Splitter Islands** 	Loads will continue on the A713 at this location. All street furniture should be removed from all traffic islands through Carsphairn.

POI	Key Constraint	Details
59	**A713 Carsphairn** 	Loads will continue on the A713 at this location. Due to the constrained nature of the section, it is recommended that a topographical survey is completed and the assessment repeated to confirm the mitigation. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail land on the outside of the left bend where a land search is recommended to confirm that it is part of the adopted network. One lighting column and one road sign should be removed. Loads will over-sail the footway on the inside of the bend where vegetation should be trimmed. A load bearing surface should be laid in the south western footway and parking should be suspended. Loads will continue to over-sail the northern footpath where one road sign should be removed. **N163**: Mitigation as per the SG155 with the additional requirement to remove a lighting column from the western footway when entering the left bend. **SG170**: Mitigation as per the N163. Swept path assessment SK42 is included in Appendix B.
60	**A713 Carsphairn Splitter Islands** 	Loads will continue on the A713 at this location. Two islands to be lowered. Three bollards and one lighting column should be removed to allow loads to pass.
TP	**A713 Blade Transfer Point** 	As part of their Windy Rig Wind Farm project, Statkraft have created a blade transfer point immediately east of the village. The transfer area is used to allow the blades to be transferred onto the blade lifting trailer. No as-built drawings have been provided to allow assessment of its use. A swept path assessment should be completed to establish what alterations are required to facilitate the transfer of the larger blades. All assessments from this point to the proposed site entrance have been completed with the blade raised on the lifting trailer to 60 degrees. **All overhead utilities and obstructions should be removed at all locations where the blade is raised.**

POI	Key Constraint	Details
61, 62	**A713 / B729 Junctions**  	Loads will turn left at the A713 / B729 junction and then procced to take another left at the B729 junction. *No as-built drawings have been provided to show the works that have been carried out for deliveries to Windy Rig Wind Farm. As such some of the proposed mitigation may already be in place for the remainder of the route to site.* **SG155**: Loads will over-run and over-sail the inside of the A713 / B729 junction where trees, vegetation and bollards should be removed and a load bearing surface laid. **Third party land is required.** Loads will over-sail both verges through the following right bend with a load bearing surface required in the northern verge. All overhead utilities and obstructions should be removed. Loads will over-sail the western verge where loads will over-sail the wall. **Third party land is required.** Loads will over-sail the inside of the B729 junction where one utility pole, one road sign, vegetation and a stone wall should be removed. The land should be reprofiled to allow over-sail. **Third party land is required.** Loads will utilise the existing over-run area to the east of the exit road which should be expanded as required. The road surface was noted to be in a poor state of repair at this location and many sections on the remainder of the route to site. It is recommended that discussions are held with the roads authority to ensure repairs are completed prior to deliveries. The blade should be lowered following the bend prior to passing under major overhead utilities. **N163**: The mitigation works are similar to those required for the SG155, albeit with larger oversail areas. **SG170**: The mitigation works are similar to those required for the SG155, albeit with larger oversail areas. An additional over-run area is necessary on the eastern verge. Swept path assessment SK43 is included in Appendix B.

POI	Key Constraint	Details
63 & 64	**B729 Knockgray Bend**  	Loads will proceed southbound on the B729. All overhead utilities and obstructions should be removed. Throughout the route, the tree canopy needs to be trimmed to provide a clear 5m head height. Trimming of the tree canopy can be subject to ecological constraints and it is suggested that early consultation with Dumfries and Galloway Council is undertaken to agree cutting times and permits. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-run and over-sail the northern verge through the right bend where the existing over-run area should be reused and extended as required. Vegetation should be trimmed. **Third party land required.** Loads will over-sail the southern verge through the right bend where the safety barrier and stone wall should be over-sailed. **Third party land required.** Loads should utilise the existing over-run areas and extend if required on both sides of the road through the following left bend. **N163**: Mitigation as per the SG155 without the requirement to overrun the northern verge. An overrun area will be required in the north eastern verge where a load bearing surface should be laid and the road signs should be removed. **SG170**: Mitigation as per the SG155 with the additional requirement to oversail the inside of the left bend where signs should be removed. Swept path assessment SK44 is included in Appendix B.
65	**B729 Andrew's Knowe** 	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. The raised blade would need to be lowered at this location to avoid an overhead power line.
66	**B729 Twin Knowes** 	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
67	**B729 Glede Bog** 	Loads will continue south east on the B729. Loads will occupy the entire carriageway through the section. Escorts to provide advanced warning to oncoming vehicles.
68	**B729 Willie's Rig** 	Loads will continue south east on the B729. 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.
69 & 70	**B729 Burnfoot Double Bend**  	Loads will continue southbound on the B729 around the double bends. All overhead utilities and obstructions should be removed. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the northern verge through the initial right bend. The blade will over-sail two utility poles, the wall, bridge parapet and gate. **Third party land required.** Loads will over-run and over-sail the inside of the first bend where a load bearing surface should be laid. Trees and vegetation should be removed. **Third party land required.** Loads will over-run and over-sail the south western verge through the second bend where the existing over-run area should be reused and extended as required. Vegetation should be removed and loads will over-sail the crash barrier. **Third party land required.** Loads will over-run and over-sail the inside of the second bend where the existing over-run area should be used. Trees and vegetation should be removed. Detailed design is required to confirm if the retaining wall can be lowered and the bank reprofiled to allow over-sail. **Third party land required.** **N163**: Mitigation as per the SG155. **SG170**: Mitigation as per the SG155 with the additional requirement to overrun the outside of the right bend where a load bearing surface should be laid in two areas. Swept path assessment SK45 is included in Appendix B.

POI	Key Constraint	Details
71	**B729 West of Burnfoot Bridge** 	Loads will continue southbound on the B729 around the double bends. All overhead utilities and obstructions should be removed. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges of the carriageway and over-run the north eastern verge through both bends where the existing over-run area should be reused and extended as required. The bank should be reprofiled and **third-party land is required.** Vegetation and one utility pole should be removed. **N163**: Mitigation as per the SG155 with the additional requirement to remove another utility pole from the north eastern verge. **SG170**: Mitigation as per the N163. Swept path assessment SK46 is included in Appendix B.
72	**B729 West of Furmiston Bridge** 	Loads will continue southbound on the B729 around the double bends. A swept path assessment has been undertaken for all blade options. All overhead utilities and obstructions should be removed. **SG155**: Loads will over-sail both verges of the carriageway where vegetation should be cleared on the north. **Third party land** required. **N163**: Mitigation as per the SG155, albeit with larger areas. **SG170**: Mitigation as per the SG155, albeit with larger areas Swept path assessment SK47 is included in Appendix B.
73	**B729 Furmiston Bridge** 	Loads will continue to proceed southbound on the B729. Verge vegetation should be trimmed back to enable loads to over-sail the verges.
74	**B729 East of Furmiston Bridge** 	Loads will continue southbound on the B729 around the bends at this location. Verge vegetation should be trimmed back to enable loads to over-sail the verges.

POI	Key Constraint	Details
75 & 76	**B729 Marsclloch Bends**  	Loads will continue southbound on the B729 around the sinuous section. A swept path assessment has been undertaken for all blade options. All overhead utilities and obstructions should be removed. **SG155**: Loads will over-sail both verges throughout the sinuous section. Vegetation and trees should be cleared along with one road sign. Existing over-run areas should be utilised where available and load bearing surfaces should be laid in identified areas. **N163**: Mitigation as per the SG155 with the additional requirement for **third party land** to the south of the road where vegetation and trees should be removed. **SG170**: Mitigation as per the SG155 with the additional requirement for further overrun areas and oversail into **third party land** to the south of the road. Trees and vegetation should be cleared. Swept path assessment SK48 is included in Appendix B.
77	**B729 Marscalloch** 	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.
78	**B729 South of Marscalloch** 	Loads will continue south east on the B729. *The OS mapping does not identify the road edge. An indicative road edge has been provided for illustration only and all mitigation should be confirmed through a test run or revised tracking on a topographical base.* **SG155**: Loads will over-run and over-sail the northern verge before the bend where the existing over-run area should be reused and extended as required and vegetation should be trimmed. Overhead utilities should be cleared. Loads will over-sail the inside of the bend where vegetation should be trimmed. Loads will over-run and over-sail the north eastern verge after the bend where the existing over-run area should be reused and extended as required and vegetation should be trimmed. One utility pole should be removed. Overhead utilities should be cleared. **N163**: Mitigation as per the SG155 with the requirement to remove an additional utility pole from the north eastern verge. **SG170**: Mitigation as per the N163, albeit with larger areas. Swept path assessment SK49 is included in Appendix B.

POI	Key Constraint	Details
79 & 80	**B729 South of Marscalloch**  	Loads will continue south east on the B729. All overhead utilities and obstructions should be removed. Throughout the route, the tree canopy needs to be trimmed to provide a clear 5m head height. Trimming of the tree canopy can be subject to ecological constraints. *The OS mapping does not identify the road edge. An indicative road edge has been provided for illustration only and all mitigation should be confirmed through a test run or revised tracking on a topographical base.* **SG155**: Loads will over-sail both verges throughout the section where vegetation and trees should be cleared. **N163**: Mitigation as per the SG155. **SG170**: Mitigation as per the SG155 with larger areas required. Swept path assessment SK50 is included in Appendix B.
81	**B729 Knowehead** 	Loads will continue south east on the B729. *The OS mapping does not identify the road edge. An indicative road edge has been provided for illustration only and all mitigation should be confirmed through a test run or revised tracking on a topographical base.* **SG155**: All overhead utilities and obstructions should be removed. Loads will over-sail both verges of the carriageway, however no works are required. **N163**: Mitigation as per the SG155, albeit with larger areas. **SG170**: Mitigation as per the SG155, albeit with larger areas. Swept path assessment SK51 is included in Appendix B.
82	**B729 East of Knowehead** 	Loads will continue south east on the B729. The carriageway should be widened to 4.5m in line with manufacturer standards.

POI	Key Constraint	Details
83	**B729 / B700 Junction** 	Loads will continue along the B729, turning north at the junction with B7000. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges prior to and after the bend, however no works are required. Loads will over-run and over-sail the verge on the outside of the bend both sides of the B729 / B700 junction where the existing over-run area should be reused and extended as required, and vegetation trimmed. One road sign should be removed. Loads will over-sail the inside of the bend where vegetation should be trimmed, and overhead utilities should be removed. Two road signs should be removed. **N163**: Mitigation as per the SG155, albeit with larger areas. **SG170**: Mitigation as per the SG155 with the additional requirement for larger overrun areas. **Third party land** is potentially required to construct the mitigation. Swept path assessment SK52 is included in Appendix B.
84 & 85	**B729 Marsclloch Bends**  	Loads will continue on the B729 though this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail the north western verge through the first and second bend where vegetation should be trimmed, and a land search is recommended to confirm the extent of the adopted boundary. Loads will over-run and over-sail the southern verge through the second and third bends where a load bearing surface should be laid and a land search is recommended to confirm the extent of the adopted boundary. Overhead utilities should be cleared over the third bend. Loads will over-sail the north western verge through the third bend where vegetation should be trimmed and one road sign should be removed. Loads will over-sail both verges through the fourth and fifth bends and over-run the south eastern verge where a load bearing surface should be laid. One road sign should be removed, and the blade will over-sail the fence into **third party land** one the south eastern verge. Vegetation should be cleared on the north western verge. It was evident during the site visit that some of the widening works had started to fail. Repairs should be carried out prior to the beginning of deliveries. **N163**: Mitigation as per the SG155 with the additional requirement to overrun the northern verge where a load bearing surface should be laid. **SG170**: Mitigation as per the SG155 with larger overrun areas required within the north western verge. Swept path assessment SK53 is included in Appendix B.

POI	Key Constraint	Details
86, 87, 88, 89	**B729 Marsclloch Bends**    	Loads will continue on the B729 though this location. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges of the carriageway, however no mitigation is required. **N163**: Mitigation as per the SG155 with the additional requirement to removed one utility pole from the north western verge at the end of the section. **SG170**: Mitigation as per the N163 with an additional requirement to remove one utility pole from the north western verge at the beginning of the section. Swept path assessment SK54 is included in Appendix B.

POI	Key Constraint	Details
90	**B729 / Water o Ken Junction** 	Loads would turn left onto the Water o Ken Road. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-run and over-sail the south eastern verge of the B729 where a load bearing surface should be laid. Blades will over-sail the fence into **third party land.** Loads will over-run and over-sail the western verge where the existing over-run area should be reused and extended as required. The ditch should be culverted, and the stone wall removed. Three road signs and all overhead utilities should be removed. Loads will over-sail the eastern verge of the northern track where the existing over-run area should be reused and extended as required. One road sign should be removed. The Water o Ken Road has been upgraded as part of the Windy Rig works however no as-built drawings are available to complete accurate swept path assessments along. An indicative 4.5m wide road has been provided for illustration only and all mitigation should be confirmed during the test run. Third party land may be required when upgrading the road from this location to the site access junction. **N163**: Mitigation as per the SG155 with larger areas required. **SG170**: Mitigation as per the SG155 with larger areas required. Swept path assessment SK55 is included in Appendix B.
91	**Water of Ken Road South of Craigengillan** 	Loads will continue north on the Water of Ken Road. The road has been widened however there is evidence that this is failing. Repairs should be carried out. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges and an area of over-run will be required in the western verge. All obstacles should be removed. **N163**: Mitigation as per the SG155 without the requirement for a load bearing surface. A land search is required to the west of the road. **SG170**: Mitigation as per the N163 albeit with larger areas required. Swept path assessment SK56 is included in Appendix B.

POI	Key Constraint	Details
92	**Water of Ken Road Craigengillan Burn** 	Loads will continue north on the Water of Ken Road. A swept path assessment has been undertaken for all blade options. **SG155**: The road has been widened. Loads will over-sail both verges. All obstacles should be removed. **N163**: Mitigation as per the SG155 albeit with larger areas required. **SG170**: Mitigation as per the SG155 albeit with larger areas required. Swept path assessment SK57 is included in Appendix B.
93	**Water of Ken Road Polifferie Burn** 	Loads will continue north on the Water of Ken Road. The road has been widened however there is evidence that this is failing. Repairs should be carried out. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both verges and areas of over-run will be required in both verges. All obstacles should be removed. The vertical profile of the bridge is pronounced and should be reviewed during the test run stage to ascertain if tar wedges will be required to prevent grounding. Confirmation should be sought that all structures along the route are suitable for the proposed loads. The ground clearance for load over-sail of the bridge parapets should be confirmed during the test run. **N163**: Mitigation as per the SG155 albeit with larger areas required. **SG170**: Mitigation as per the SG155 albeit with larger areas required. Swept path assessment SK58 is included in Appendix B.

POI	Key Constraint	Details
94	**Water of Ken Road Strahanna Bridge**  	Loads will continue through the series of right bends and then cross the Strahanna bridge. Detailed design on a topographical base plan will be required to confirm the extent of works required. The road from the site entrance of Windy Rig Wind Farm will need to be widened to a minimum of 4.5m. **Third party land** will be required to provided and an over-run area to the north of the road on approach to the bridge. This is required to allow loads to approach the bridge straight on. A swept path assessment has been undertaken for all blade options. **SG155**: Loads will over-sail both parapets which should be lowered to allow over-sail. The vertical profile of the bridge is pronounced and should be reviewed during the test run stage to ascertain if tar wedges will be required to prevent grounding. Confirmation should be sought that all structures along the route are suitable for the proposed loads. **Third party land** will be required on both sides of the road to facilitate over-sail across the bridge. **N163**: Mitigation as per the SG155 albeit with larger areas required. **SG170**: Mitigation as per the SG155 albeit with larger areas required. Swept path assessment SK59 is included in Appendix B.
95	**Proposed Site Entrance**  	Loads will turn right into the proposed site entrance. The junction should be upgraded to meet manufacturer and Dumfries & Galloway Council standards and should feature visibility splays of at least 4.5m x 160m in both directions.

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. PF have not been provided with any as-built drawings to take account of road modifications that have been carried out as part of the Windy Rig works. It is assumed that all works will be retained and will be available for use by the proposed loads.

The quality of the OS in sections of the route is poor and it is recommended that a topographical survey of the B729 and Water of Ken Road is undertaken once the candidate turbine is selected and prior to land negotiations finalising options.

3.5 Weight Review

A weight review has been undertaken via the ESDAL (Electronic Service Delivery for Abnormal Loads) contacts database using the Highways Agency website www.esdal.com.

All of the relevant ESDAL contacts are noted in Table 3-2, and all have been contacted to ascertain if there are any relevant constraints that should be noted. The feedback from the consultees is provided in Appendix C where responses have been obtained.

Table 3-2: ESDAL Contacts

Organisation	Email Address
Police Scotland	osdwindfarmabnormalloads@scotland.pnn.police.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
Ayrshire Roads Alliance	abloads@ayrshireroadsalliance.org
Dumfries & Galloway Council	esdal@dumgal.gov.uk
Renfrewshire Council*	ei@renfrewshire.gov.uk
ScotlandTranServ	abnormalloadrouting@scotlandtranserv.co.uk
Glasgow City Council	abnormalloads@glasgow.gov.uk
M8 DBFO	m8dbfo.abloads@amey.co.uk
Connect M77/GSO PLC	M77DBFOAbnormalLoads@balfourbeatty.com

*Renfrewshire Council have previously advised that they will not enter into discussions with consultants and will only engage with hauliers immediately prior to loads moving. As such, they have not been consulted.

3.6 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 Highland Council has noted as a general rule that the area of adoption is between established fence / hedge lines or a maximum 3m from the road edge. This can vary between areas and location.

3.7 Summary Issues

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

- 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 Statkraft to prepare a Route Survey Report to examine the issues associated with the transport of AIL turbine components to Appin Wind Farm.

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

The quality of the OS in sections of the route is poor and it is recommended that a topographical survey of the B729 and Water of Ken Road is undertaken once the candidate turbine is selected and prior to land negotiations finalising options.

The report is presented to Statkraft for consideration. 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;
- 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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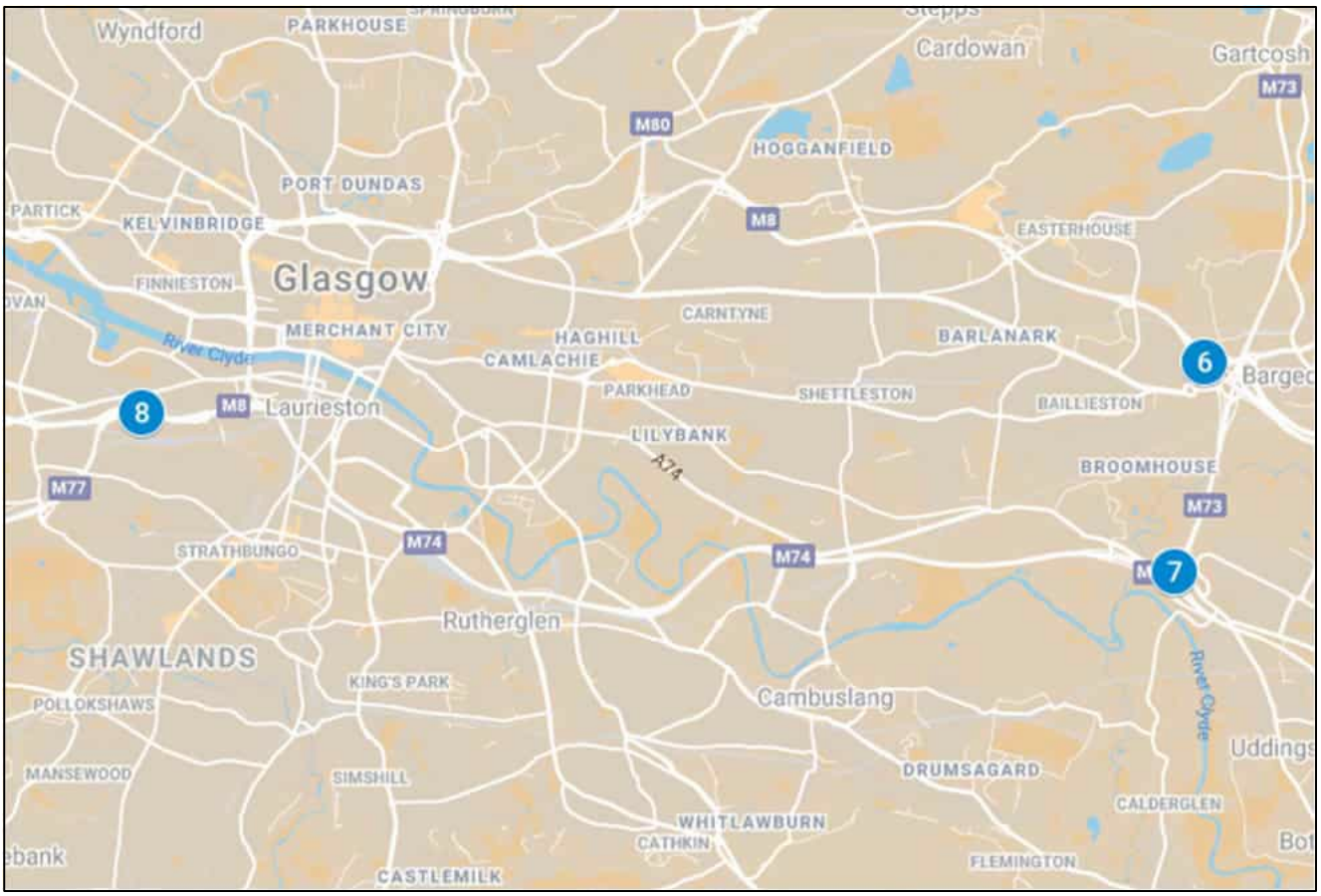


