Technical Appendix 12.1

Transport Assessment

SCOTTISHPOWER RENEWABLES

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Pell Frischmann

Clauchrie Windfarm

Transport Assessment

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102816

Prepared for:

ITP Energised
7 Dundas Street
Edinburgh
EH3 6QG

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 ITP Energised (on behalf of ScottishPower Renewables) to undertake a Transport Assessment (TA) of the transport issues associated with a proposed windfarm development at Clauchrie.

This report has been prepared in accordance with instructions from the Applicant on the above project details.

The report identifies the key transport and access issues associated with the proposed Development, including the route for abnormal loads. The TA identifies where the proposed Development may require mitigation works to accommodate the predicted loads; however, the detailed design of these remedial works is beyond the agreed scope of this report. It is the responsibility of the wind turbine supplier (depending upon the final contract) to ensure that the access routes to the development site are fit for purpose and that appropriate consideration for all road users has been made in accordance with the relevant health and safety legislation and ruling transport requirements at the time the project commences onsite.

1.2 Report Structure

Following this introduction, the TA report is structured as follows:

- Chapter Two describes the Proposed Development and the candidate turbine;
- Chapter Three reviews the relevant transport and planning policies;
- Chapter Four sets out the methodology used within this assessment;
- Chapter Five describes the baseline transport conditions;
- The trip generation and distribution of construction traffic in the study area is described in Chapter Six;
- Chapter Seven summarises the traffic impact assessment;
- Chapter Eight considers mitigation proposals for general construction traffic within the study area;
- Chapter Nine outlines access to the development for abnormal loads;
- Chapter Ten presents a framework Traffic Management Plan; and
- Chapter Eleven summarises the findings of the TA and outlines the key conclusions.

2 Site Background

2.1 Site Location

The proposed Development is for 18 turbines located within forestry land located to the south-east of Barrhill, near the South Ayrshire / Dumfries & Galloway Council border. In addition to the wind turbines, up to 25 MW of energy storage is proposed, co-located on the site. Figure 1 illustrates the general site location.

Figure 1: Site Location Plan

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The proposed Development will comprise:

- 18 wind turbines (maximum blade tip height of 200m) with associated turbine foundations and hardstanding areas;
- Up to 25 MW of energy storage;
- A network of underground cables linking the turbines to a grid connection point (please note that the off-site grid connection is the subject of a further planning application and as such is not covered in this assessment);
- Onsite access tracks connecting the turbine locations with the public road network;
- A control and maintenance building;
- Temporary works including a construction compound;
- A permanent anemometer mast to measure wind speed and wind direction; and
- On-site material extraction areas.

2.2 Candidate Turbines

ScottishPower Renewables has indicated that they wish to consider Vestas V150 turbines at a tip height of 200m as the candidate turbine for this windfarm application. A full Route Survey Report has been undertaken on behalf of ScottishPower Renewables and a copy is contained in Appendix A.

The tower design is likely to be site specific and as such a generic tower has been assumed to provide a worst-case kinematic envelope. Details of the proposed components are summarised in table below.

Table 1: Turbine Size Summary – V150

Component	Length (m)	Width (m)	Height (m)	Weight (t)
Blade	73.70	4.06	3.12	17.24
Tower	33.880	4.500	4.500	60

These sections were used for the subsequent swept path assessment of the proposed loads along the access route.

The selection of the final turbine model and specification will subject to a commercial procurement process following consent of the application. The assumed dimensions may therefore vary slightly from those assumed as part of this assessment.

To provide a robust assessment scenario based upon the known issues along the access route, it has been assumed that all blades would be carried on a Super Wing Carrier trailer to reduce the need for mitigation in constrained sections of the route.

Given the sizes of the proposed mid and top tower sections, these along with other loads such as the hub and nacelle housing would be carried on a six-axle step frame trailer. The base tower would be carried in a 4+7 clamp trailer.

Figure 2: Super Wing Trailer

Figure 3: Base Tower Trailer

3 Policy Context

3.1 Introduction

An over review of relevant transport planning policies has been undertaken and is summarised below for national and local government policies.

3.2 National Policy

3.2.1 National Planning Framework 3 (2014)

Scotland's National Planning Framework (NPF3) sets the context for development planning in Scotland and provides a framework for the spatial development of Scotland as a whole. It sets out the Government's development priorities over the next 20-30 years and identifies national developments which support the development strategy. Scotland's third NPF was laid in the Scottish Parliament on June 23, 2014.

3.2.2 Planning Advice Note (PAN) 75

Planning Advice Note (PAN) 75: Planning for Transport provides advice on the requirements for Transport Assessments. The document notes that:

"… transport assessment to be produced for significant travel generating developments. Transport Assessment is a tool that enables delivery of policy aiming to integrate transport and land use planning."