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Castlehill Rd
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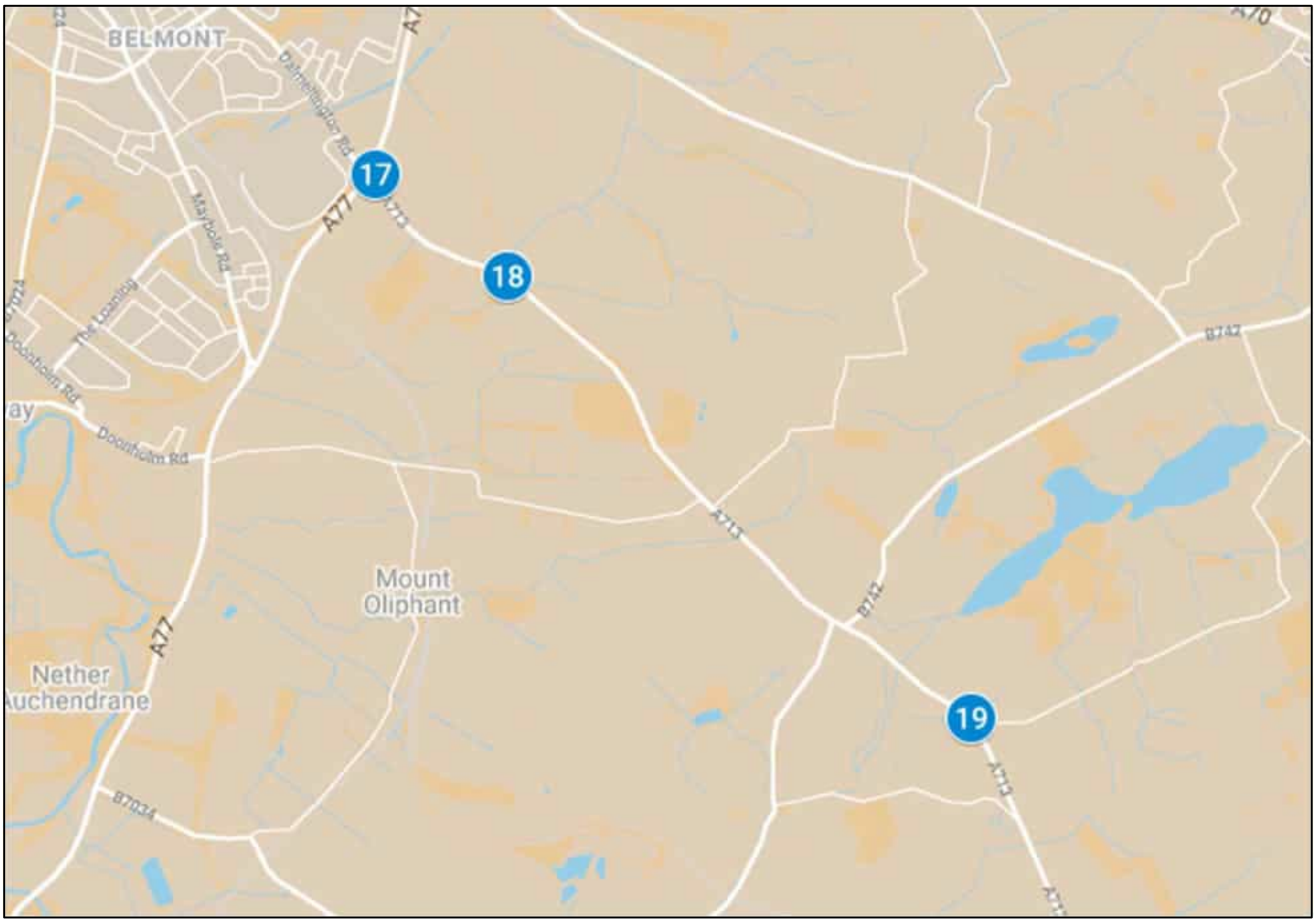
B7024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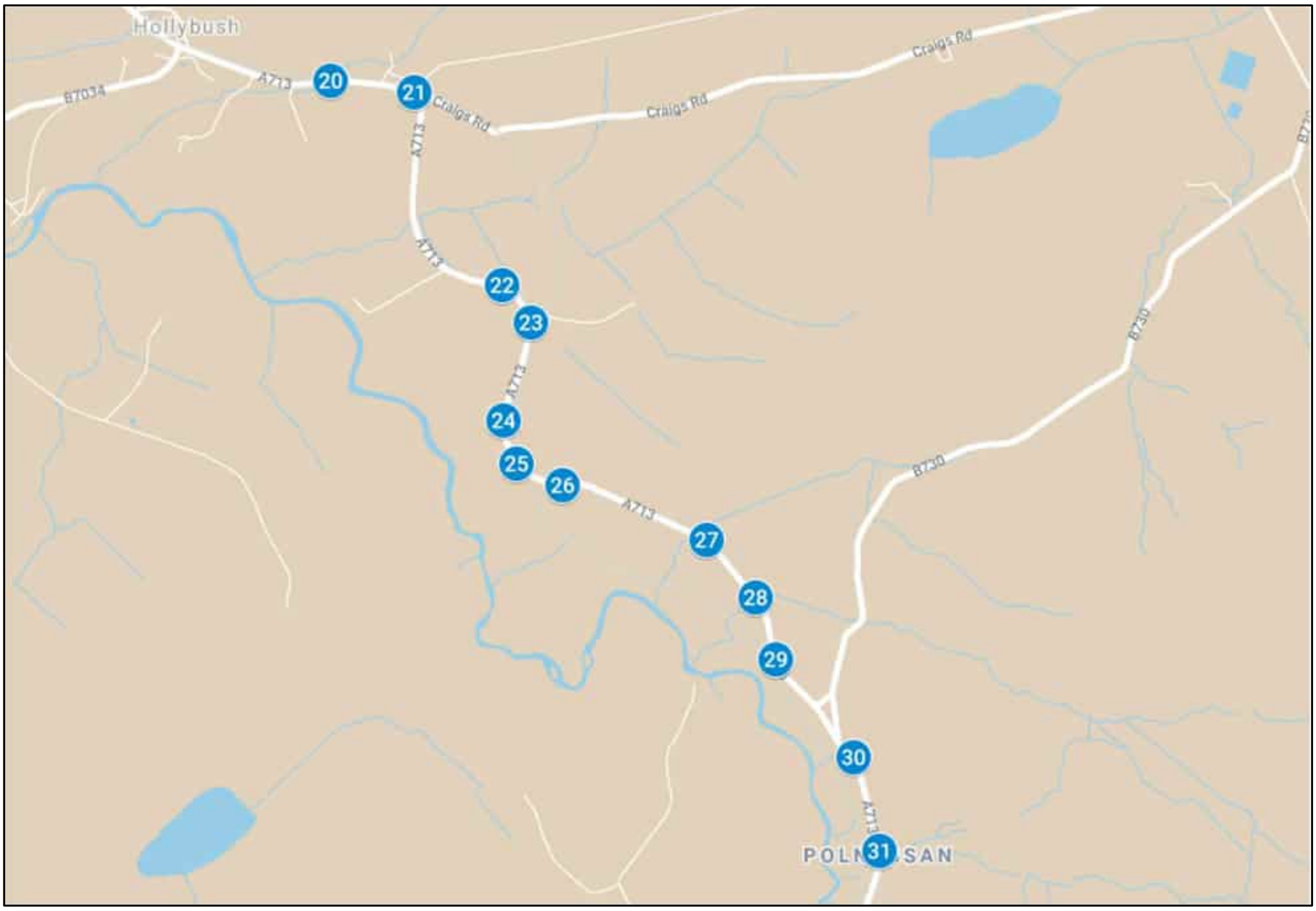
Maybole Rd
The Loaning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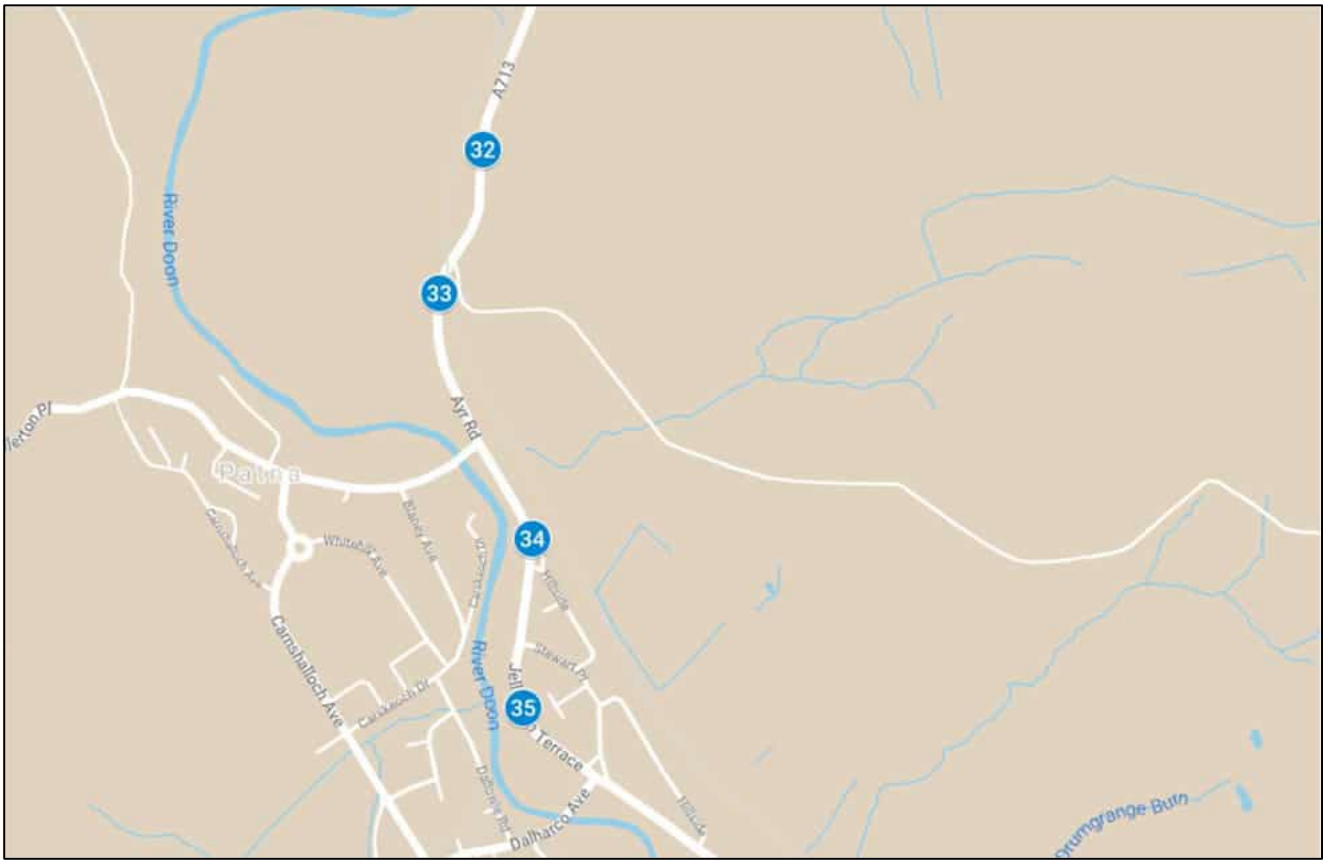
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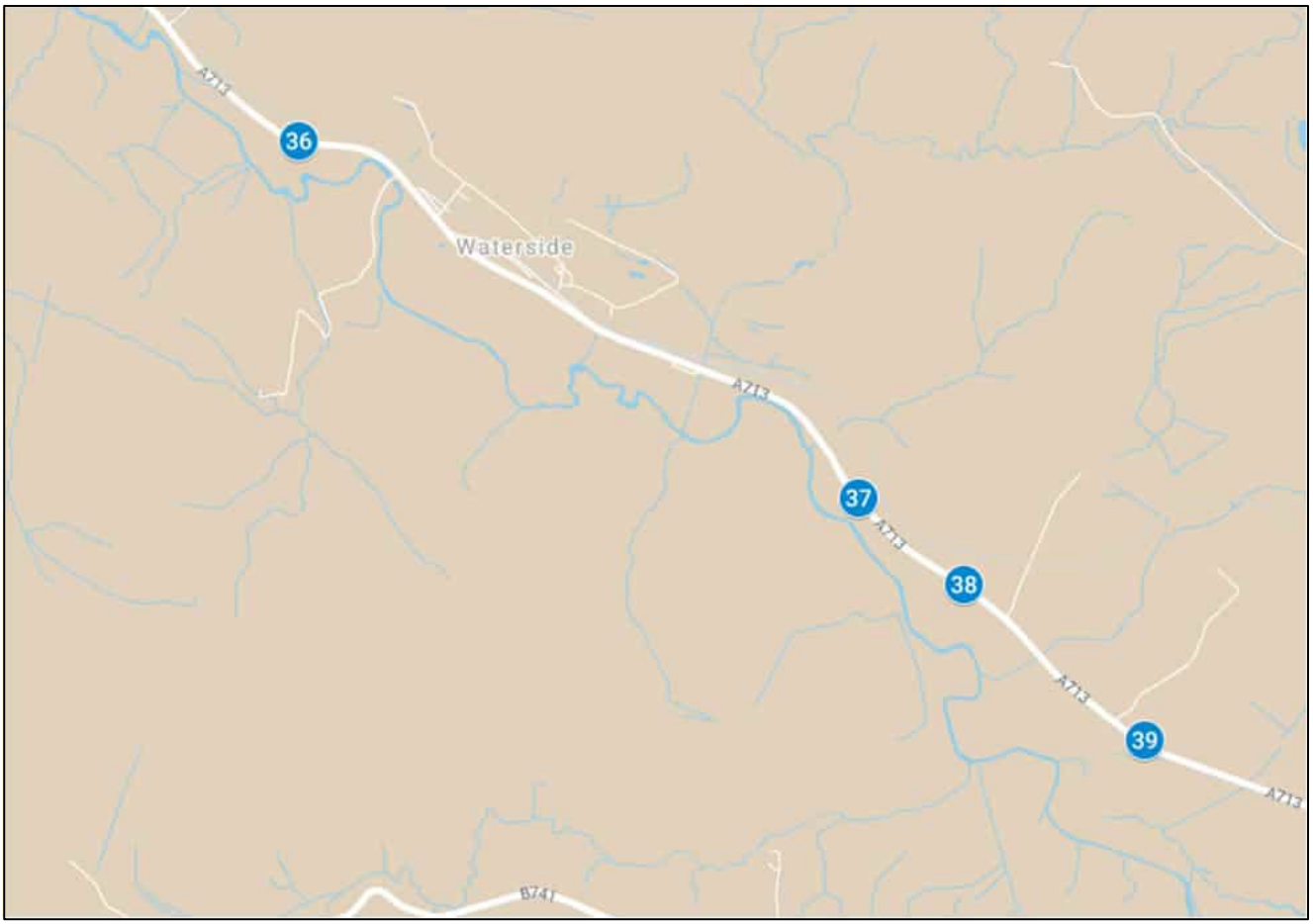
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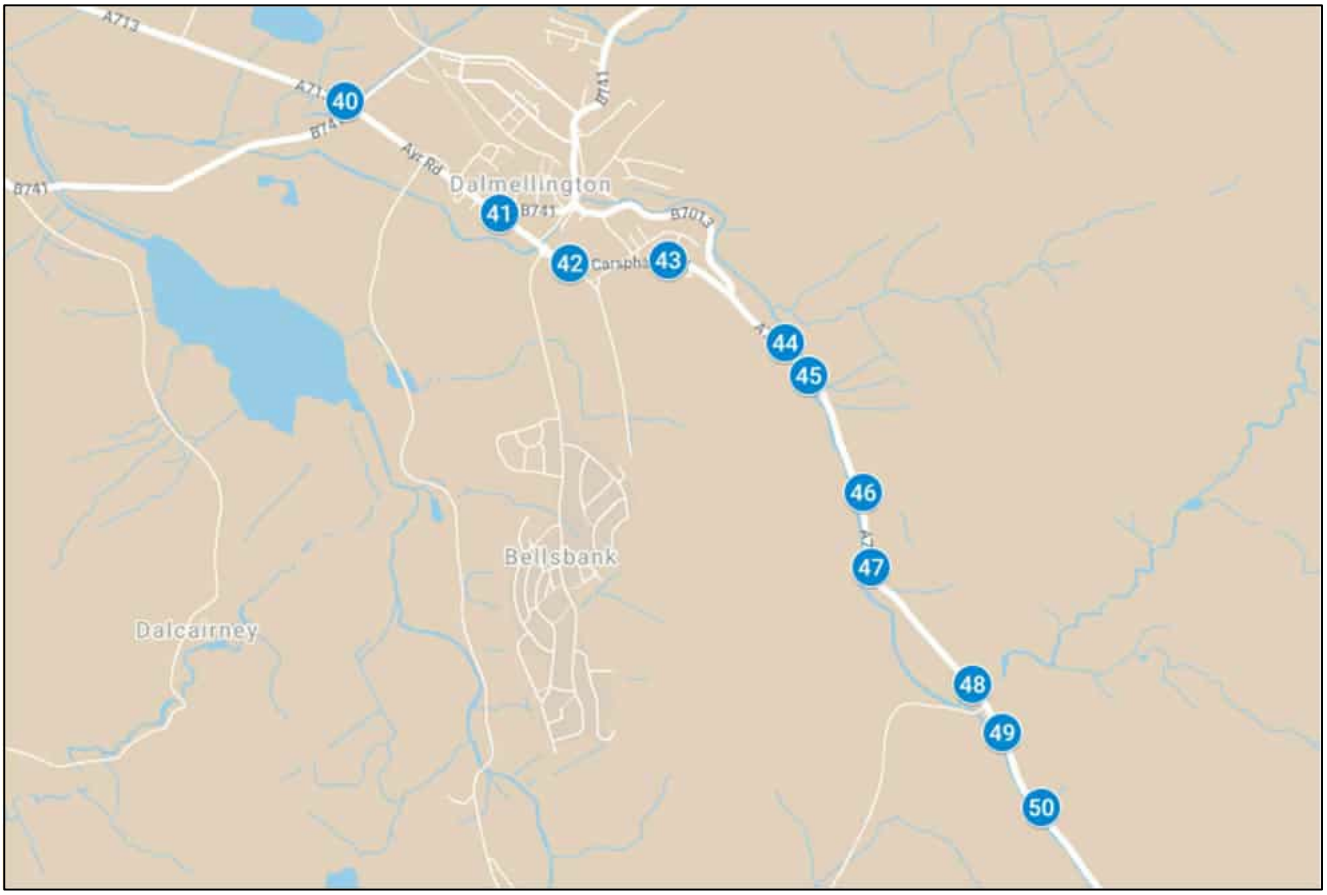
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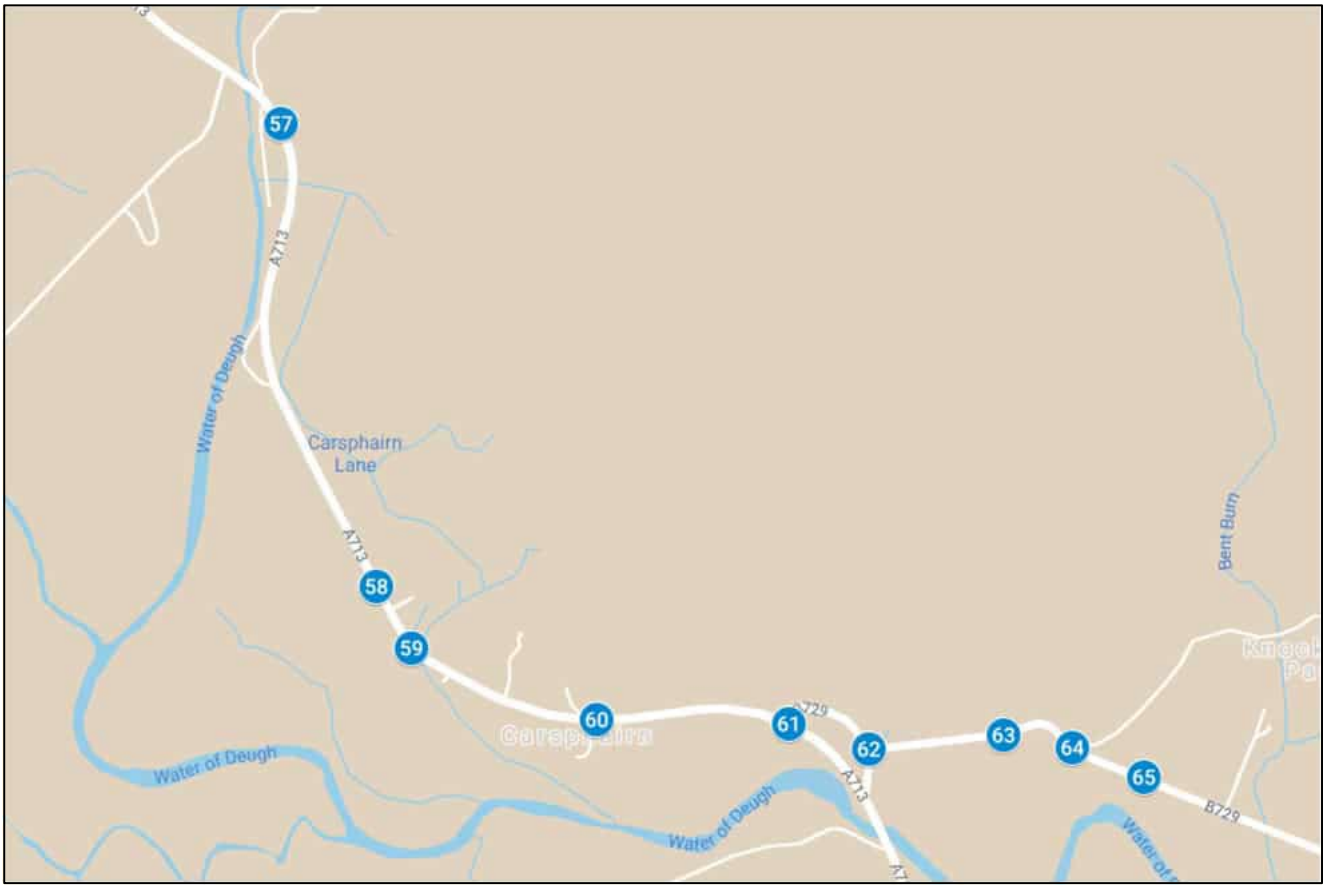
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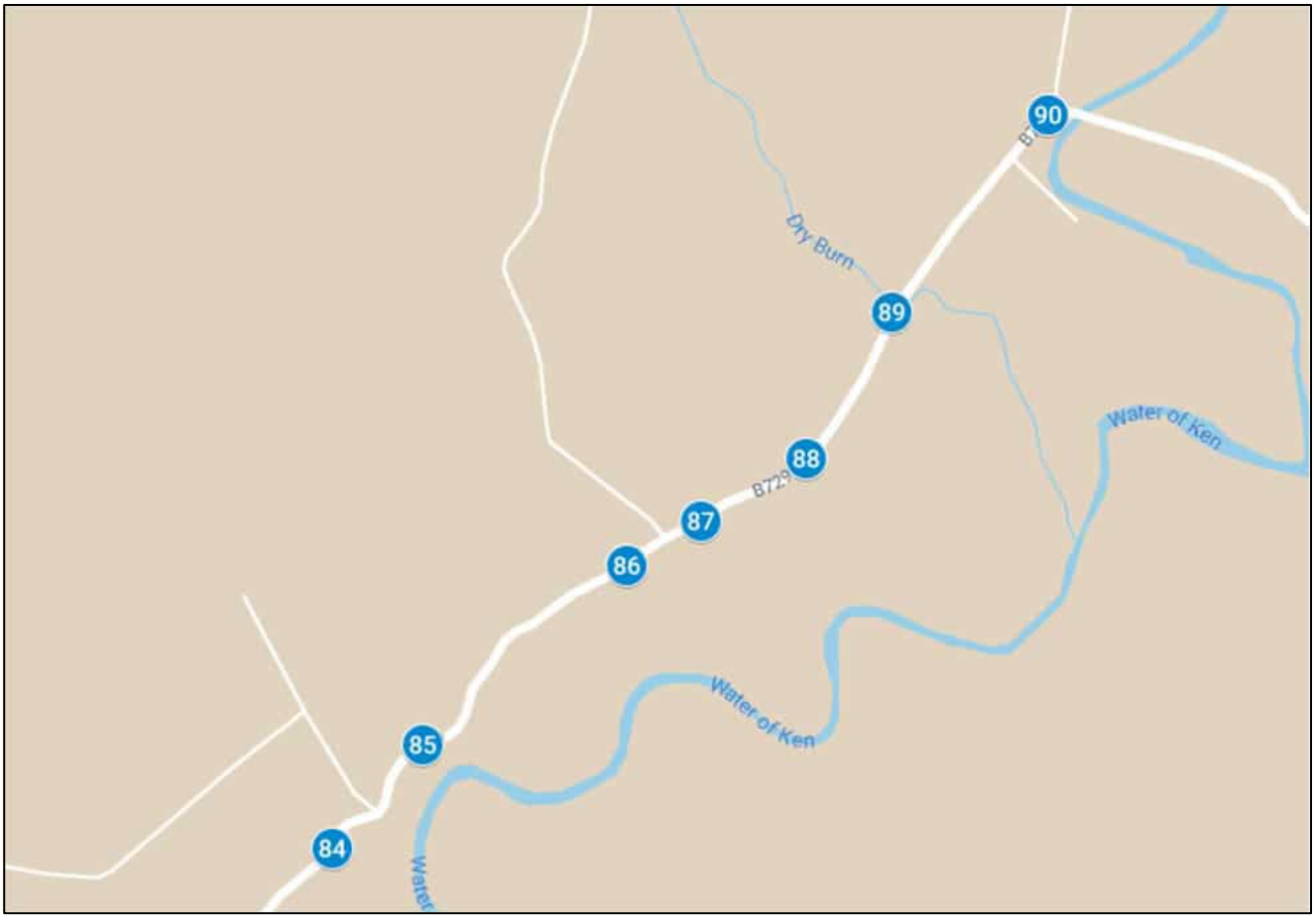
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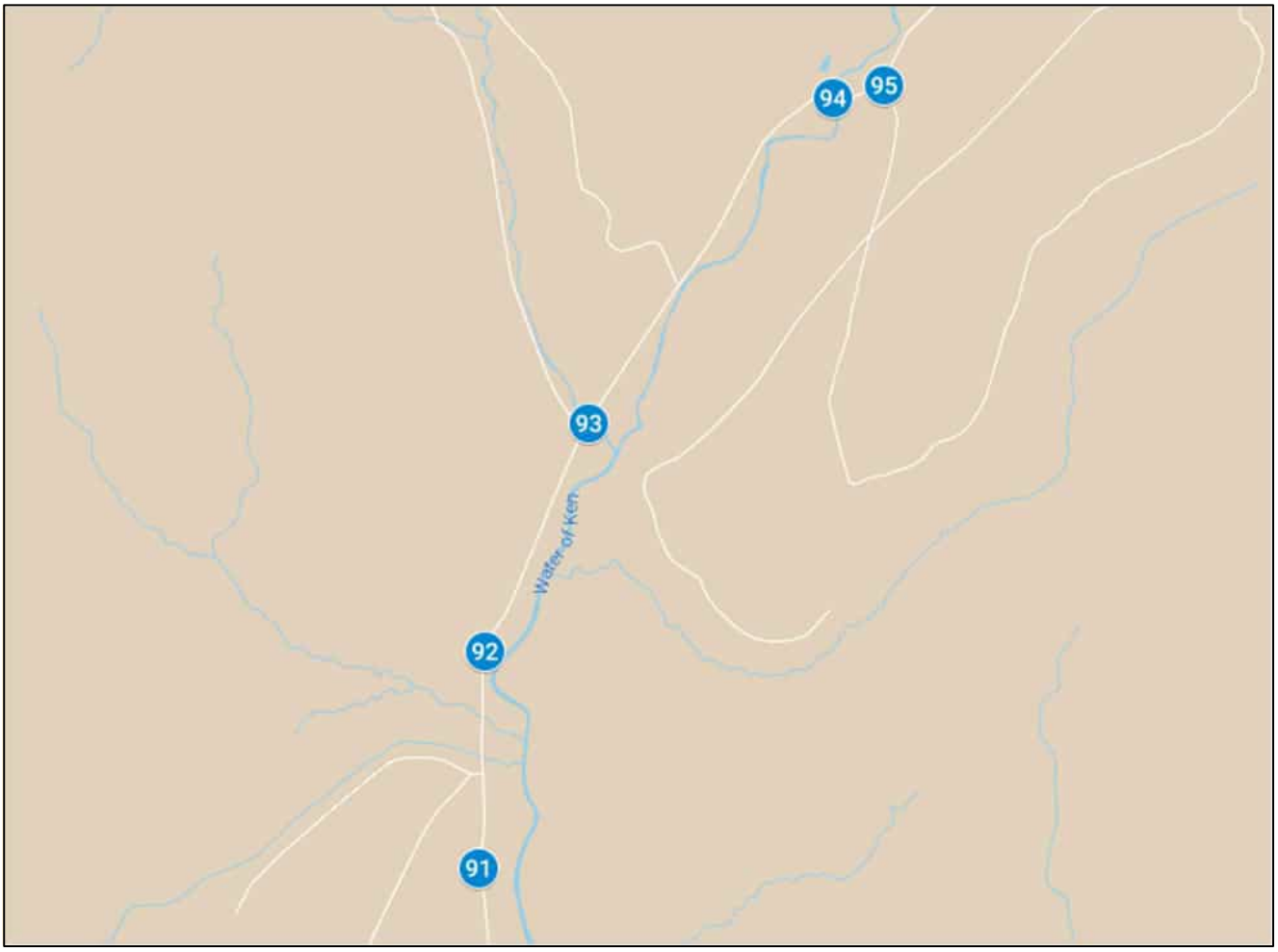
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Appendix B Swept Path Assessments