"All planning applications that involve the generation of person trips should provide information which covers the transport implications of the development. The level of detail will be proportionate to the complexity and scale of the impact of the proposal...For smaller developments the information on transport implications will enable local authorities to monitor potential cumulative impact and for larger developments it will form part of a scoping exercise for a full transport assessment. Development applications will therefore be assessed by relevant parties at levels of detail corresponding to their potential impact."

3.2.3 Onshore Wind Turbines; Online Renewables Planning Advice (May 2014)

The most recent Scottish Government advice note regarding onshore wind turbines was published in 2014. The advice note identifies the typical planning considerations in determining applications for onshore wind turbines including landscape impact, impacts on wildlife and ecology, shadow flicker, noise, ice throw, aviation, road traffic impacts, cumulative impacts and decommissioning.

In terms of road traffic impacts, the guidance notes that in siting wind turbines close to major roads, pre-application discussions are advisable. This is important for the movement of abnormal indivisible loads during the construction period, ongoing planned maintenance and for the decommissioning phase.

3.2.4 Transport Assessment Guidance (2012)

Transport Scotland's (TS) Transport Assessment Guidance was published in 2012. It aims to assist in the preparation of Transport Assessments (TA) for development proposals in Scotland such that the likely transport impacts can be identified and dealt with as early as possible in the planning process. The document sets out requirements according to the scale of development being proposed.

The document notes that a TA will be required where a development is likely to have significant transport impacts but that the specific scope and contents of a TA will vary for developments, depending on location, scale and type of development.

3.3 Local Policy

3.3.1 Dumfries & Galloway Local Development Plan

The Dumfries and Galloway Council Local Development Plan - The Local Development Plan (LDP) was adopted by the Council on 29th September 2014 and is the established planning policy for Dumfries and Galloway. It sets out a settlement strategy and spatial framework for how the Council foresees development occurring in the forthcoming twenty-year period.

The LDP does not contain any specific policy guidance for windfarm developments, however it does reference a Supplementary Guidance 'Part 1 Wind Energy Development: Development Management Considerations'. The relevant transport elements from this policy are:

- "Where wind energy developments will involve abnormal load impact on public roads, developers and their contractors will be required, in consultation with the Council as roads authority, to produce an appropriate Traffic Management Plan. Developers will also be required to enter into a Section 75 or other legal agreement requiring any damage to the public roads to be made good at the developer's expense (the said agreement will require a 'before' and 'after' photographic survey of all public roads to be used by the developer and their contractors). Developers should also demonstrate how they have taken into consideration the impact on amenity for residents in close proximity to the transport routes used during the construction phase";

- "Developers should also carry out early consultation with the local roads and/or trunk roads officials and the Police in respect of abnormal load deliveries to the application site. Due to the size of the components being transported there can be issues in relation to the capacity of rural roads to cope with these loads"; and

- "The route of new access roads/tracks should be carefully selected and be as sensitive to the existing contours as is practical in relation to the use it will receive".

3.4 Policy Summary

The proposed Development can accord with the stated policy objectives and the design of the site and proposed mitigation measures will ensure compliance with national and local objectives.

4 Study Methodology

4.1 Introduction

There are two stages of the life of the proposed Development. Both stages have been considered in this assessment and are as follows:

- The Construction Phase; and

- The Operational Phase.

4.2 Project Phases – Transport Overview

The greatest traffic volumes are associated with the project construction phase. The operational phase is restricted to occasional maintenance operations which generate significantly lower volumes of traffic that are not considered to be in excess of daily traffic variation levels on the road network.

The 'worst case' transport scenario is the construction phase and this assessment concentrates on this phase of the proposed Development.

It should be noted however that the construction effects are short lived and transitory in nature.

4.3 Scoping Discussions

The Applicant submitted a scoping report to Dumfries and Galloway Council, South Ayrshire Council and Transport Scotland in respect of the Environmental Impact Assessment which included a section considering traffic and transport. A full review of that scoping opinion is provided in the Access, Traffic and Transport Chapter of the EIA.

5 Baseline Conditions

5.1 Access Arrangement

The proposed Development would be accessed directly from a priority junction on the A714 near Cairnderry Cairn.

An existing forest access track would be improved and the existing A714 junction widened to accommodate the proposed access movements for the construction and operational phases of the project.

5.2 Study Area Determination

Discussions with ScottishPower Renewables were held to review the transport experiences of their nearby Kilgallioch windfarm site. These discussions centred around likely points of origin for materials to assist in developing a suitable study area.

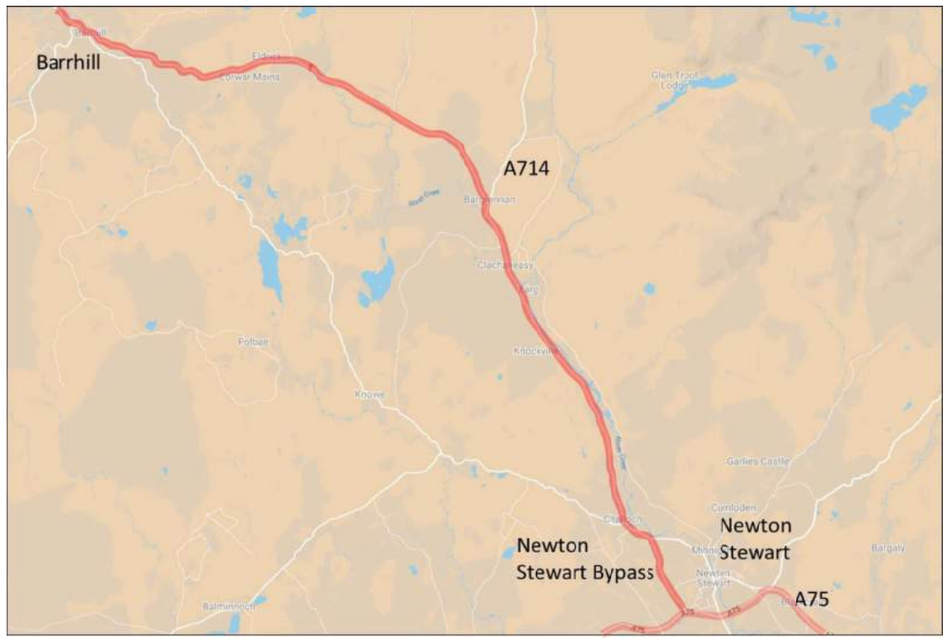
Strategic access to the A714 is available from the A75 trunk road network to the south. Access between the A75 is made either through the town of Newton Stewart or via a bypass of the town to the west. Recent experience has diverted all construction traffic along this bypass to reduce the impact on the local population as far as possible

The study area for this assessment is as follows:

- The A75 trunk road (east and west of Newton Stewart);
- The bypass of Newton Stewart (U52W); and
- The A714 between Newton Stewart and Barrhill to the north.

The network is illustrated in Figure 4 below:

Figure 4: Assessment Study Area



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5.3 Pedestrian and Cyclist Networks

There are no Core Paths recorded by Dumfries and Galloway Council near the proposed site access.

The pedestrian network within the study area is limited as a result of the rural nature of the road network.

A review of the Sustrans cycle network plan of the United Kingdom indicates that the there are no National Cycle Routes on the A714 or within the vicinity of the site. The Dumfries and Galloway Council cycle map indicates that the nearest cycle network interaction with the proposed delivery route is located at the junction between the A75 and Newton Stewart bypass.

The A714 does not have any pedestrian or cyclist infrastructure near the site access junction and as such, active travel activity is considered to be very low.

5.4 Road Access

Access to the site is currently taken from the A714 via a priority junction that provides access to the wider forestry estate and to Cairnderry Chambered Cairn.

The A714 is not part of the trunk road network but forms an important regional distributor function between the wider Galloway area and South Ayrshire. The road is maintained by Dumfries and Galloway Council and South Ayrshire Council.

The access junction and track are unsurfaced and are not signposted for wider access. There are no formal kerbs and vegetation is growing in the visibility splays.

The junction in its current form would need improvement works in order for it to be accessible for the proposed abnormal loads.

5.5 Existing Traffic Conditions

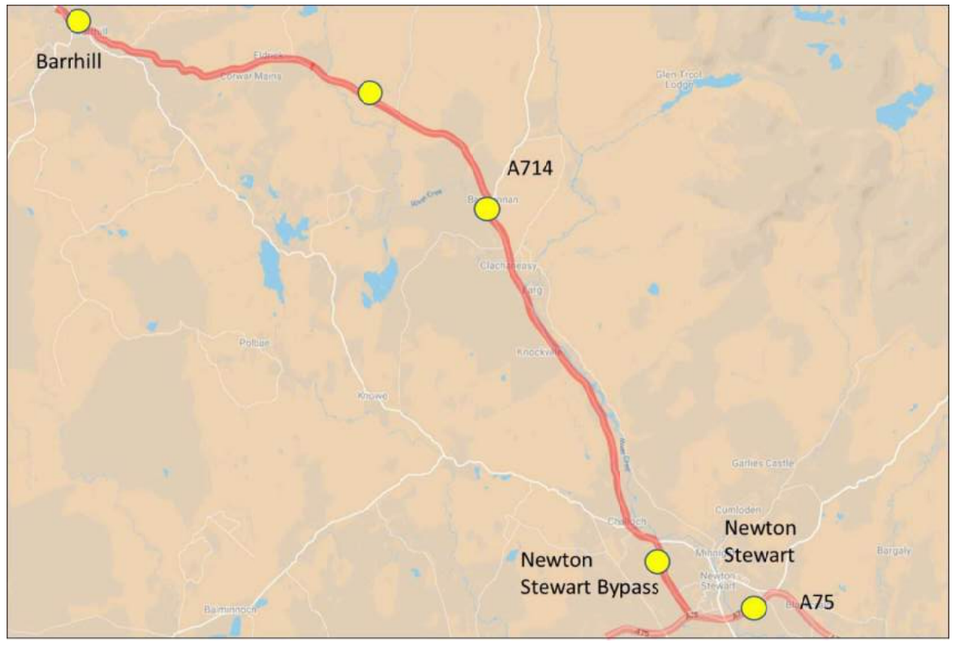
In order to assess the impact of construction traffic on the study area, a series of Automatic Traffic Count (ATC) sites were established in September 2019. These were deployed during a neutral period to record average traffic flows.