Pell Frischmann
39 GEORGE STREET, EDINBURGH, EH2 2ES
tel: +44 (0)131 540 1270
Email: pfedinburgh@pellfrischmann.com
www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Kings Inch Drive Roundabout 1

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Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		1

Scale: 1:1000 @ A3

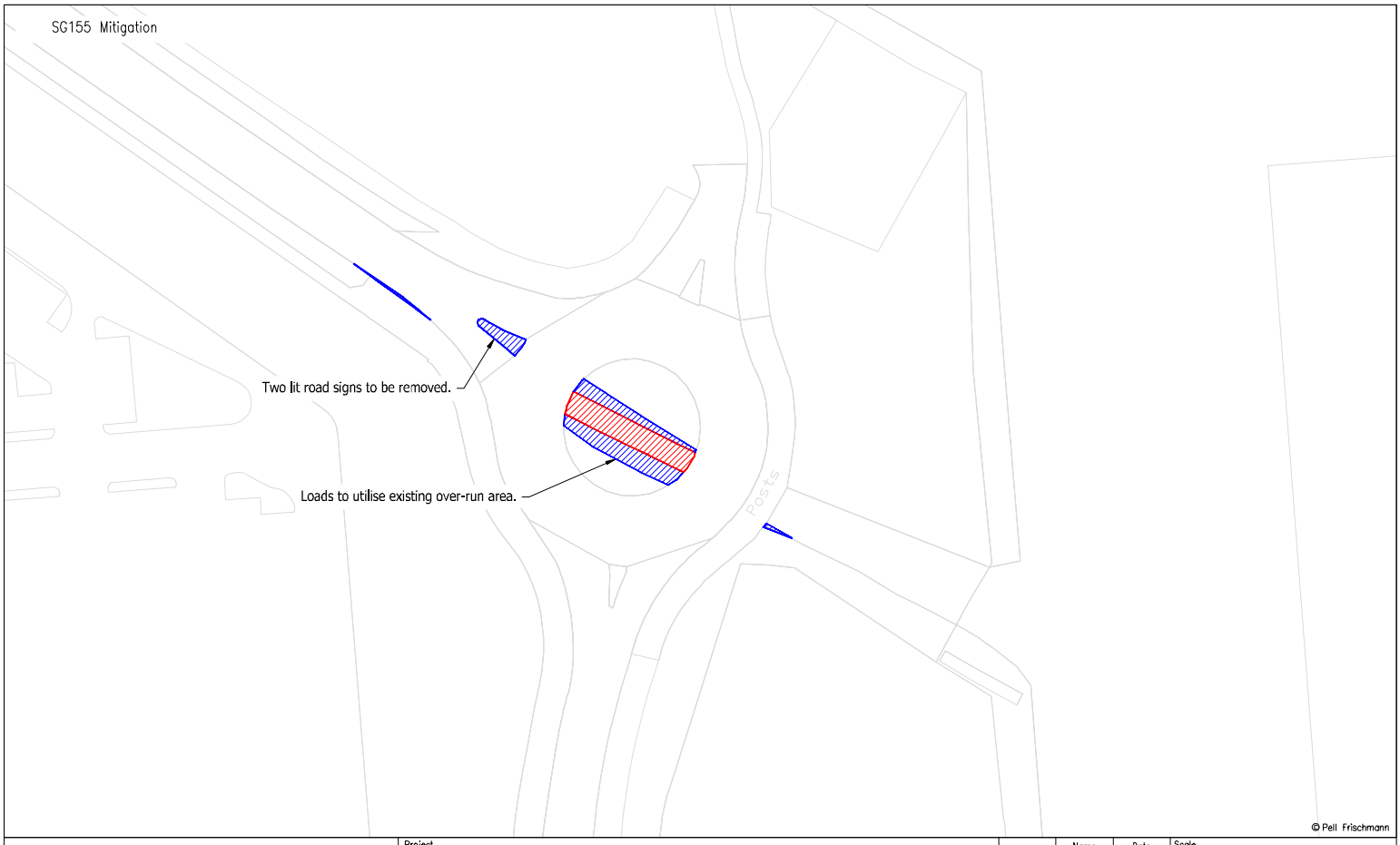
Drawing Status: Draft

Drawing No.: SK01

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

SG155 Mitigation



Pell Frischmann 79 GEORGE STREET, EDINBURGH, EH2 3ES tel: +44 (0)131 540 1270 Email: pfedinburgh@pellfrischmann.com www.pellfrischmann.com	Project: Appin Wind Farm		Name	Date	Scale: 1:500 @ A3
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		Checked	GB	15/07/2022	Drawing Status: Draft
Client: Statkraft	Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower	Point of Interest		1	
Key: Wheel SPA, Body SPA, Load SPA, Indicative, Over-run, Over-sail	SPA Location: Kings Inch Drive Roundabout 1	Drawing No. SK01A	Notes: 1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.		Revision: XXX

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Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Kings Inch Drive Roundabout 1

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		1

Scale: 1:1000 @ A3

File No.: 220622 Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No.: SK01B

Notes:
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2. This is not a construction drawing and is intended for illustration purposes only.

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Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Kings Inch Drive Roundabout 1

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		1

Scale: 1:500 @ A3

File No. 220622 Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No.: SK01C

Notes:
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Project	Appin Wind Farm
Client	Statkraft
Drawing Title	SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower
SPA Location	Kings Inch Drive Roundabout 1

Key: Wheel SPA (red line), Body SPA (green line), Load SPA (magenta line), Indicative (cyan line), Over-run (red hatch), Over-sail (blue hatch)

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		1

Scale: 1:1000 @ A3

File No. 220622 Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No. SK01D

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

SG170 Mitigation

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79 GEORGE STREET, EDINBURGH, EH2 3ES
tel: +44 (0)131 540 1270
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Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Kings Inch Drive Roundabout 1

	Name	Date
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Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
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Scale: 1:500 @ A3

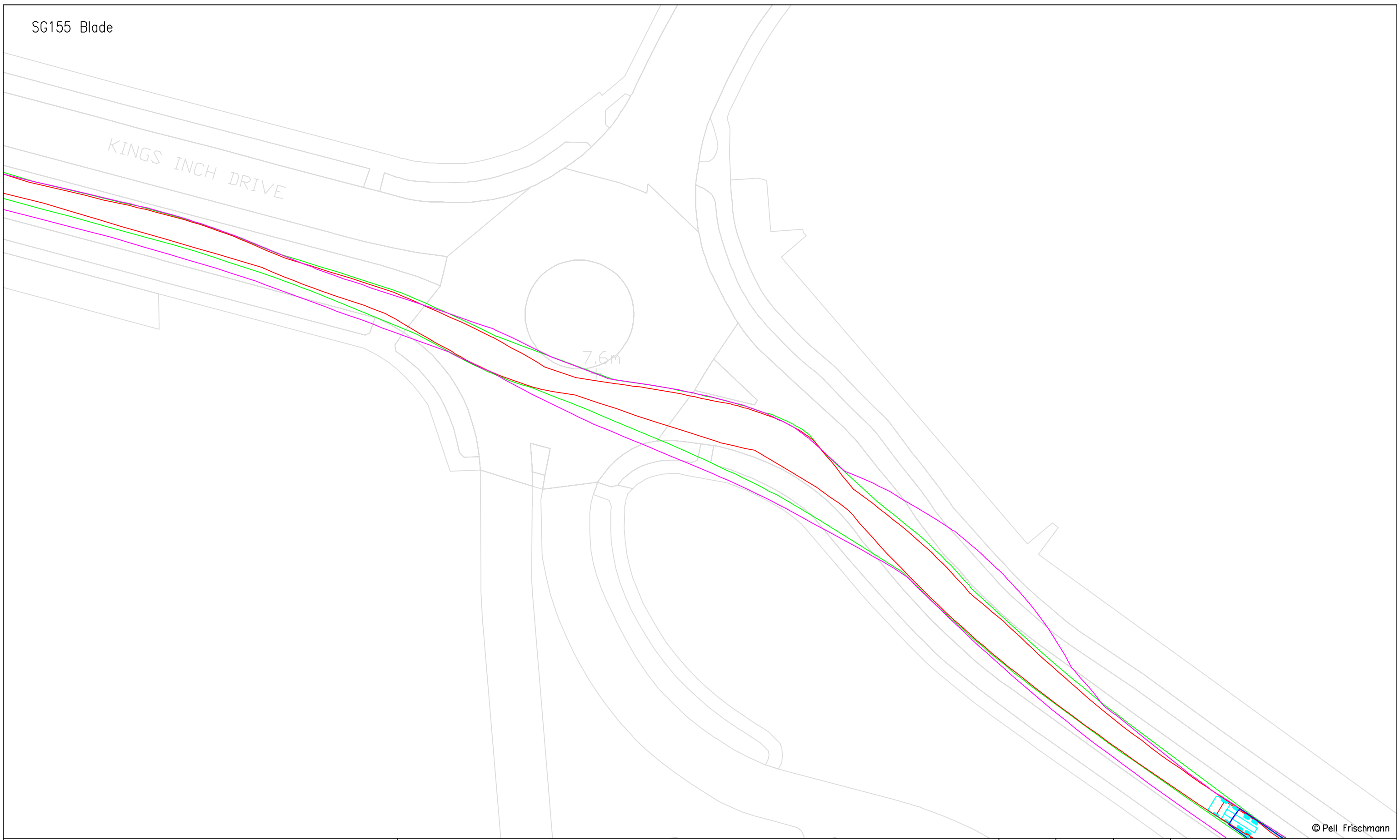
P20610-Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No.: SK01E

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX



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Tel: +44 (0)131 240 1270
Email: pfedinburgh@pellfrischmann.com
www.pellfrischmann.com

Project	Appin Wind Farm
Client	Statkraft
Drawing Title	SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower
SPA Location	Kings Inch Drive Roundabout 2

Key: Wheel SPA, Body SPA, Load SPA, Indicative, Over-run, Over-sail

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Scale: 1:500 @ A3

File No.: 220622 Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No.: SK02

Notes:
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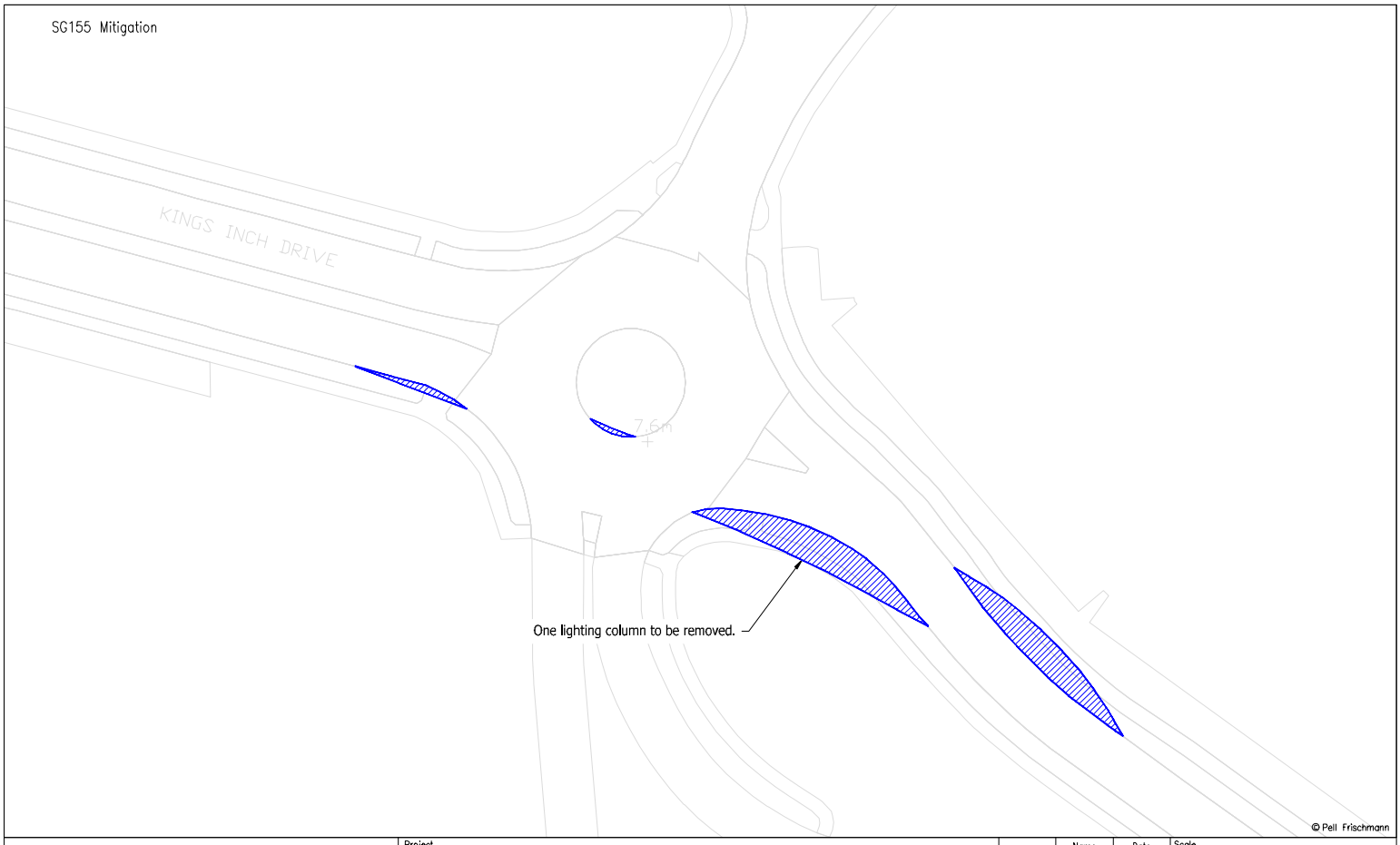
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

SG155 Mitigation



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39 GEORGE STREET, EDINBURGH, EH2 2ES
tel: +44 (0)131 540 1270
Email: pfedinburgh@pellfrischmann.com
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Client	Statkraft	
Project	Appin Wind Farm	
Drawing Title	SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower	
SPA Location	Kings Inch Drive Roundabout 2	