The counts sites used were as follows:

- The A75 (between the Newton Stewart Bypass and A714 junction);
- The Newton Stewart Bypass;
- The A714 to the north of Bargrennan Bridge);
- The A714 at the Site Access Junction; and
- The A714 in Barrhill village centre.

The locations of the ATC sites are illustrated in Figure 6.

Figure 5: Count Site Locations



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These sites were identified as being areas where sensitive receptors on the access route would be located. A full receptor sensitivity and effect review is prepared in the Access, Traffic and Transport Chapter of the EIA.

The traffic counters allowed the traffic flows to be split into vehicle classes and the data have been summarised into cars/ light goods vehicles (LGV) and heavy goods vehicles (HGVs) (all goods vehicles >3.5 tonnes gross maximum weight).

Table 2 summarises the 24 hour average weekday traffic data collected at the count sites.

Table 2: 24hour Average Weekday Traffic Data

Survey Location	Cars & LGV	HGV	Total
A75	4469	614	5083
Newton Stewart Bypass	746	48	794
A714 Bargrennan	868	40	908
A714 Site Access	581	32	613
A714 Barrhill	809	30	839

The ATC sites used to provide traffic volume data were also used to collect speed statistics. The two-way five-day average and 85th percentile speeds observed at the count locations are summarised below in Table 3.

Table 3: Speed Summary (Weekday Average Two Way Flows) MPH

Survey Location	Mean Speed	85%ile Speed	Speed Limit
A75	48.65	57.65	60
Newton Stewart Bypass	44.75	53.50	60
A714 Bargrennan	33.10	38.80	60
A714 Site Access	55.65	63.45	60
A714 Barrhill	24.45	29.50	30

The speed survey data indicates that there is compliance with current speed limits on the study area with the exception of the area of the site access junction. This indicates that traffic management measures will be required at this location and that Police Scotland may wish to consider enforcement spot check in this very rural area.

5.6 Accident Review

Road traffic accident data for the three year period commencing 01 January 2016 through to the 31st December 2018 was obtained from the online resource crashmap.co.uk which uses data collected by the police about road traffic crashes occurring on British roads where someone is injured.

Accident data for the A75 in the vicinity of Newton Stewart, the Newtown Stewart bypass and The A714 between Newton Stewart and Barrhill was reviewed. The summary statistics indicate that:

- There were a total of 11 accidents within the study area over the three year period. Of those, eight were classified as “Slight”, two “Serious” and one as “Fatal”;
- In the immediate three year period, two recorded accidents were noted as being “Slight”, one as “Serious” and one fatality was recorded;
- The fatal accident occurred on the A714 between Bargrennan and Newton Stewart. The “Serious” accidents were noted on the A75 to the east of Newton Stewart;
- Three “Slight” accidents were noted in the vicinity, one at Bargrennan and the rest occurring on the A75. No accidents were recorded at the A75 / Newton Stewart bypass road junction;
- There are three recorded accidents involving HGV traffic, all on the A75. Two were “Slight”, with one noted as being “Serious”;
- There was only one “Serious” accident involving a motorcycle (on the A75). There were no Bus, cyclist or pedestrian accidents noted and no children were recorded as casualties; and
- Young drivers were involved in two slight accidents (at Bargrennan and on the A75) and one “Serious” accident on the A75.

The statistics indicate that the majority of accidents are “Slight” in nature and that there are a limited number of HGV incidents that occurred on the strategic A75 trunk road. With the exception of the one fatal accident, there has been a significant reduction in accidents in the study area over the last three years.

5.7 Baseline Traffic Conditions

Construction of the project could commence during 2022 if consent is granted and is anticipated to take up to 18 months depending on weather conditions and ecological considerations.

To assess the likely effects during the construction phase, base year traffic flows were determined by applying a National Road Traffic Forecast (NRTF) low growth factor to the surveyed traffic flows.

The NRTF low growth factor for 2019 to 2022 is 1.022. These factors were applied to the 2019 survey data to estimate the 2022 Base traffic flows shown in Table 4.

Table 4: Baseline 2022 24hour Average Weekday Traffic Data

Survey Location	Cars & LGV	HGV	Total
A75	4568	627	5195
Newton Stewart Bypass	762	49	811
A714 Bargrennan	887	41	928
A714 Site Access	594	33	627
A714 Barrhill	827	31	858

6 Trip Generation and Distribution

6.1 Construction Phase

6.1.1 General Methodology

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

- Staff transport, either cars or staff minibuses;
- Construction equipment and materials, deliveries of machinery and supplies such as cement; and
- Abnormal loads consisting of the wind turbine sections and also a heavy lift crane.

Average monthly traffic flow data were used to establish the construction trips associated with the site based on the assumptions detailed in the following sections.

6.1.2 Construction Staff

Staff would arrive in non-HGV vehicles and where possible will be encouraged to car share. The workforce onsite will depend on the activities undertaken, but, based on previous wind farm construction site experience for a project of this scale which suggests three staff per turbine during the short peak period of construction is likely, the maximum number of staff expected onsite could be around 54 per day.

For the purposes of estimating traffic movements, it was assumed that 60% of staff would be transported by minibus carrying up to 16 people and 40% would arrive by car (single car occupancy was assumed as the worst case at this stage with potentially fewer movements through car sharing).

Based on these assumptions, staff transport cars and light vehicles would account for a maximum of 48 vehicle trips (24 trips inbound and 24 trips outbound) per day during the peak period of construction.

6.1.3 Abnormal Indivisible Load Deliveries

The turbines are broken down into components for transport to the Site. The nacelle, blade and tower sections are classified as Abnormal Indivisible Loads (AIL) due to their weight, length, width and height when loaded. For the purposes of the report, the ‘worst case’ numbers of components requiring transport are illustrated in Table 5.

Table 5: Turbine Components

Component	Loads per turbine
Blades	3
Tower Sections	4
Nacelle Housing	1
Hub	1
Drive Train	1

Component	Loads per turbine
Container	1
Nose Cone	0.5
Footings	1
Site parts (shared Containers)	0.2
Total Movements	12.7 per turbine
Number of Turbines	18 turbines
Total Vehicle Trips	229
Total Vehicle Movements	458

In addition to the turbine deliveries, two high capacity erection cranes would be needed to offload a number of components and erect the turbines. The cranes are likely to be mobile cranes with a capacity up to 1,000 tonnes that are escorted by boom and ballast trucks to allow full mobilisation onsite. Smaller erector cranes would also be present to allow the assembly of the main cranes and to ease the overall erection of the turbines.

Escort vehicles would accompany the AIL convoys to support the traffic management measures. Up to four vehicles would be deployed and it is assumed that three turbine components would be delivered per convoy. This would result in 61 convoys on the network, with a total of 486 escort journeys (243 trips in and 243 trips out).

The escort vehicles have been assumed to be police cars and light goods vehicles. Motorcycles may be deployed, depending upon Police resources.

6.1.4 General Deliveries

Throughout the construction phase, general deliveries will be made to site via HGV. These would include fuel, site office supplies and staff welfare.

At the height of construction, it is assumed that up to 40 journeys to site are made (20 in and 20 out) per month.

Separate to general welfare deliveries, a site compound will be established on site and will be removed following the commissioning stage of the construction process. This will be constructed of modular buildings and a provision of 50 journeys has been established for this element.

6.1.5 Forestry Extraction

Forestry extraction from the site is an ongoing process as the site is located in a commercial forest crop area. As such extraction works are expected to be ongoing prior to the commencement of site works. Some of this work will be in areas where the proposed Development works will take place.

An amount of forestry will still need to be cleared to complete the construction platform for the proposed Development. An estimate of this material is difficult to provide at present as future extraction works have yet to be planned. As such an extraction provision of 20 HGVs per day for four months has been estimated (10 HGVs inbound and 10 HGVs outbound).

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6.1.6 Material Deliveries

Various materials will need to be delivered to site to form the site based infrastructure. At the outset, up to 50 HGV deliveries will deliver plant and initial material deliveries to the site to enable the formation of the site compound, borrow pits and access tracks

ScottishPower Renewables have confirmed that they will be using borrow pits to obtain stone from the site and that water may be extracted for use within the site for damping down roads etc. This has been based upon their recent experience at the nearby Arecleoch and Kilgallioch windfarm sites.

As such, it is assumed that all materials for the construction of the road network and crane hardstandings will be won from the site and that no additional material will need to be exported into the site.

Concrete required to form the turbine bases and that substation foundation will be imported from site from ready mix suppliers located to the south of the site and accessed from the A75. Steel will also be imported for use as reinforcement in the foundations and will come from the southeast of the site.

Concrete calculations for the turbine bases and the substation are detailed in Tables 6 and 7 below.