Key: Wheel SPA; Body SPA; Load SPA; Indicative; Over-run; Over-sail

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		2

Scale: 1:500 @ A3

P20610-Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No.: SK02A

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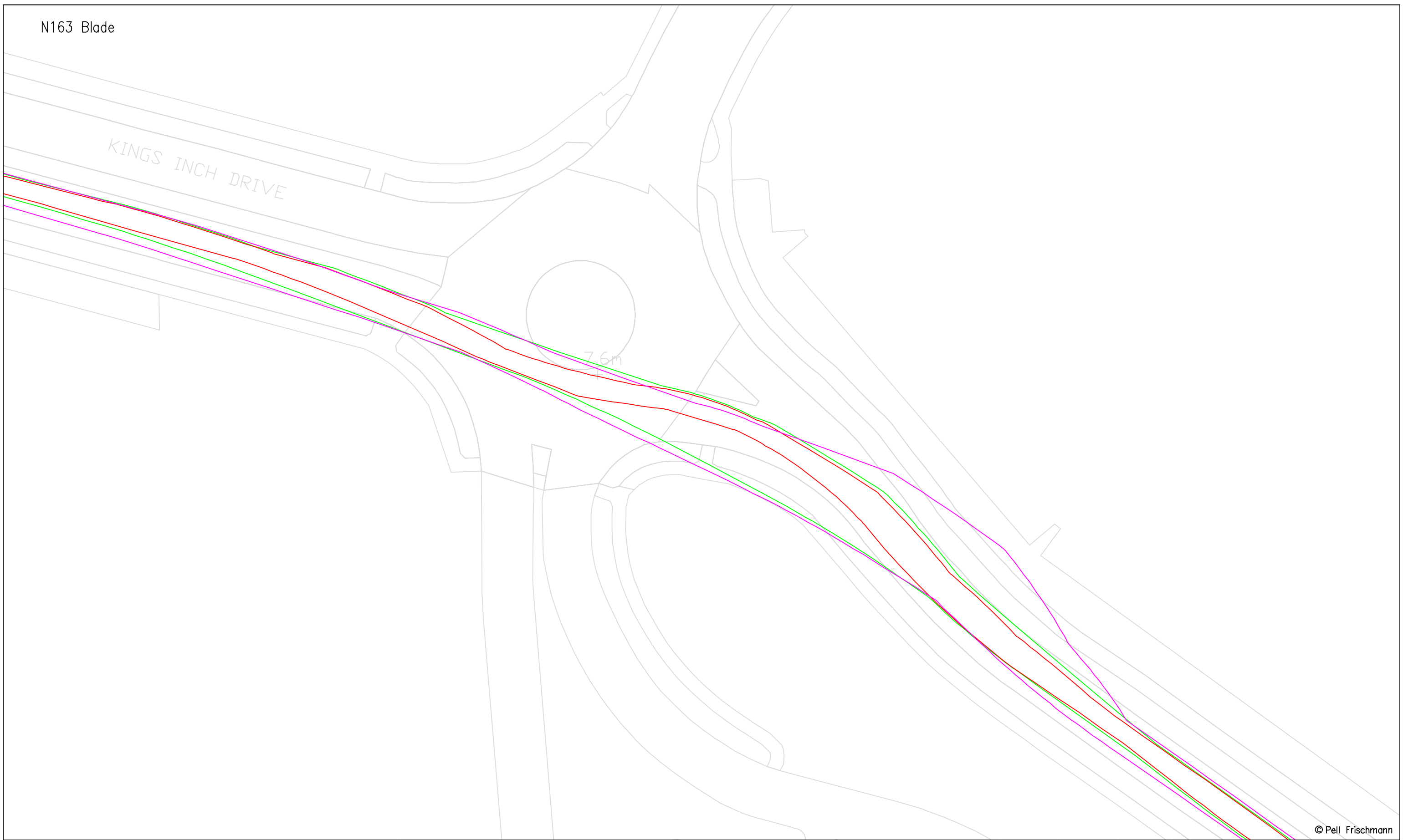
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX



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Tel: +44 (0)131 240 1270
Email: edinburgh@pellfrischmann.com
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Project	Appin Wind Farm
Client	Statkraft
Drawing Title	SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower
SPA Location	Kings Inch Drive Roundabout 2

Key: Wheel SPA (red), Body SPA (green), Load SPA (magenta), Indicative (cyan), Over-run (red hatch), Over-sail (blue hatch)

	Name	Date
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Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		2

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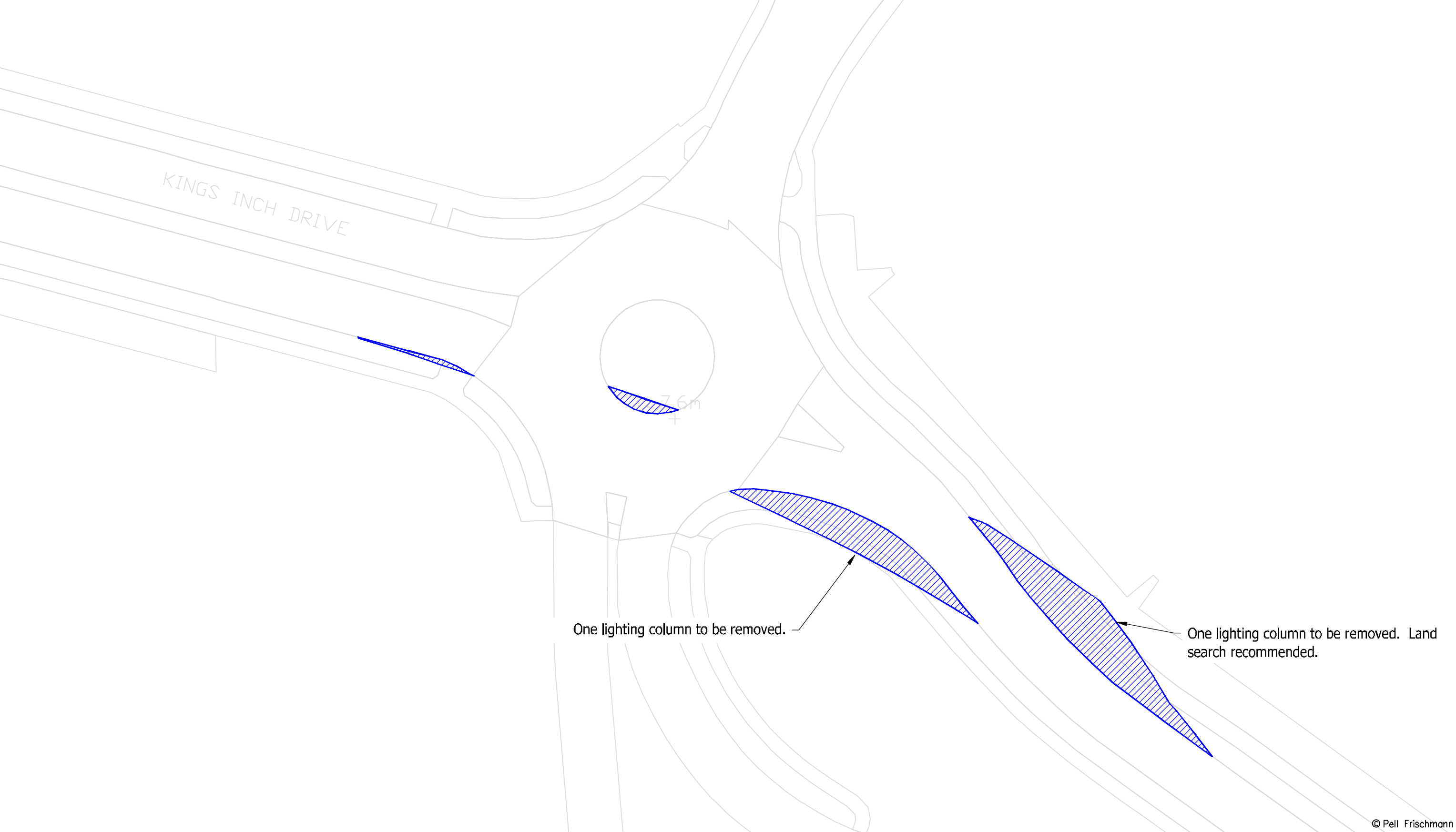
Revision	XXX

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

N163 Mitigation



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93 GEORGE STREET, EDINBURGH, EH2 3ES
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Email: pfedinburgh@pellfrischmann.com
www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Kings Inch Drive Roundabout 2

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		2

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File No. 220622 Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

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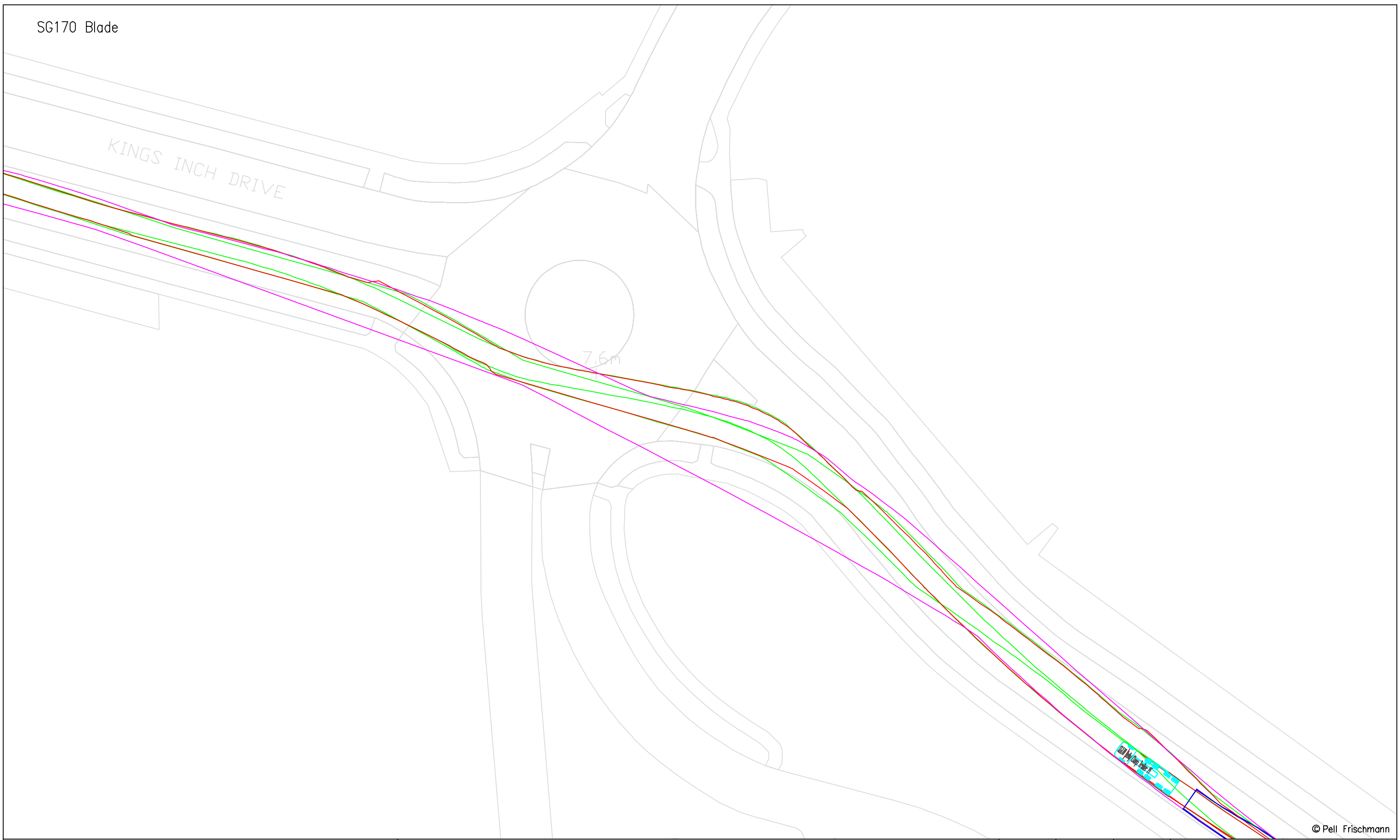
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX



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Tel: +44 (0)131 240 1270
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www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Kings Inch Drive Roundabout 2

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		2

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Drawing Status: Draft

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Notes:
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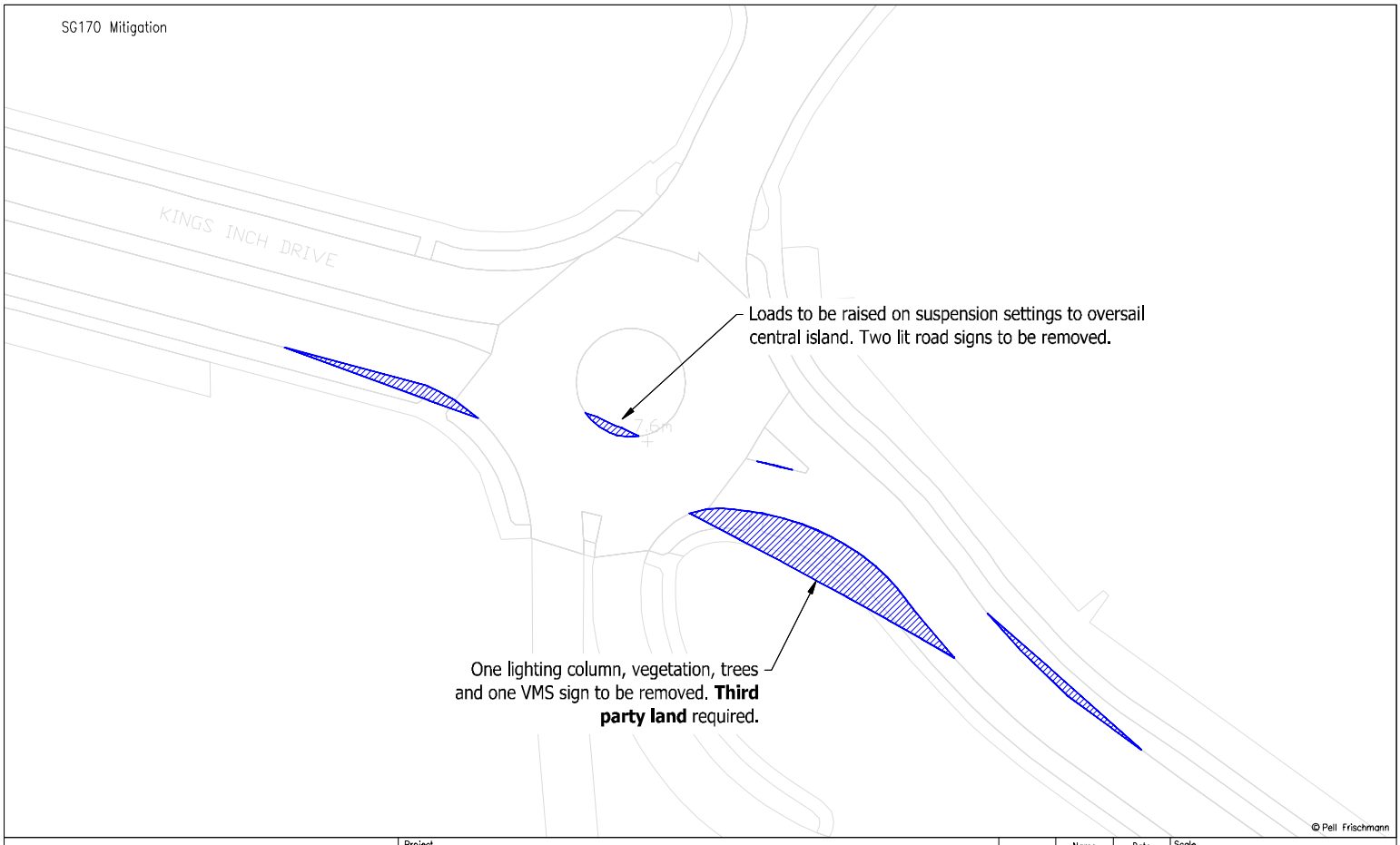
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

SG170 Mitigation



Pell Frischmann 79 GEORGE STREET, EDINBURGH, EH2 3ES tel: +44 (0)131 540 1200 Email: pfedinburgh@pellfrischmann.com www.pellfrischmann.com	Project: Appin Wind Farm		Name	Date
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		Checked	GB	15/07/2022
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Client: Statkraft	Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower	Drawing No.: SK02E		
Key: Wheel SPA, Body SPA, Load SPA, Indicative, Over-run, Over-sail	SPA Location: Kings Inch Drive Roundabout 2	Notes: 1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.		

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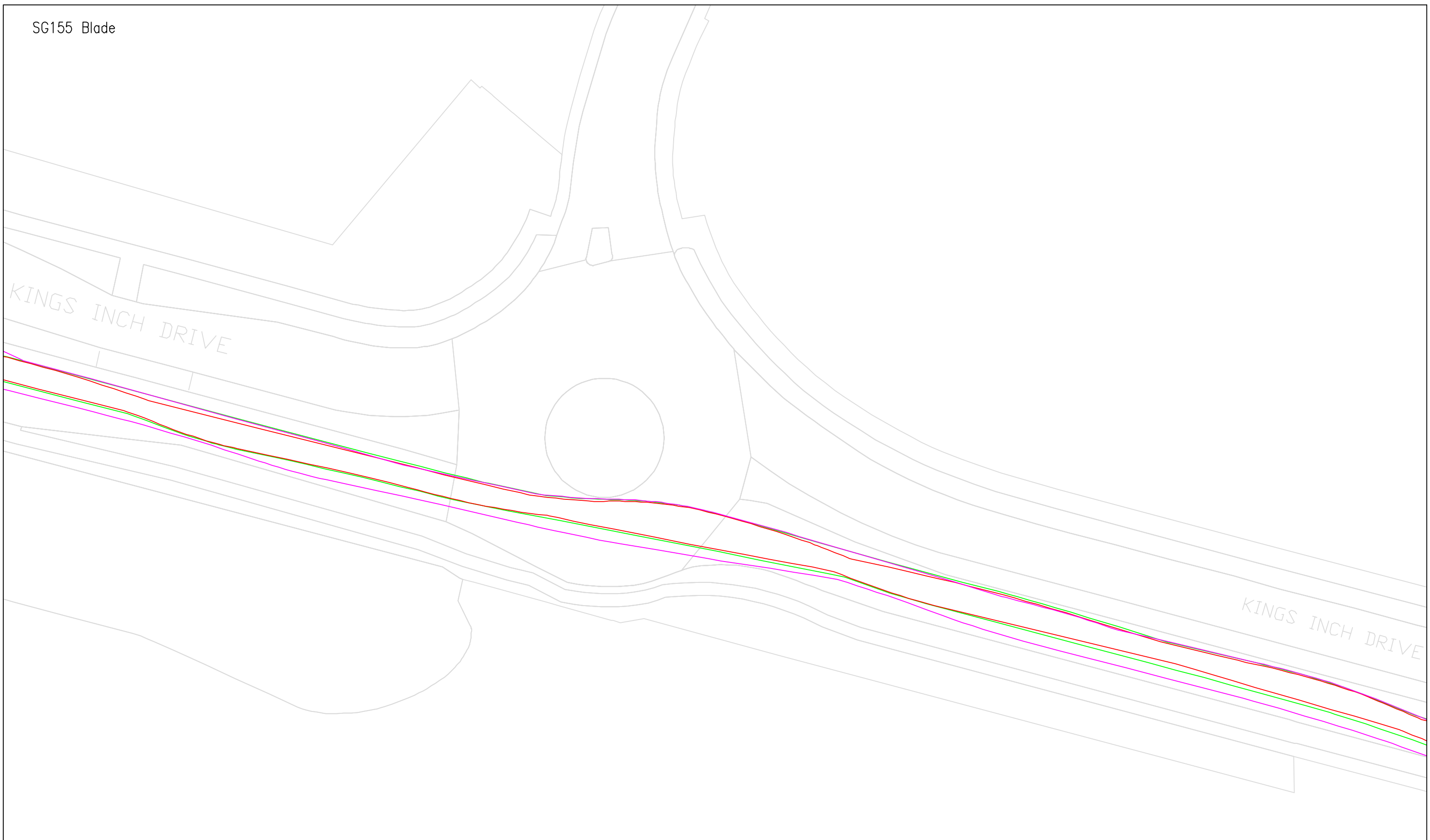
Revision: XXX

SG155 Blade



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Tel: +44 (0)131 240 1270
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Project	Appin Wind Farm			
Client	Statkraft			
Drawing Title	SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower			
SPA Location	Kings Inch Drive Roundabout 3			
	Name	Date		
Drawn	GLJ	15/07/2022		
Designed	GLJ	15/07/2022		
Checked	GB	15/07/2022		
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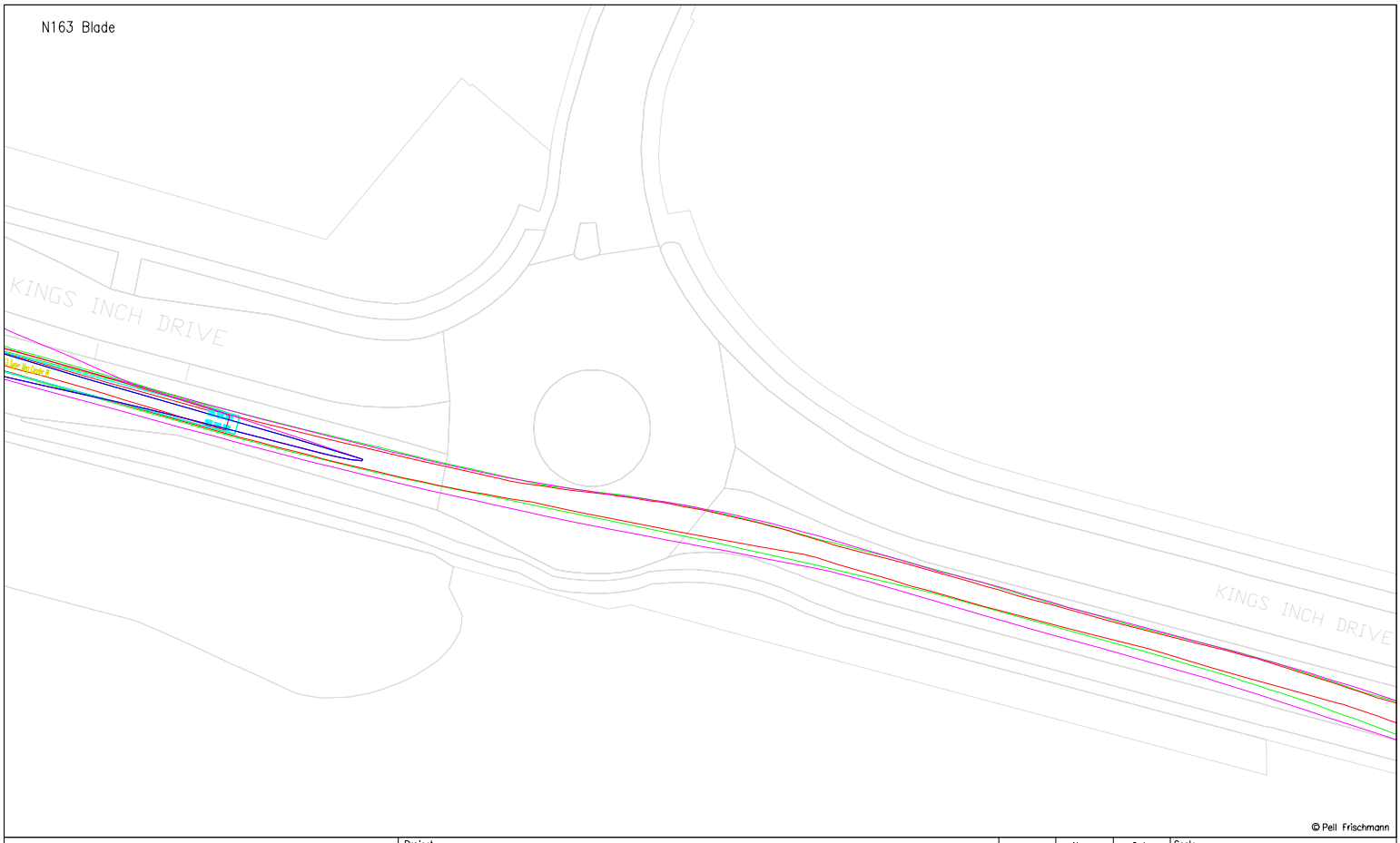
Scale	1:500 @ A3			
File No.	220622 Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg			
Drawing Status	Draft			
Drawing No.	SK03			
Revision	XXX			