Table 6: Concrete Trip Estimation

Section	Volume per pour (m3)	No of Pours	Total Volume (m3)	Vehicle Capacity (m3)	No of Trips	No of Journeys
Turbine Base	800	18	14400	6	2400	4800
Substation Foundation	100	1	100	6	17	34

Table 7: Reinforcement Trip Estimation

Section	Tonne per base	No of bases	Total Weight (t)	Vehicle Capacity (t)	No of Trips	No of Journeys
Turbine Base	100	18	1800	30	60	120
Substation Foundation	20	1	20	30	1	2

Cables will connect each turbine to the internal substation and control building. Trip estimates for the cable materials are provided below in Tables 8 and 9. ScottishPower Renewables have also confirmed that all cable sand is likely to be extracted from the site and that no other imports will be required.

Three cables are to be provided within each cable trench and would be backfilled with cable sand. Geotextiles would be used to shield the trench and ducting would be used to protect the cable when it runs under roadways.

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Table 8: Cabling Trip Estimation

Length of Cable run	Total cable length	Length of cable / drum (m)	No of Drums	Drums / Vehicle	No of Trips	No of Journeys
25000	75000	500	150	9	17	34

Table 9: Geotextile and Ducting Trip Estimation

Section	Length of run	Length / roll or section (m)	No of rolls / sections	Drums / Section per Vehicle	No of Trips	No of Journeys
Geotextile	25000	75	333	20	17	34
Ducting	200	5	40	20	2	4

A substation and control building will be constructed on the site. This will require deliveries of building materials and structural elements. These are detailed in Table 10 and result in a further 150 HGV journeys.

Table 10: Building Material Trip Estimation

Component	Trips	Journeys
Structural Steelwork	30	60
Cladding	5	10
Blockwork	10	20
Substation Electrical Components	10	20
Ancillary Equipment and Deliveries	20	40

6.1.7 Energy Storage Deliveries

ScottishPower Renewables have advised that the site will feature up to 25MW of energy storage. The energy storage units will be housed in standard shipping containers and their transport will result in up to 26 HGV journeys.

As the energy storage units are supplied in standard shipping containers, they do not need AIL escorts or any other additional traffic. The smaller turbine erection crane, or HGV mounted HIAB crane would be used for off loading.

6.1.8 Distribution of Trips

The distribution of development trips on the study area will vary depending on the types of loads being transported. All traffic will enter and exit the Site by way of the site access junction on the A714.

Staff trips are assumed to originate from the directions of Newton Stewart and Barrhill in equal numbers to be close to the site. General site deliveries are also assumed to follow the same distribution pattern.

Based upon previous experience that ScottishPower Renewables has gained from Arecleoch and Kilgallioch windfarms, ready mix concrete for Clauchrie will originate from sites on the A75 to the east of Newton Stewart. Access to the site will be via the bypass to the west of Newton Stewart and will be enforced via the Balance of Plant (BoP) contract.

General construction and building supplies deliveries will be made via the A75 and A714. Loads may use the M74 / A75 or the A77 / A75 to access the area. Access via the A714 from the north will be discouraged via the BoP contracts.

ScottishPower Renewables have recently constructed Kilgallioch Windfarm. In line with their experience at this site, it is proposed that a dual port strategy is considered for the delivery of the wind turbine components. It is proposed that the primary port used or the deliveries of wind turbines components would be King George V Dock in Glasgow. This port has ample adequate facilities for accommodating the proposed loads and the access route from the dock to the A714 has been the subject of upgrade works for these loads and has been agreed by Transport Scotland already.

Access from King George V docks would be via the M8, M74, M6, A75 and A714. Loads would undertake a U-turn at Carlisle at M6 Junction 42 or Junction 44 to allow direct access onto the A75.

A secondary port option using the port of Cairnryan is also considered. This port is significantly smaller and improvement works to the road network from the port gate to the A714 access junction will be required. In addition, the Port of Cairnryan has some restrictions including limited water depth and port handling facilities/component storage and may limit the use of this facility.

Access from Cairnryan would be via the A77, A751, A75 and A714.

If consented, ScottishPower Renewables would engage in detailed discussions with the turbine suppliers, haulage contractors, Transport Scotland, Police Scotland and road authorities in regards to an agreed port of entry strategy and AIL delivery route.

6.1.9 Peak Construction Period

A construction programme has been developed for the project. This has been used to determine timescales for the various deliveries and trips.

A trip programme has been developed and is illustrated in Appendix B.

The results conclude that Month 5 is likely to be the peak period for the construction phase. This corresponds with the delivery of ready mix concrete for the turbine foundations, extraction of forest timber, general site deliveries and staff. The activities are anticipated to generate an average of 102 movements per day (51 trips in and 51 trips out), of which 48 would be made by light vehicles (site staff) and 54 by HGV.

The traffic impact assessment focuses on the peak period traffic flows to illustrate the potential worst case traffic effects on the study area.

6.2 Operational Phase

The It is predicted that during the operation of the Site there would be up to 2 vehicle movements per week for maintenance purposes. Also, there may be occasional abnormal load movements to deliver replacement components in the unlikely event of a major failure.

7 Construction Traffic Impact Assessment

The peak construction month occurs in Month 5. Using the distribution of traffic described in the previous section, the proposed traffic flows on the study area network at the peak of construction are illustrated in Table 11.

Table 11: Peak Construction Month Daily Traffic Data

Survey Location	Cars & LGV	HGV	Total
A75	24	52	76
Newton Stewart Bypass	24	52	76
A714 Bargrennan	24	52	76
A714 Site Access	48	54	102
A714 Barrhill	24	2	26

The peak month traffic data was combined with the future year (2022) traffic data to allow a comparison between the baseline results to be made. The increase in traffic volumes is illustrated in percentage increases for each class of vehicle. This is illustrated in Table 12.

Table 12: 2022 Peak Month Daily Traffic Data

Survey Location	Cars & LGV	HGV	Total Traffic	Cars & Lights % Increase	HGV % Increase	Total Traffic % Increase
A75	4592	679	5271	0.53%	8.29%	1.46%
Newton Stewart Bypass	786	101	887	3.15%	105.56%	9.37%
A714 Bargrennan	911	93	1004	2.70%	127.20%	8.19%
A714 Site Access	642	87	729	8.08%	165.12%	16.28%
A714 Barrhill	851	33	884	2.90%	6.52%	3.03%

It is anticipated that should any weekend working take place, it would involve limited numbers of staff and associated vehicle movements and no deliveries by HGV (with the possible exception of abnormal load deliveries). As such no detailed analysis has been undertaken.

The total traffic movements are not predicted to increase by more than 10% on all of the study area, with the sole exception of the A714 in the vicinity of the site access junction.

The total HGV traffic movements will increase between 105% and 165% on the Newton Stewart Bypass and on the A714. Whilst this increase is statistically significant, it is generally caused by the relatively low HGV flows on these two roads and will see an additional 52 HGV journeys per day (26 Inbound and 26 Outbound). This represents nearly 7 HGV journeys every hour during construction activities, which is not considered significant in operational terms.

A review of existing road capacity has been undertaken using the Design Manual for Roads and Bridges, Volume 15, Part 5 “The NESA Manual”. The theoretical road capacity has been

estimated for each of the road links that makes up the study area. The results are summarised in Table 13.

Table 13: 2022 Daily Traffic Data (24hr)

Location	2022 Baseline Flow	Theoretical Road Capacity	2022 Base + Development Flows	2022 Base + Development Used Capacity %	Spare Road Capacity %
A75	5195	57600	5271	9.15%	90.85%
Newton Stewart Bypass	811	43200	887	2.05%	97.95%
A714 Bargrennan	928	43200	1004	2.32%	97.68%
A714 Site Access	627	43200	729	1.69%	98.31%
A714 Barrhill	858	38400	884	2.30%	97.70%

The results indicate that there are no road capacity issues with the proposed Development and that ample spare capacity exists within the trunk and local road network.

8 Proposed Traffic Mitigation Measures

8.1 Construction Phase

A Construction Traffic Management Plan (CTMP) would be prepared and agreed with the Council and Transport Scotland prior to construction works commencing. The CTMP will be developed using experience gathered during the construction of recent projects including Kilgallioch Windfarm:

The following measures could be included within CTMP during the construction phase.

- All materials delivery lorries (dry materials) would be sheeted to reduce dust and stop spillage on public roads;
- Specific training, audit and disciplinary measures would be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- Appropriate traffic management measures would also be put in place at the Site access junction to advise drivers to slow down and be aware of turning traffic;
- Directional signage could be provided to enforce delivery routes;
- Requirement for all drivers to attend an induction to include a safety briefing, the need for appropriate care and speed control, particularly in sensitive areas, identification of specific sensitive areas, identification of the specified route, and the requirement not to deviate from the specified route; and
- A Travel Plan to encourage lift sharing /crew bus access to site for construction staff.

8.2 Operational Phase Mitigation

Site entrance roads will be well maintained and monitored during the operational life of the development. Regular maintenance will be undertaken to keep the site access track drainage systems fully operation and to ensure there are no run off issues onto the public road network.

8.3 Decommissioning Phase Mitigation

Similar to the construction phase, a Traffic Management Plan and Construction Traffic Management Plan will be prepared for the decommissioning phase.

9 Abnormal Indivisible Load Summary

A Route Survey Review has been undertaken and is attached in Appendix A. The assessment is based on a rotor diameter of 150m at a maximum tip height of 200m.

The assessment details the proposed route and the required physical mitigation works that are required along the proposed access route form the ports to the site access junction.

The route assessment was based upon the use of Vestas V150 turbine. The worst case loads were used in the assessment, with a 74m long by 4.03m wide turbine blade and a 33.88m long by 4.5m wide turbine tower section being assessed.

The assessment reviews access to the proposed Development from King George V Docks in Glasgow via the M8, M74, M7, A75 and A714. The works to accommodate these loads comprises of adjustments to street furniture and the provision of over-run surfacing at various junctions along the A75.