NO MITIGATION

Key: Wheel SPA, Body SPA, Load SPA, Indicative, Over-run, Over-sail

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

N163 Blade



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39 GEORGE STREET, EDINBURGH, EH2 2ES
tel: +44 (0)131 540 1270
Email: pfedinburgh@pellfrischmann.com
www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower NO MITIGATION

SPA Location: Kings Inch Drive Roundabout 3

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		3

Scale: 1:500 @ A3

File: 220610-Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No.: SK03B

Notes:
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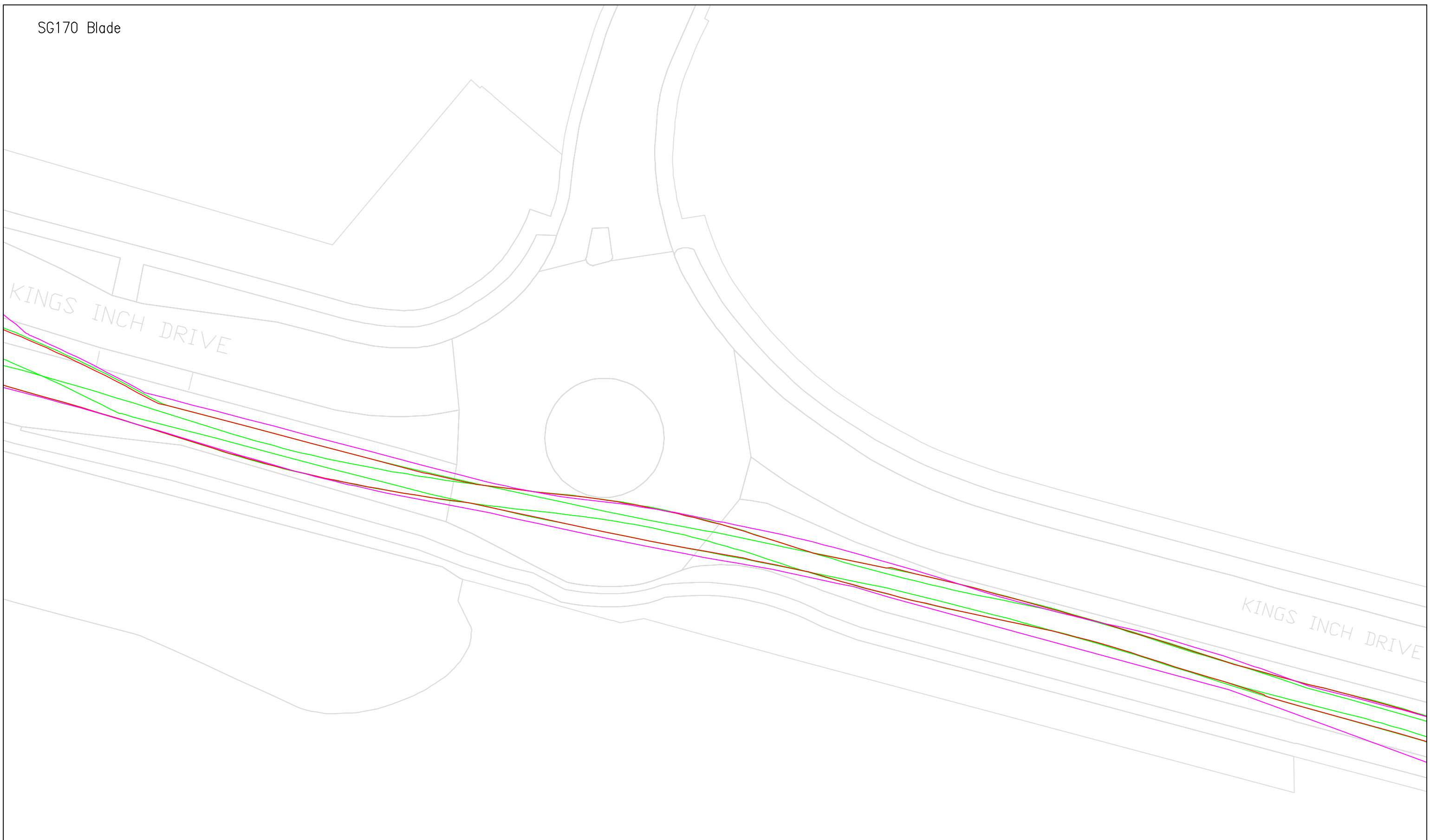
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX



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93 GEORGE STREET, EDINBURGH, EH2 3ES
Tel: +44 (0)131 240 1270
Email: edinburgh@pellfrischmann.com
www.pellfrischmann.com

Client	Statkraft	Project	Appin Wind Farm
Drawing Title	SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower		NO MITIGATION
SPA Location	Kings Inch Drive Roundabout 3		

Key: Wheel SPA (red) | Body SPA (green) | Load SPA (magenta) | Indicative (cyan) | Over-run (red hatch) | Over-sail (blue hatch)

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		3

Scale: 1:500 @ A3

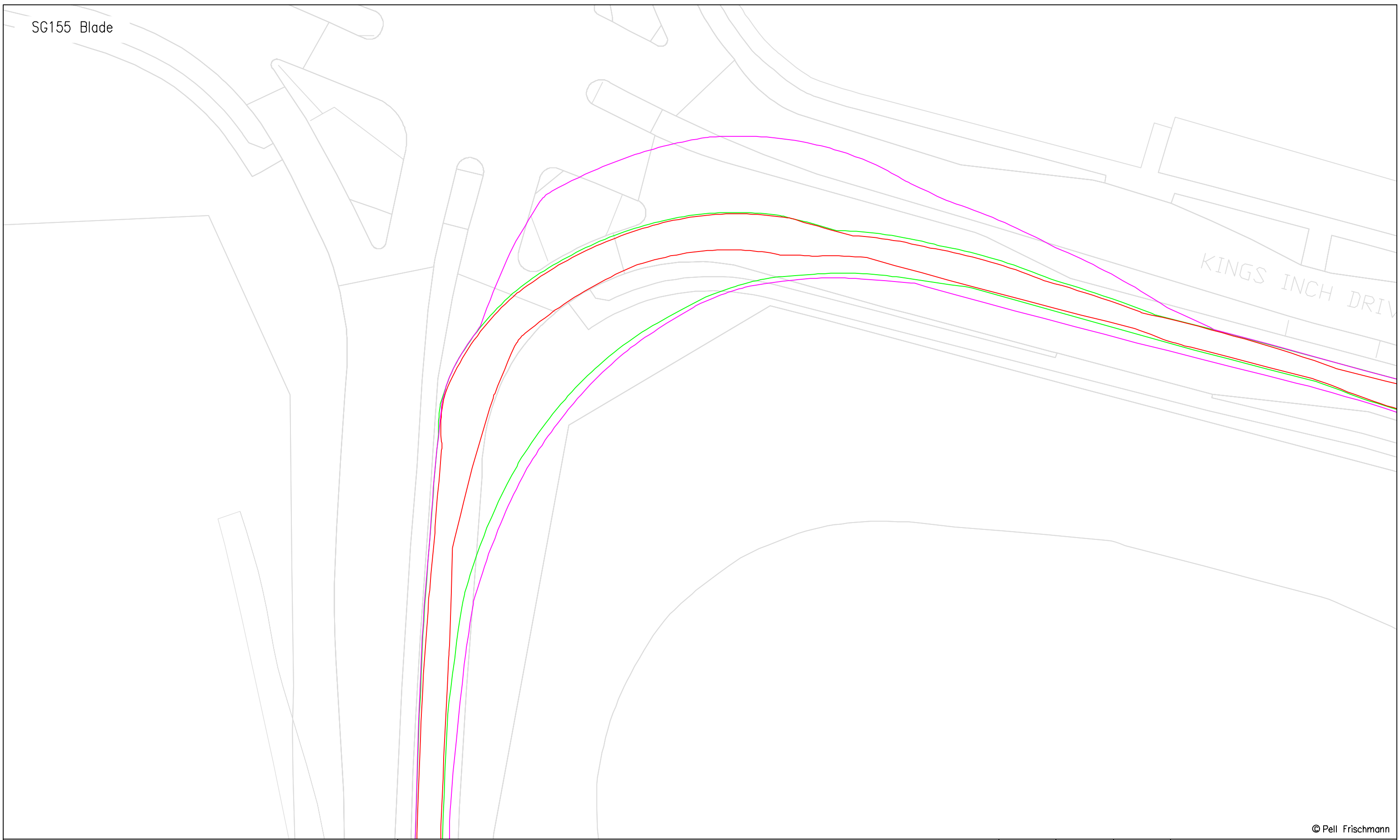
File No. 220622 Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No.: SK03D

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX



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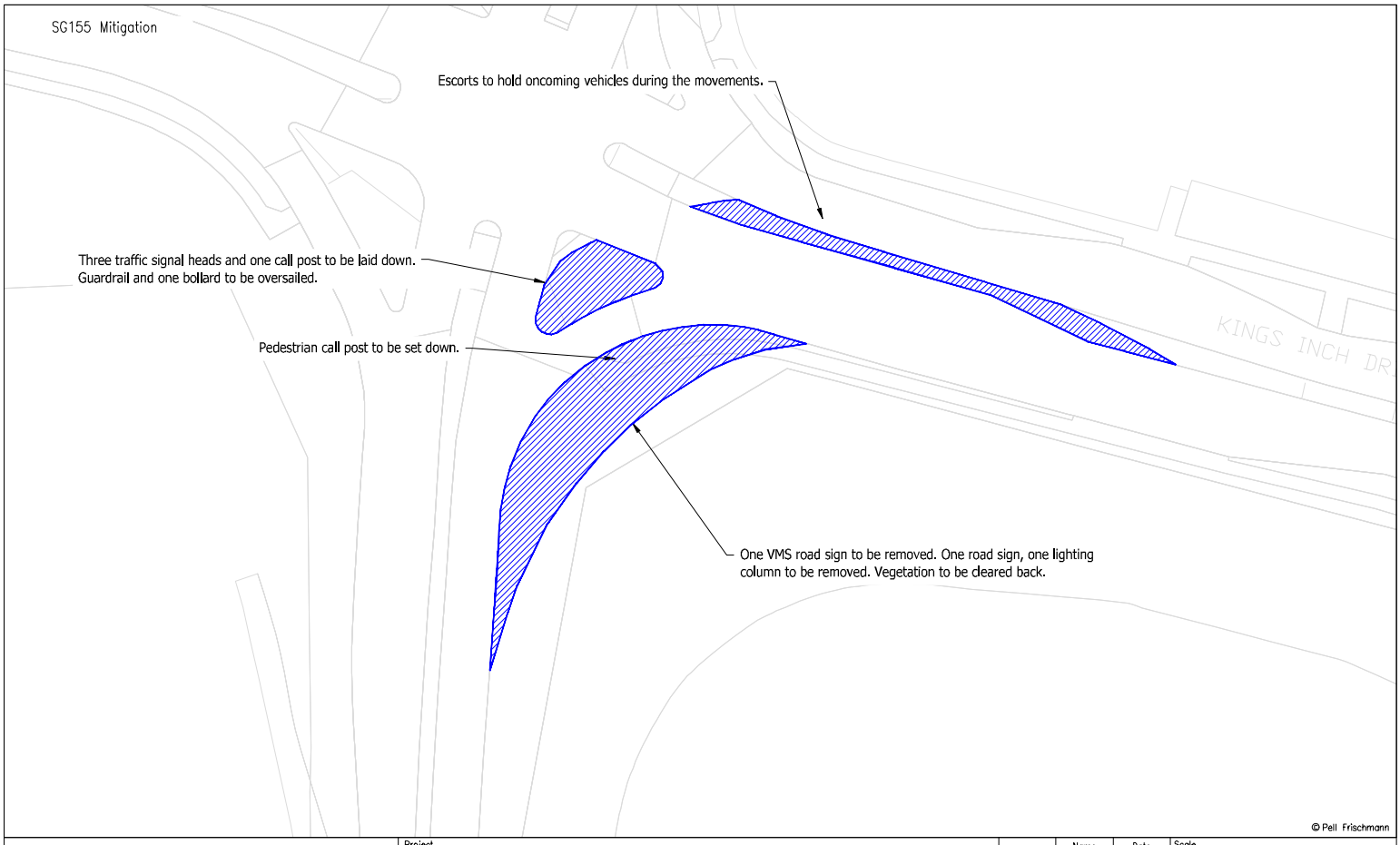
Pell Frischmann 93 GEORGE STREET, EDINBURGH, EH2 3ES Tel: +44 (0)131 240 1270 Email: pfedinburgh@pellfrischmann.com www.pellfrischmann.com	Project: Appin Wind Farm	Name / Date Drawn: GLJ, 15/07/2022 Designed: GLJ, 15/07/2022 Checked: GB, 15/07/2022	Scale: 1:500 @ A3 File No. 220622- Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg
Client: Statkraft	Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower	Point of Interest: 4	Drawing Status: Draft
Key: Wheel SPA, Body SPA, Load SPA, Indicative, Over-run, Over-sail	SPA Location: Kings Inch Drive / Mayo Avenue Junction	Drawing No.: SK04	Revision: XXX

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.



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39 GEORGE STREET, EDINBURGH, EH2 2ES
tel: +44 (0)131 540 1270
Email: pfedinburgh@pellfrischmann.com
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Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Kings Inch Drive / Mayo Avenue Junction

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		4

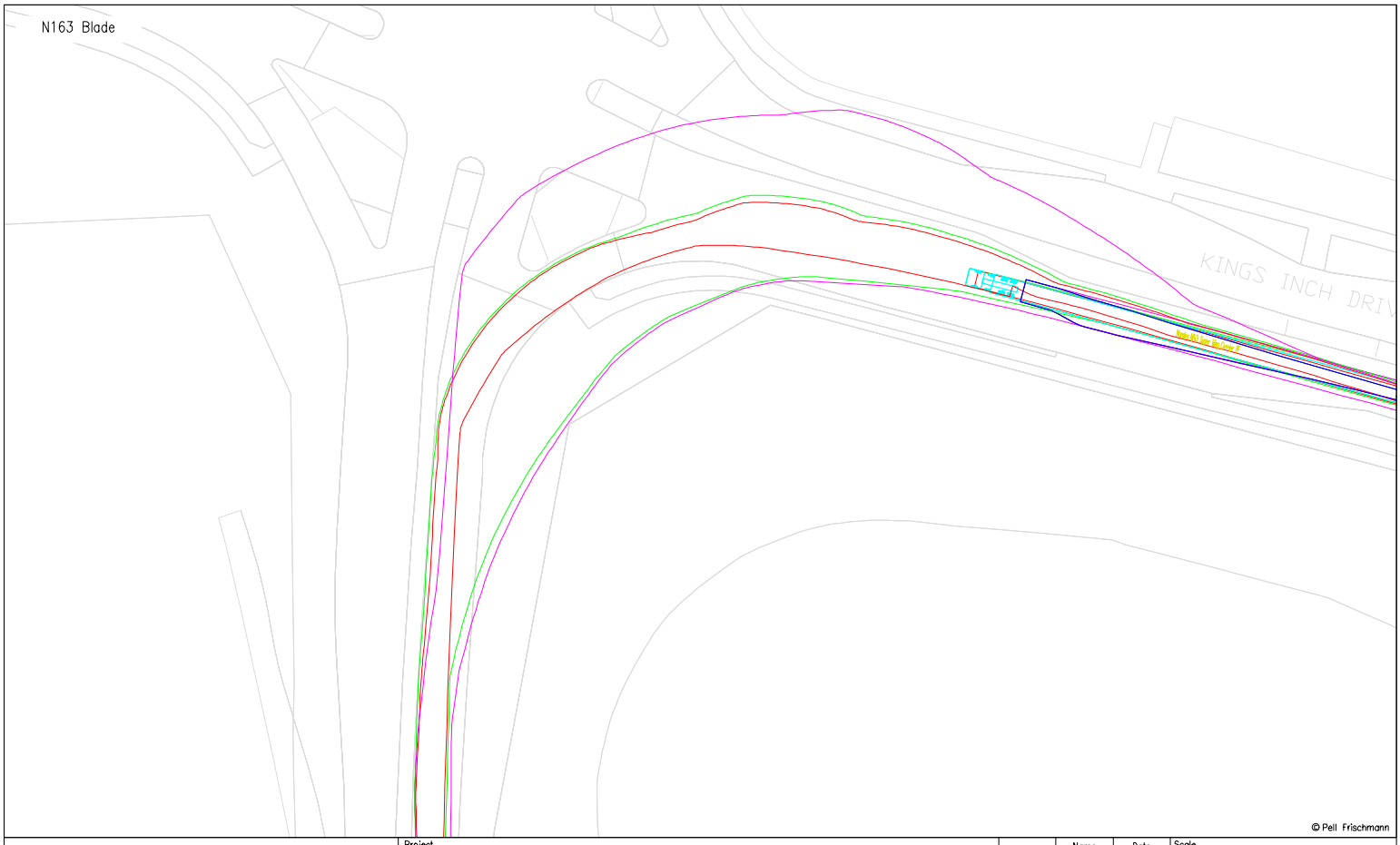
Scale: 1:500 @ A3

Drawing Status: Draft

Drawing No.: SK04A

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX



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79 GEORGE STREET, EDINBURGH, EH2 3ES
tel: +44 (0)131 540 1270
Email: pfadmin.uk@PellFrischmann.com
www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Kings Inch Drive / Mayo Avenue Junction

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		4

Scale: 1:500 @ A3

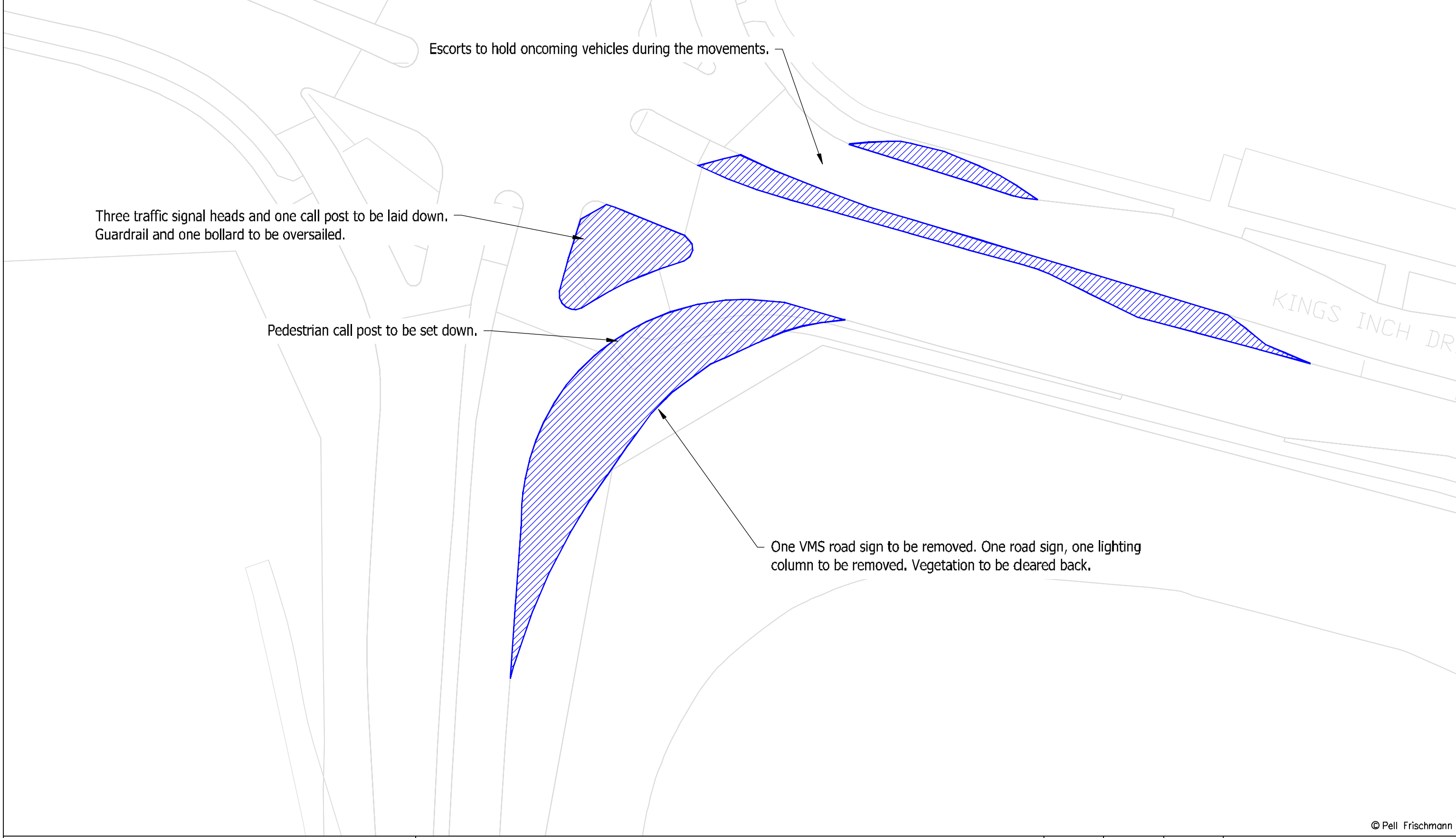
Drawing Status: Draft

Drawing No.: SK04B

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

N163 Mitigation



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93 GEORGE STREET, EDINBURGH, EH2 3ES
Tel: +44 (0)131 240 1270
Email: edinburgh@pellfrischmann.com
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Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Kings Inch Drive / Mayo Avenue Junction

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		4

Scale: 1:500 @ A3

File No. 220602 Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No. SK04C

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

Pell Frischmann
79 GEORGE STREET, EDINBURGH, EH2 3ES
tel: +44 (0)131 540 1270
Email: pfadmin.uk@PellFrischmann.com
www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Kings Inch Drive / Mayo Avenue Junction

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		4

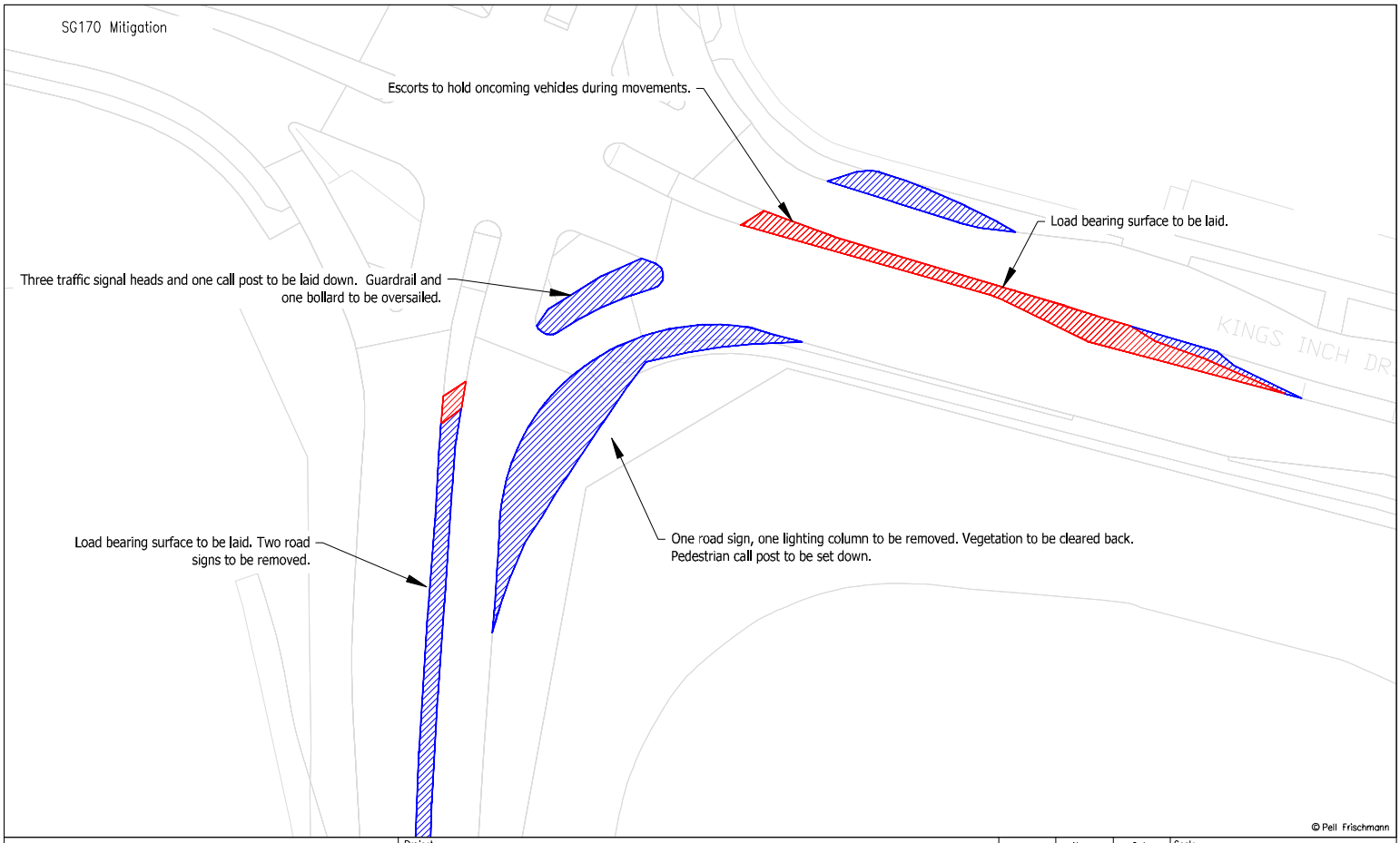
Scale: 1:500 @ A3

Drawing Status: Draft

Drawing No.: SK04D

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX



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39 GEORGE STREET, EDINBURGH, EH2 2ES
tel: +44 (0)131 540 1270
Email: pfedinburgh@pellfrischmann.com
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Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Kings Inch Drive / Mayo Avenue Junction

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		4

Scale: 1:500 @ A3

P20610-Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

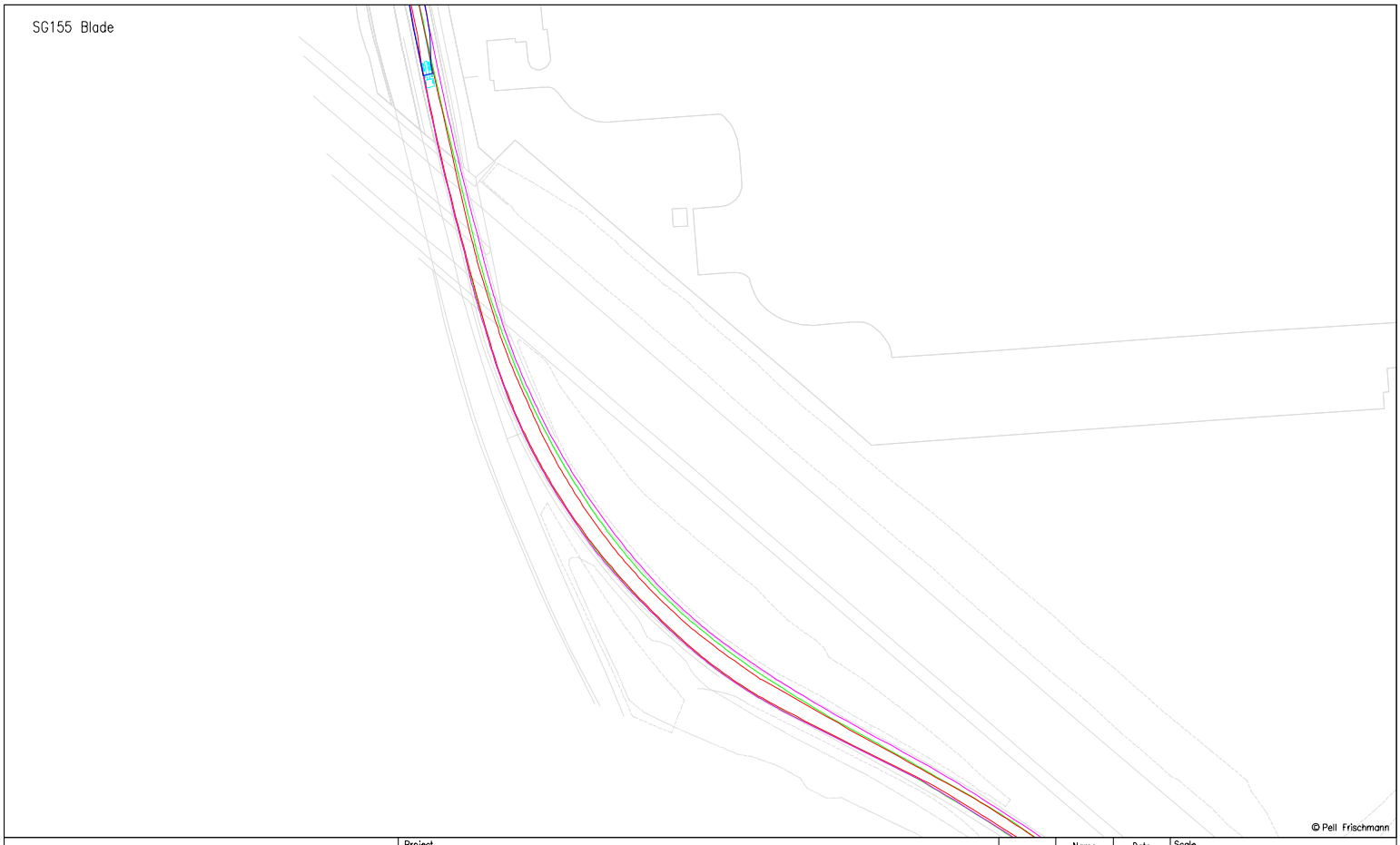
Drawing Status: Draft

Drawing No.: SK04E

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

SG155 Blade



Pell Frischmann
39 GEORGE STREET, EDINBURGH, EH2 2ES
tel: +44 (0)131 540 1270
E-mail: pfadmin.uk@PellFrischmann.com
www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: M8 Junction 25a Slip Road

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		5

Scale: 1:1000 @ A3

P20610-Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

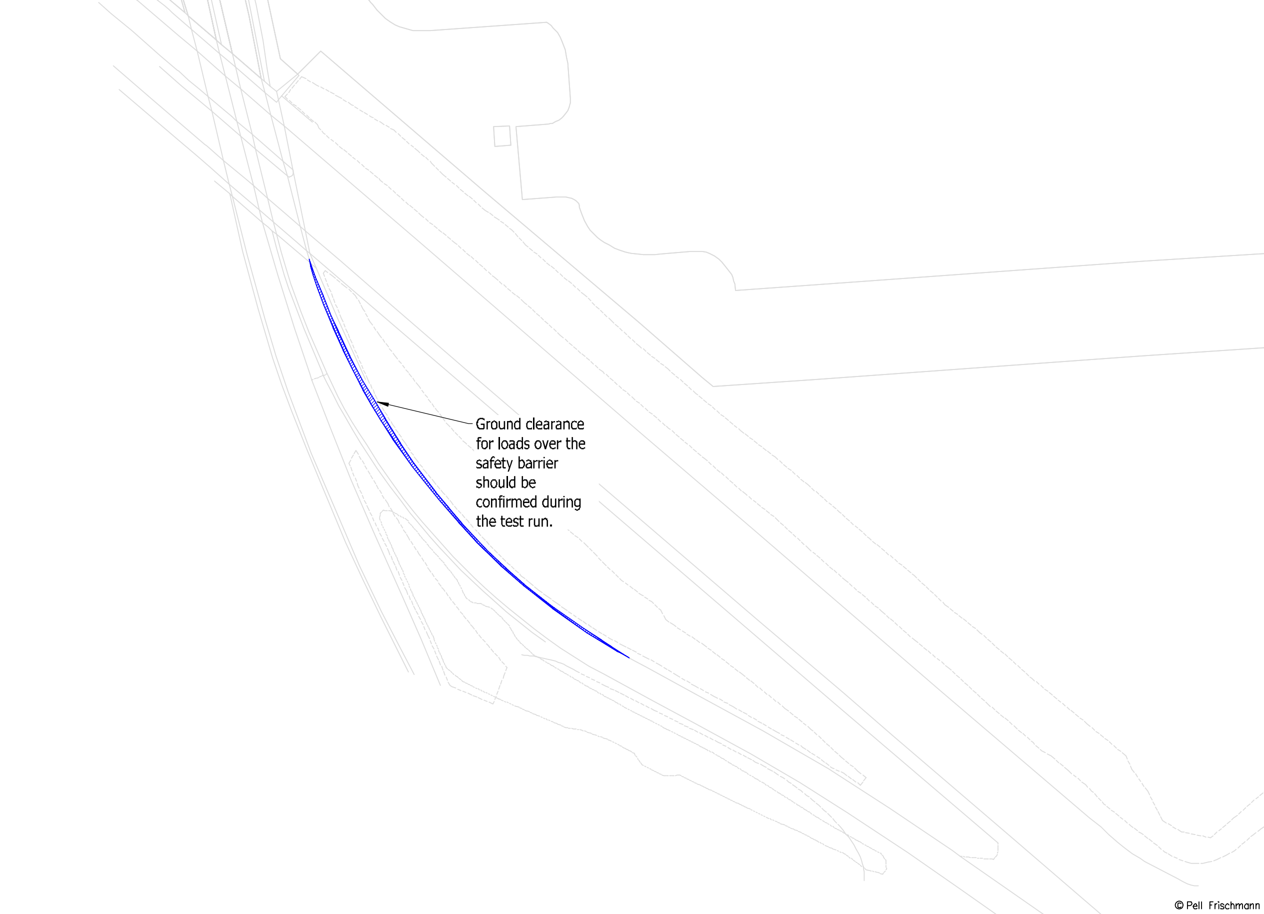
Drawing Status: Draft

Drawing No.: SK05

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

SG155 Mitigation



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93 GEORGE STREET, EDINBURGH, EH2 3ES
Tel: +44 (0)131 240 1270
Email: pfedinburgh@pellfrischmann.com
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Client	Statkraft
Project	Appin Wind Farm
Drawing Title	SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower
SPA Location	M8 Junction 25a Slip Road

Key: Wheel SPA (red line); Body SPA (green line); Load SPA (magenta line); Indicative (cyan line); Over-run (red hatch); Over-sail (blue hatch)

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		5

Scale: 1:1000 @ A3

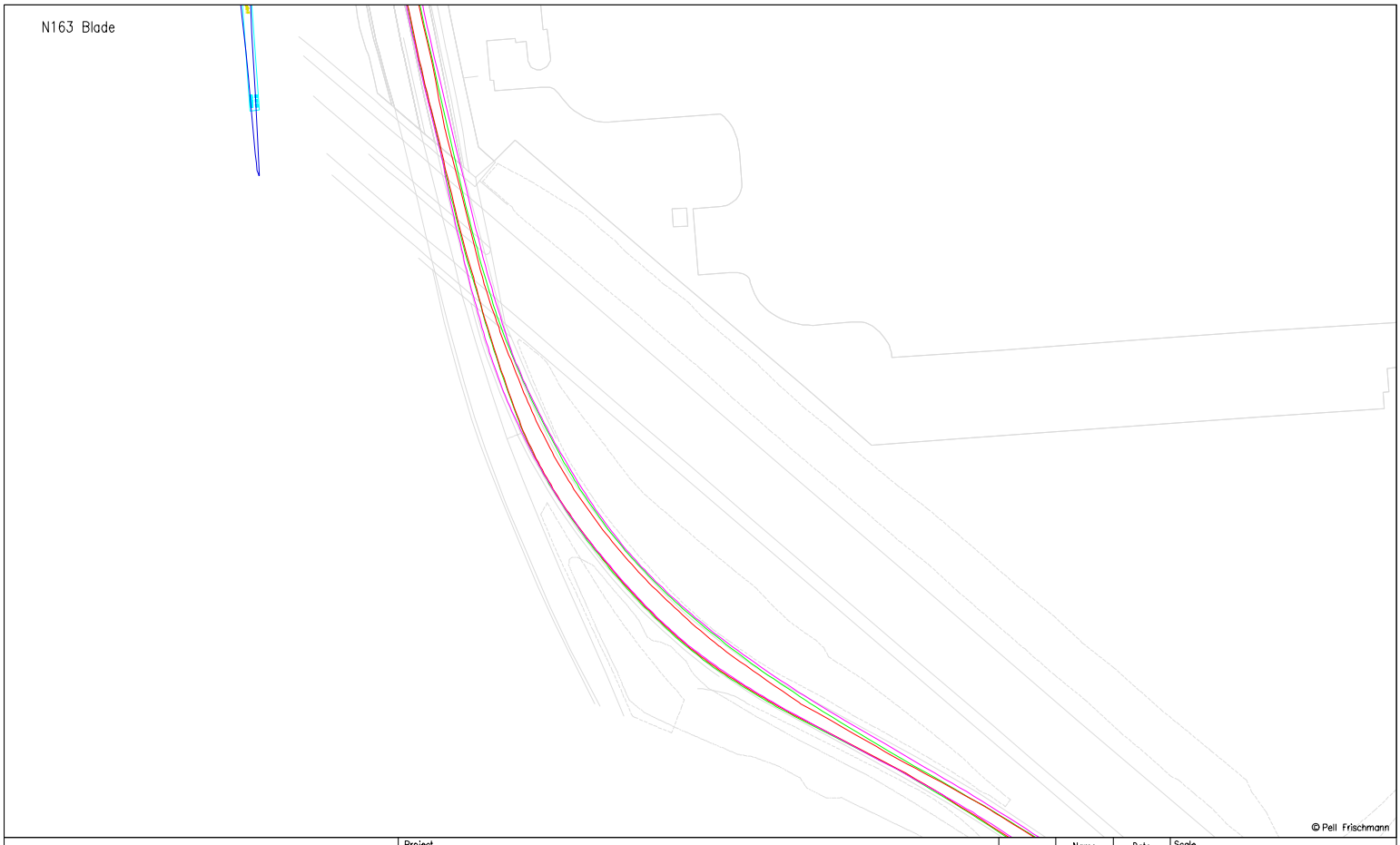
File No.: 220622 Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No.: SK05A

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX



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79 GEORGE STREET, EDINBURGH, EH2 3ES
tel: +44 (0)131 540 1270
Email: pfedinburgh@pellfrischmann.com
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Client	Statkraft
Project	Appin Wind Farm
Drawing Title	SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower
SPA Location	M8 Junction 25a Slip Road

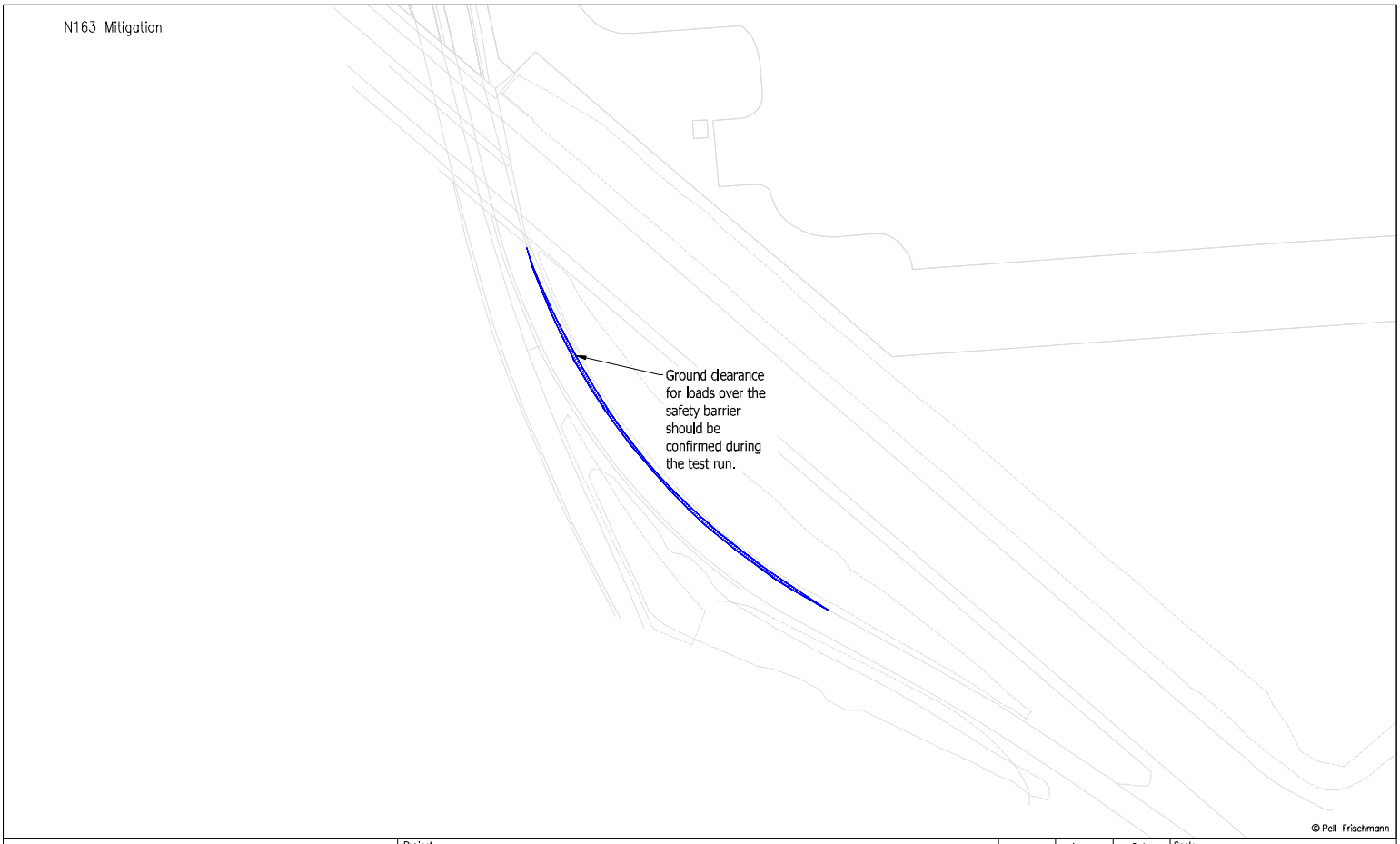
Key: Wheel SPA, Body SPA, Load SPA, Indicative, Over-run, Over-sail

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		5

Scale	1:1000 @ A3
File Name	220610-Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg
Drawing Status	Draft
Drawing No.	SK05B
Revision	XXX

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

N163 Mitigation



Pell Frischmann
99 GEORGE STREET, EDINBURGH, EH2 5ES
tel: +44 (0)131 540 1270
Email: pfedinburgh@pellfrischmann.com
www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: M8 Junction 25a Slip Road

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		5

Scale: 1:1000 @ A3

File Name: 220610-Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

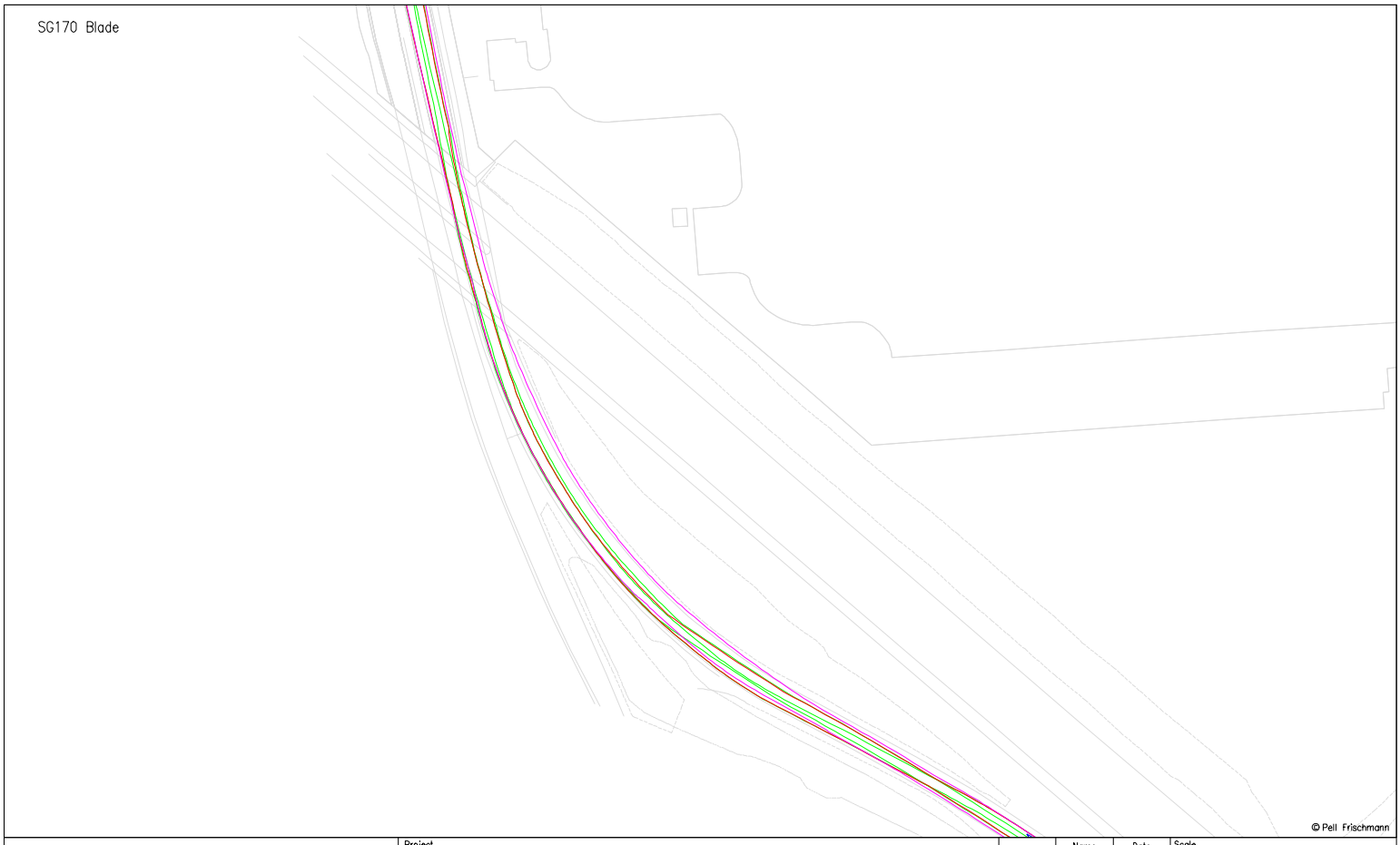
Drawing Status: Draft

Drawing No.: SK05C

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

SG170 Blade



Pell Frischmann
39 GEORGE STREET, EDINBURGH, EH2 2ES
tel: +44 (0)131 540 1270
E-mail: pfadmin.uk@PellFrischmann.com
www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: M8 Junction 25a Slip Road

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		5

Scale: 1:1000 @ A3

P20610-Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

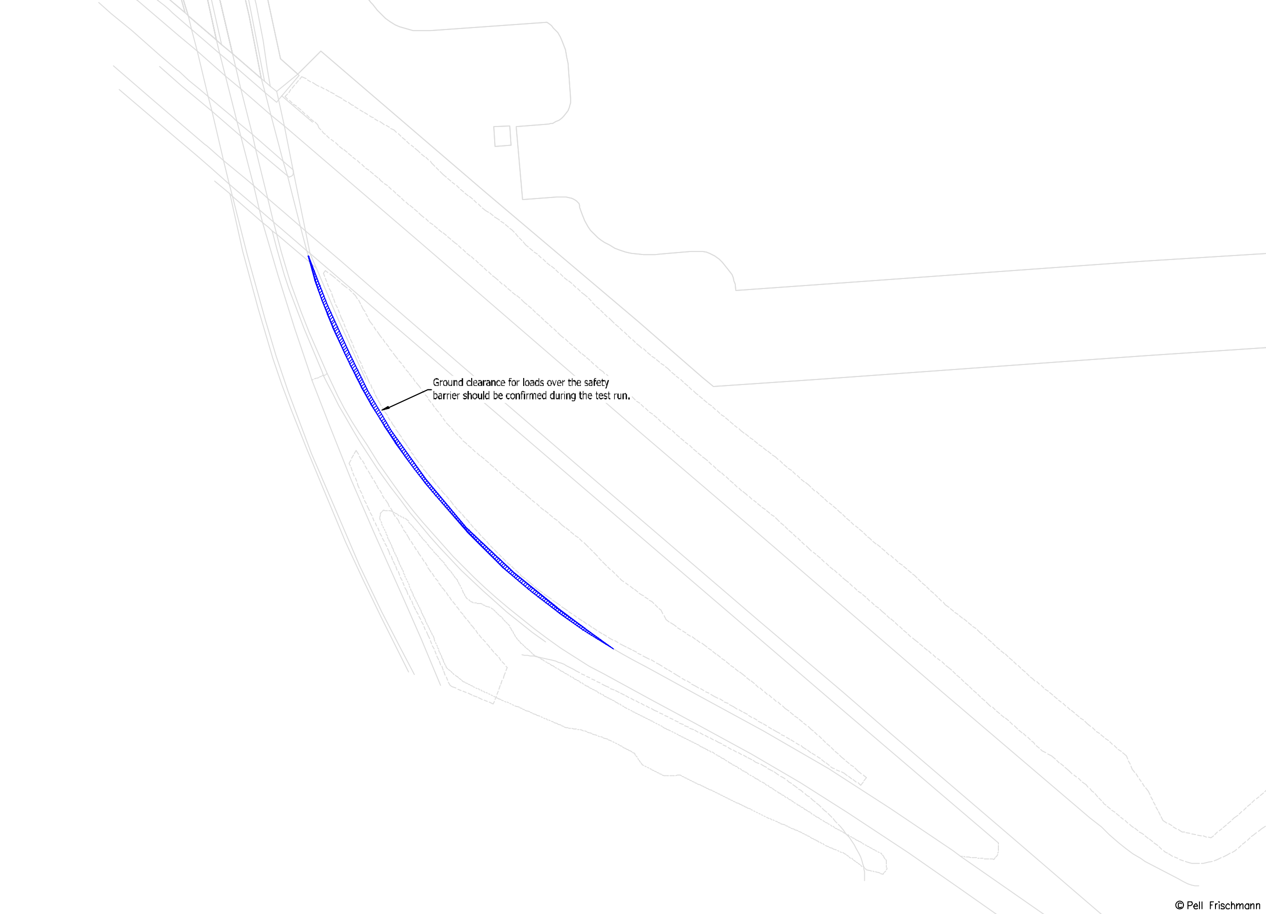
Drawing Status: Draft

Drawing No.: SK05D

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

SG170 Mitigation



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93 GEORGE STREET, EDINBURGH, EH2 3ES
Tel: +44 (0)131 240 1270
Email: pfedinburgh@pellfrischmann.com
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Client	Statkraft
Project	Appin Wind Farm
Drawing Title	SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower
SPA Location	M8 Junction 25a Slip Road

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		5

Scale: 1:1000 @ A3

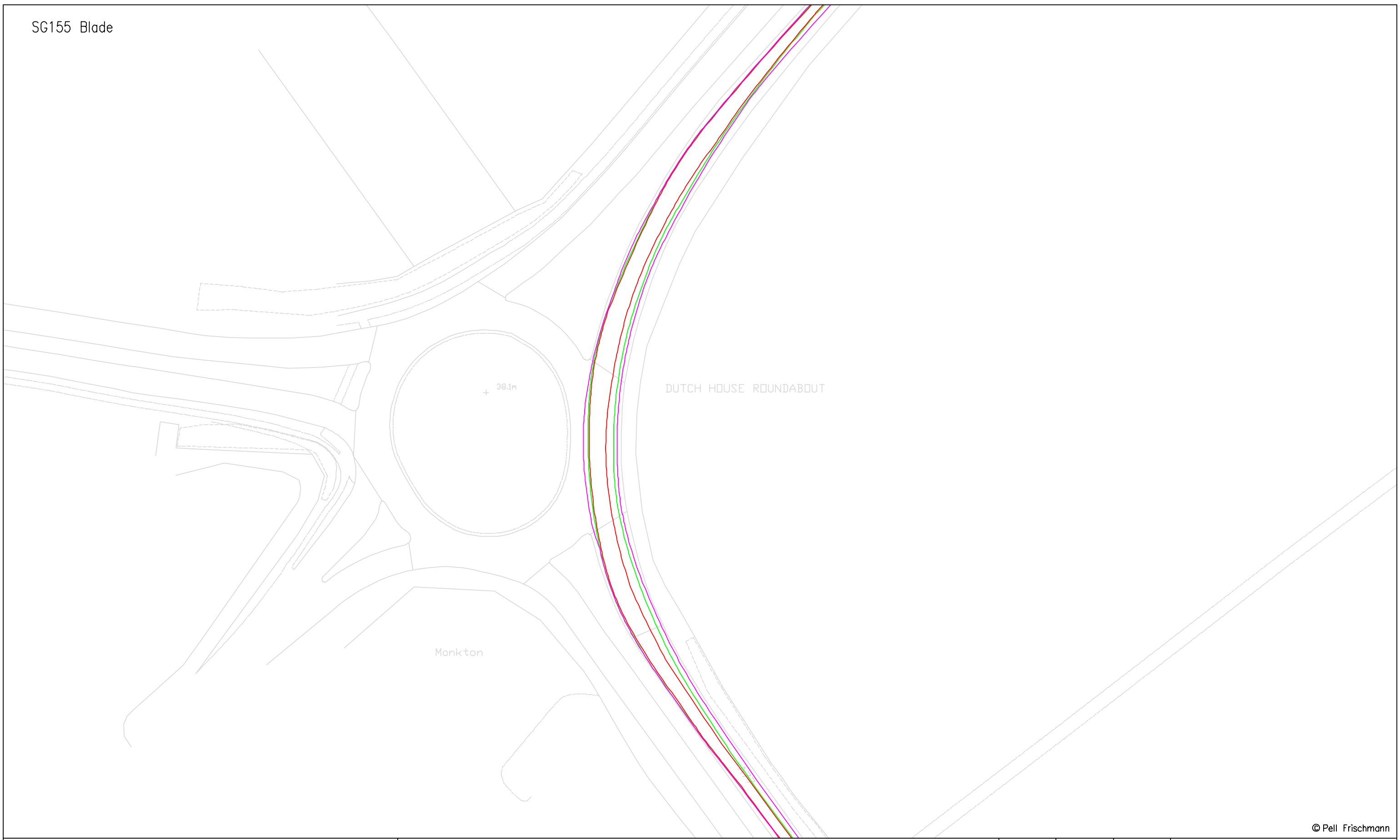
File No. 220622 - Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No.: SK05E

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX



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Client: Statkraft

Key: Wheel SPA (red) | Body SPA (green) | Load SPA (magenta) | Indicative (cyan) | Over-run (red hatch) | Over-sail (blue hatch)

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Dutch House Roundabout

NO MITIGATION REQUIRED

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		9

Scale: 1:1000 @ A3

220602- Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

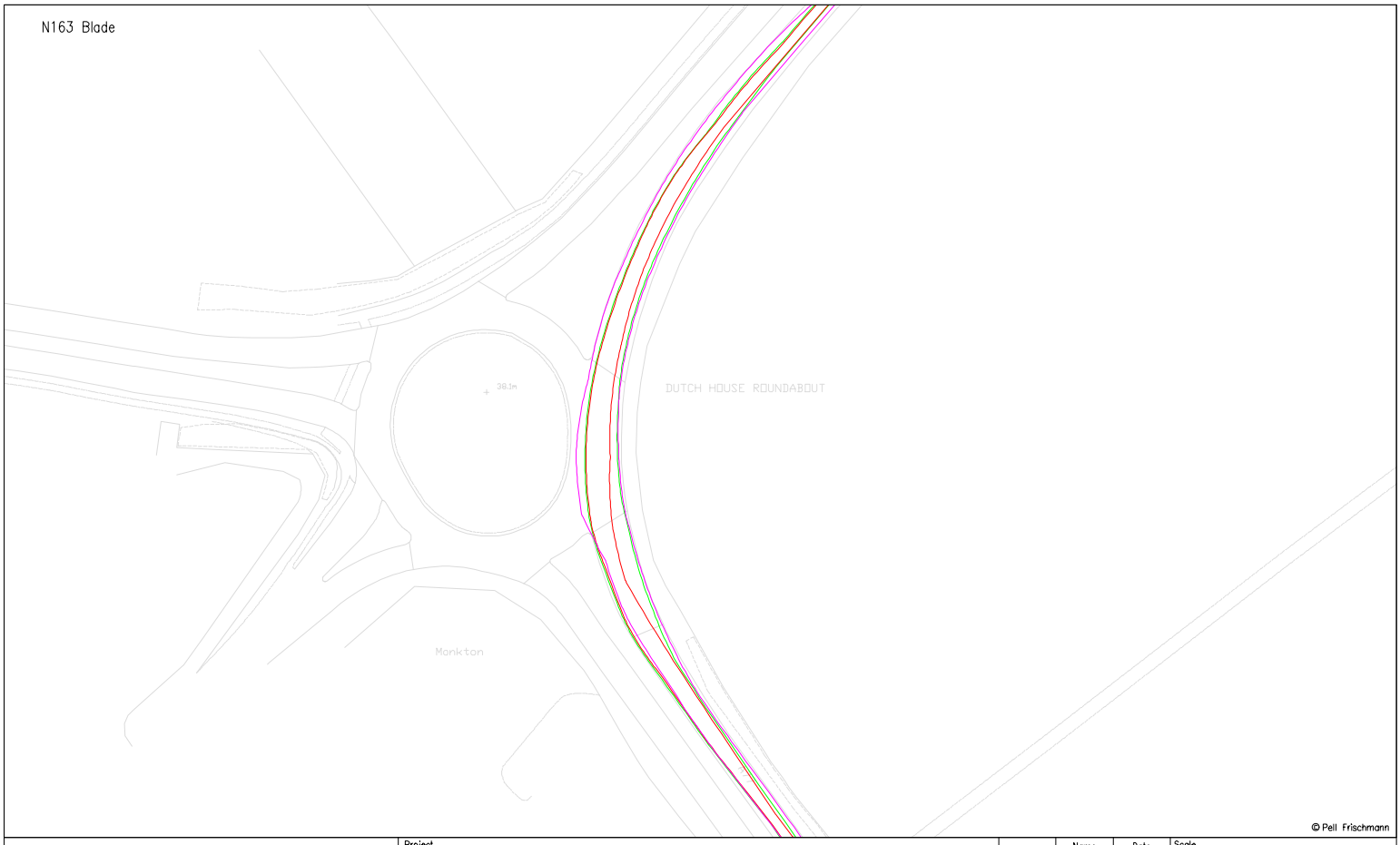
Drawing Status: Draft

Drawing No.: SK06

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

N163 Blade



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79 GEORGE STREET, EDINBURGH, EH2 3ES
tel: +44 (0)131 540 1270
Email: pfedinburgh@pellfrischmann.com
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Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Dutch House Roundabout — NO MITIGATION REQUIRED

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		9

Scale: 1:1000 @ A3

P20610-Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

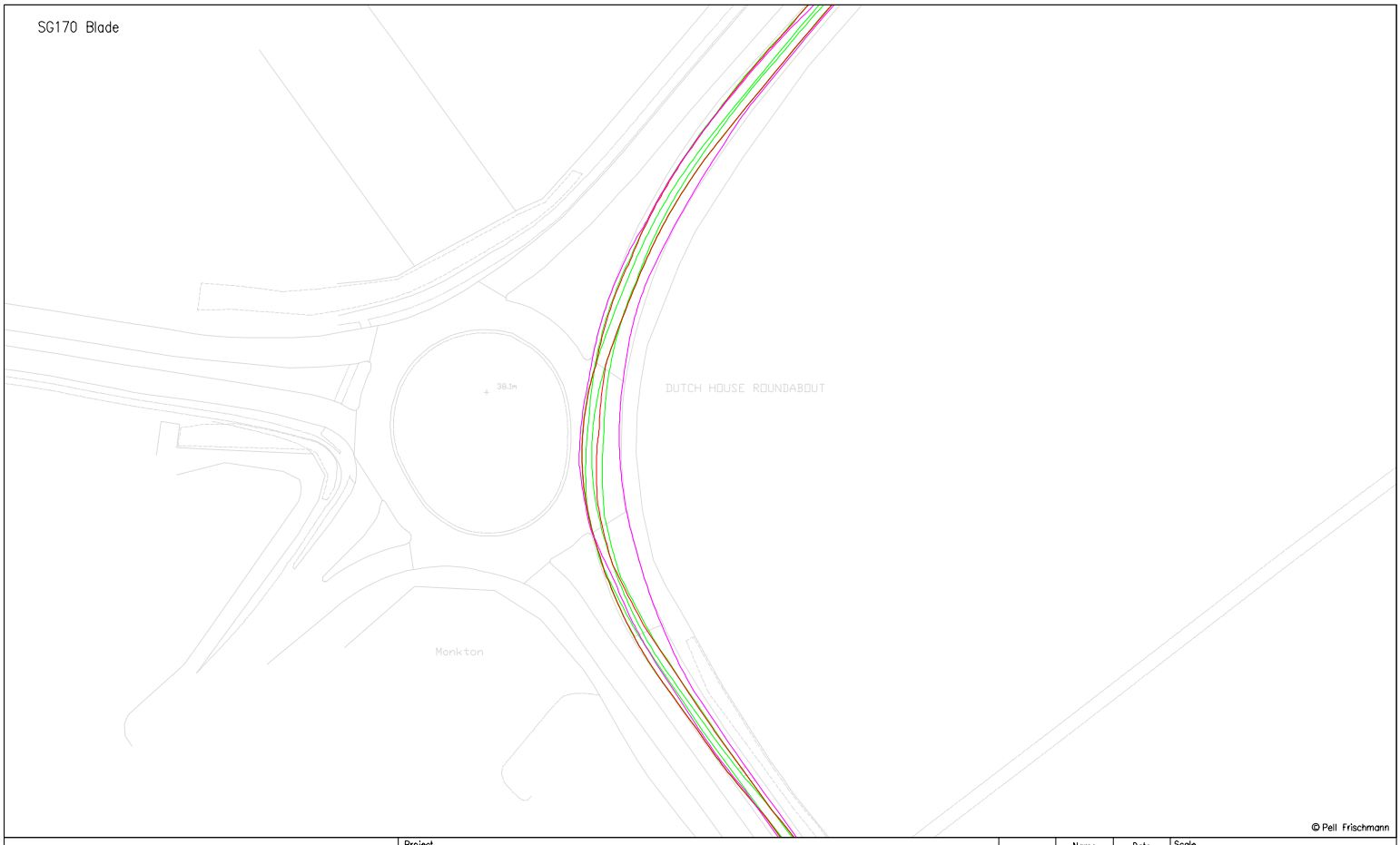
Drawing Status: Draft

Drawing No.: SK06B

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

SG170 Blade



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79 GEORGE STREET, EDINBURGH, EH2 3ES
tel: +44 (0)131 540 1270
Email: pfedinburgh@pellfrischmann.com
www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Dutch House Roundabout — NO MITIGATION REQUIRED

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		9

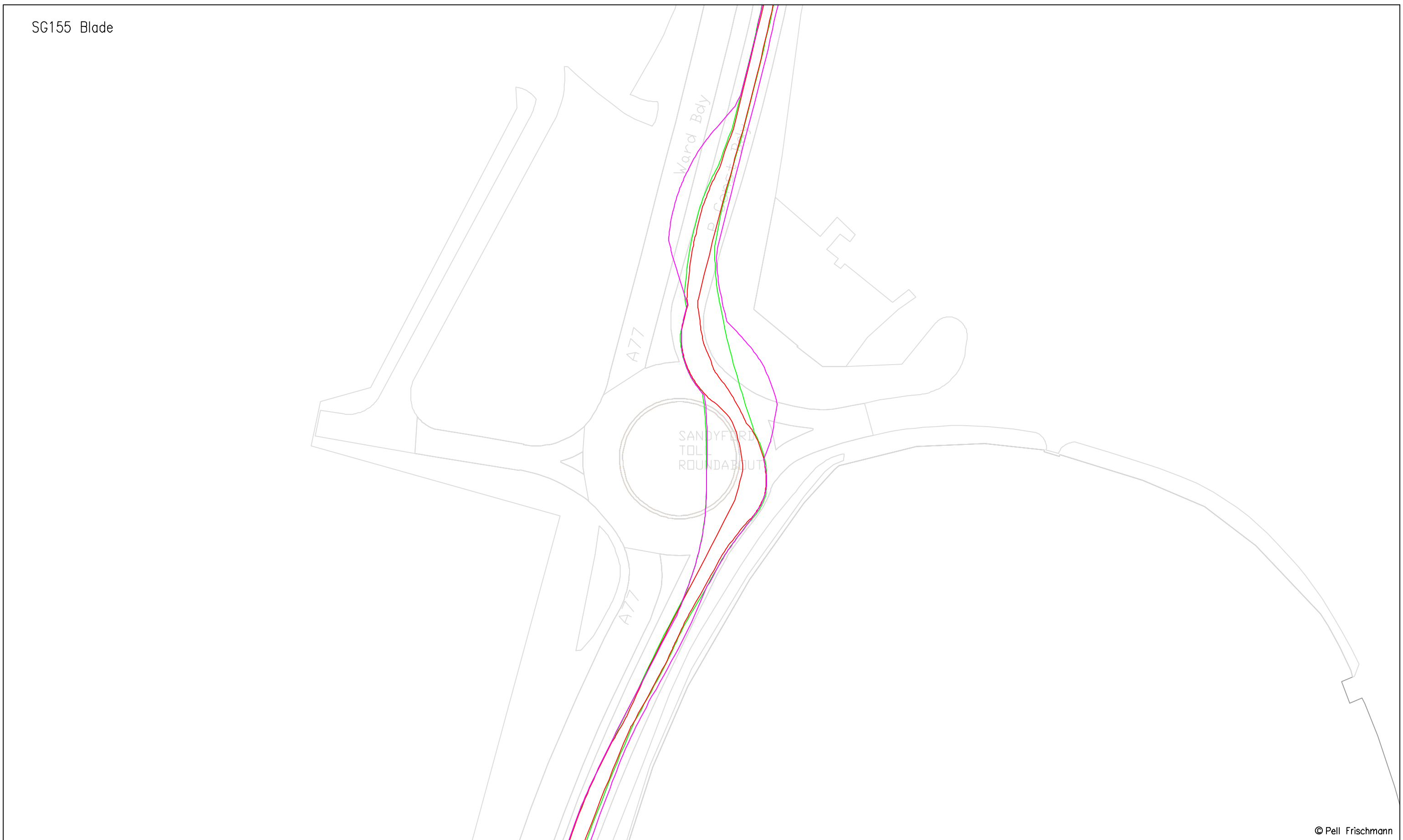
Scale: 1:1000 @ A3

Drawing No.: SK06D

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

SG155 Blade



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93 GEORGE STREET, EDINBURGH, EH2 3ES
Tel: +44 (0)131 240 1270
Email: pfedinburgh@pellfrischmann.com
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Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Sandyford Toll Roundabout

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		10

Scale: 1:1000 @ A3

File No. 220622 Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No. SK07

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

SG155 Mitigation

Pell Frischmann
93 GEORGE STREET, EDINBURGH, EH2 3ES
Tel: +44 (0)131 240 1270
Email: pfedinburgh@pellfrischmann.com
www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Sandyford Toll Roundabout

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		10

Scale: 1:1000 @ A3

File No. 220622 Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No. SK07A

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

N163 Blade

Pell Frischmann
79 GEORGE STREET, EDINBURGH, EH2 3ES
tel: +44 (0)131 540 1270
Email: pfadmin.uk@PellFrischmann.com
www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Sandyford Toll Roundabout

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		10

Scale: 1:1000 @ A3

P30630-Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No.: SK07B

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

N163 Mitigation

Pell Frischmann 99 GEORGE STREET, EDINBURGH, EH2 5ES tel: +44 (0)131 540 1200 Email: pfedinburgh@pellfrischmann.com www.pellfrischmann.com	Project: Appin Wind Farm		Name	Date	Scale: 1:1000 @ A3
		Drawn	GLJ	15/07/2022	File No. 220610-Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg
		Designed	GLJ	15/07/2022	
		Checked	GB	15/07/2022	Drawing Status: Draft
Client: Statkraft		Point of Interest		10	
Key: Wheel SPA, Body SPA, Load SPA, Indicative, Over-run, Over-sail	Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower	Drawing No. SK07C	Notes: 1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.		Revision: XXX
	SPA Location: Sandyford Toll Roundabout				

SG170 Blade

Pell Frischmann
93 GEORGE STREET, EDINBURGH, EH2 3ES
Tel: +44 (0)131 240 1270
Email: pfedinburgh@pellfrischmann.com
www.pellfrischmann.com

Project: Appin Wind Farm

Client: Statkraft

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Sandyford Toll Roundabout

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		10

Scale: 1:1000 @ A3

File No. 220622 Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

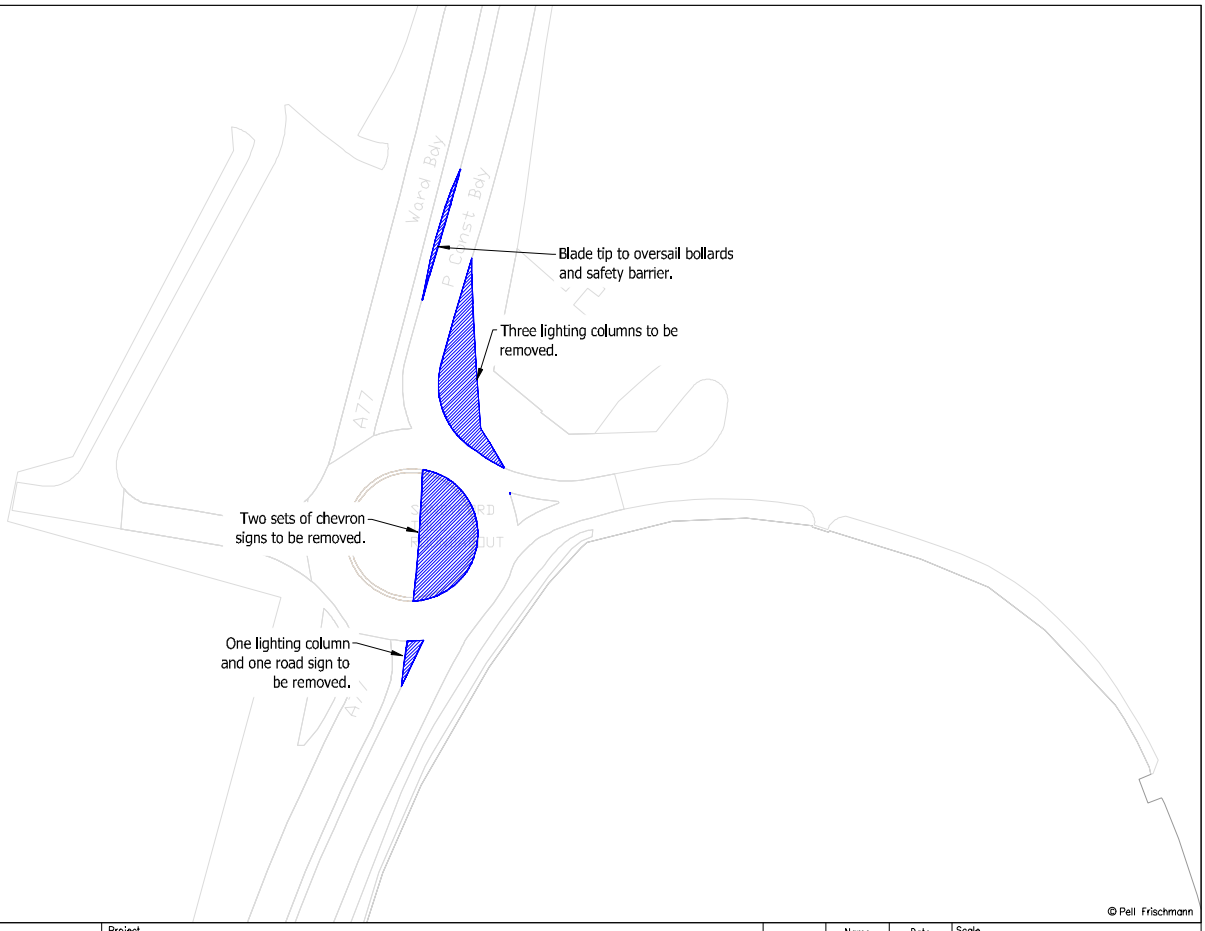
Drawing Status: Draft

Drawing No.: SK07D

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

SG170 Mitigation



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79 GEORGE STREET, EDINBURGH, EH2 3ES
tel: +44 (0)131 540 1270
Email: pfedinburgh@pellfrischmann.com
www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Sandyford Toll Roundabout

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		10

Scale: 1:1000 @ A3

P20610-Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No.: SK07E

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

Pell Frischmann

39 GEORGE STREET, EDINBURGH, EH2 2ES

tel: +44 (0)131 540 1270

Email: pfadmin.uk@PellFrischmann.com

www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Allison Street Junction

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		12

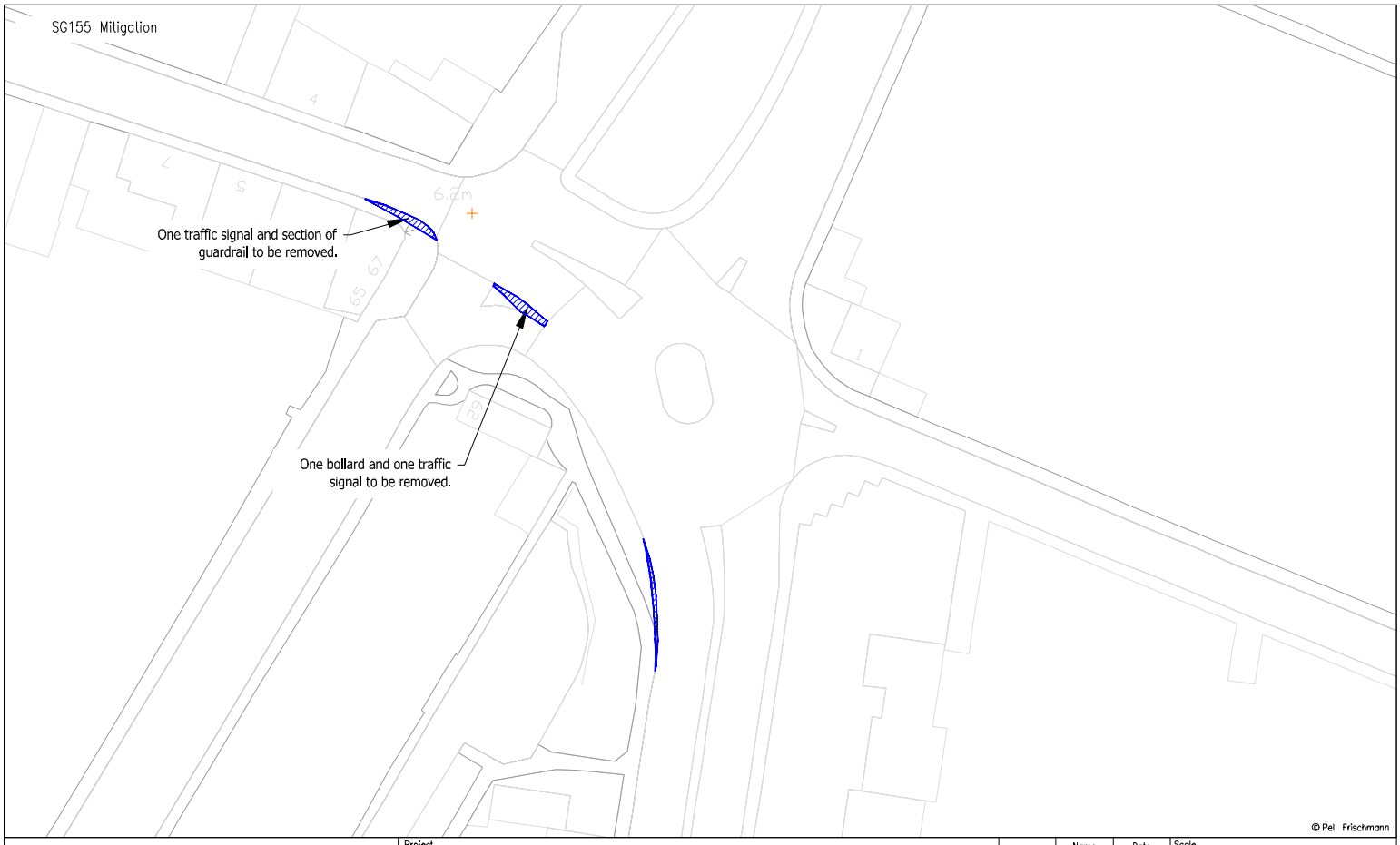
Scale: ###### @ A3

Drawing Status: Draft

Drawing No.: SK08

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: 1



Pell Frischmann
39 GEORGE STREET, EDINBURGH, EH2 2ES
Tel: +44 (0)131 540 1270
Email: pfadmin.uk@PellFrischmann.com
www.pellfrischmann.com

Client: Statkraft

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Allison Street Junction

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		12

Scale: 1:500 @ A3

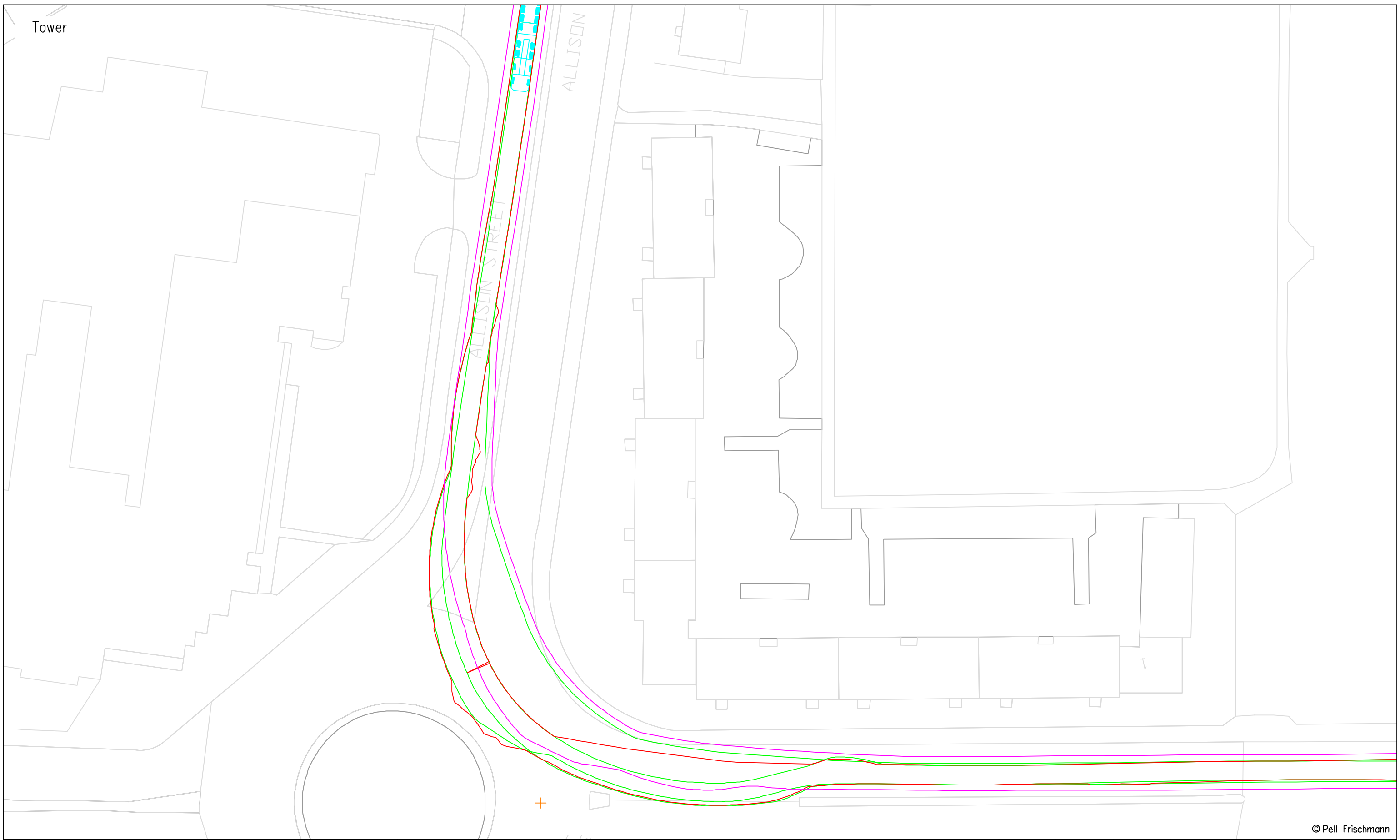
P26610-Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

Drawing No.: SK08A

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: 1



Pell Frischmann
93 GEORGE STREET, EDINBURGH, EH2 3ES
Tel: +44 (0)131 240 1270
Email: edinburgh@pellfrischmann.com
www.pellfrischmann.com

Client: Statkraft

Project: Appin Wind Farm

Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower

SPA Location: Whitletts Road Junction

	Name	Date
Drawn	GLJ	15/07/2022
Designed	GLJ	15/07/2022
Checked	GB	15/07/2022
Point of Interest		13

Scale: ###### @ A3

220602- Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg

Drawing Status: Draft

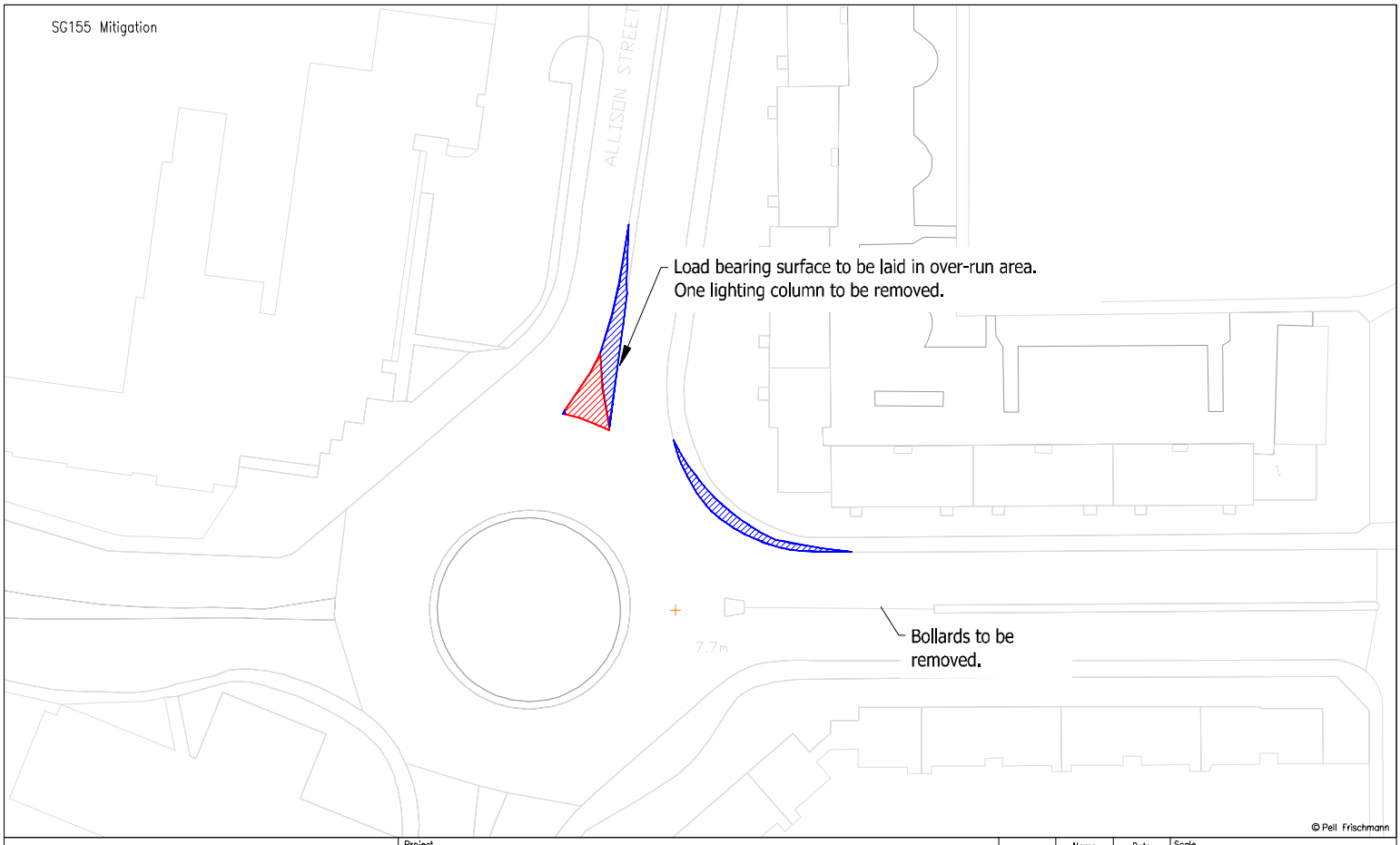
Drawing No.: SK09

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: 1

Key: Wheel SPA, Body SPA, Load SPA, Indicative, Over-run, Over-sail

SG155 Mitigation



Pell Frischmann 79 GEORGE STREET, EDINBURGH, EH2 3ES tel: +44 (0)131 540 1200 Email: pfedinburgh@pellfrischmann.com www.pellfrischmann.com	Project: Appin Wind Farm		Name / Date	Scale: 1:500 @ A3
		Drawn	GLJ 15/07/2022	File: 220610-Appin Tracking [SG155 N163 SG170]_Part1 Final.dwg
		Designed	GLJ 15/07/2022	
		Checked	GB 15/07/2022	Drawing Status: Draft
Client: Statkraft	Drawing Title: SG155 / N163 / SG170 Blades & 29.977 x 4.8 x 4.793 Tower	Point of Interest	13	
Key: Wheel SPA, Body SPA, Load SPA, Indicative, Over-run, Over-sail	SPA Location: Whitletts Road Junction	Drawing No. SK09A	Notes: 1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.	Revision: 1