A number of the necessary works identified are similar to those already in place for previous windfarm developments. These have been improved to suit the proposed larger turbine loads and will be made permanent with the agreement of the road authorities. In general, the works are of low intrusion and can be delivered without significant civil engineering works.

The existing access junction for the current Kilgallioch windfarm will be widened to accommodate the proposed larger loads. Form this point onwards, loads will proceed to the turbine locations using existing and new access tracks.

Provision for an alternative access route from Cairnryan has also been considered as noted in Section 6.18. As with the route from Glasgow, the mitigation works are small scale in nature and do not require significant civil engineering works to deliver them.

An agreed access strategy for turbine loads will be confirmed post consent once the turbine supplier has been confirmed and the turbine details confirmed.

9.1 Site Access Junction

The site access junction has been assessed and an indicative access junction is provided in Appendix C. The existing junction would be widened to accommodate the proposed abnormal loads and the sight visibility splays would be cleared to ensure safe access for all users at the junction.

9.2 Convoy Management

It is not yet possible to fully detail the convoy management measures required as the turbine supplier has yet to be identified and there is no haulier appointed to the project. Should the proposed Development be approved, ScottishPower Renewables will undertake a turbine supply tender exercise and will select a suitable turbine for use on the site. The turbine supplier will then appoint a haulier. At this stage a detailed convoy plan can be prepared one the exact nature of the turbine is known.

To address the concerns expressed by the local community, it is proposed that a detailed convoy management plan is developed with Transport Scotland and Dumfries & Galloway

Council. This will include measures to provide hold points for convoys to ensure that inconvenience to other road users can be minimised.

Please note that these are proposed areas and would use existing road space, rather than new construction:

- An overtaking / passing area to pass convoys on the dual carriageway section of the A75 at Collin;
- An overtaking / passing area to pass convoys on the A75 at Rhonehouse;
- An overtaking / passing area to pass convoys on the Newton Stewart bypass road; and
- The use of a layby area on the A714 near Knockville.

The potential for using these areas will be developed in detail with Police Scotland and the roads authorities and a detailed convoy management plan will be established prior to loads commencing.

9.3 General Comments

A review of the following would be required prior to the delivery of the abnormal loads, to ensure load and user safety:

- A review of clear heights with utility providers and the transport agencies along the route;
- Ensure any vegetation which may foul the loads is trimmed back to allow passage (this is of concern to the hauliers once the load is on the local road network and should be assessed for summer conditions);
- Confirm there are no roadworks or closures that could affect the passage of the loads;
- Check no new or diverted underground services on the proposed route are at risk from the abnormal loads;
- Confirm Police Scotland is satisfied with the proposed movement strategy; and
- The developer contacts the appropriate agencies to ensure that the above points are reviewed before the transport of the components commences.

10 Framework Traffic Management Plan

10.1 Proposed Management Measures

This chapter introduces a number of traffic management measures that could help reduce the effect of construction traffic. These measures are currently presented as indicative to be confirmed with the relevant local and trunk road authorities and police closer to the time.

All deliveries would be undertaken at appropriate times (to be discussed and agreed with the relevant roads authorities and police) with the aim to minimise the effect on the local road network. It is likely that the convoys would travel in the early morning periods, before peak times while general construction traffic would generally avoid the morning and evening peak periods.

10.2 Component & Transport Details

Traffic to the Site during construction will fall into two categories, namely:

- General construction traffic; and
- AILs – vehicles for the transport of the largest turbine components.

10.3 Potential Route Conflict Areas

The majority of potential conflicts between construction traffic and other road users will occur with AIL traffic. General construction traffic is not likely to come into conflict with other road users as the vehicles are smaller and road users are generally more accustomed to them.

Potential conflicts between the AIL turbine loads and other road users can occur at a variety of locations and circumstances. The main potential conflicts are likely to occur:

- In rural areas where the loads may straddle the centre line, where fast moving oncoming traffic may be encountered, etc.;
- Where traffic turns at a road junction, requiring other traffic to be restrained on other approach arms; and
- In locations where high speeds of general traffic are predicted.

10.4 Advance Warning Signage

Advance warning signs could be installed on the approaches to the affected road network.

This signage would assist in helping improve driver information and allow other road users to consider alternative routes or times for their journey (where such options exist).

The location and numbers of signs would be agreed post consent and would form part of the wider Traffic Management Proposal for the project.

10.5 Public Information

Information on the turbine convoys would be provided to local media outlets such as local papers to help assist the public.

Information could relate to expected vehicle movements from the port of entry through to the site access junction. This will assist residents becoming aware of the convoy movements and may help reduce any potential conflicts.

10.6 Convoy System

A police escort would be required to facilitate the delivery of the predicted loads. The police escort would be further supplemented by a civilian pilot car to assist with the escort duty. It is proposed that an advance escort would warn oncoming vehicles ahead of the convoy, with one escort staying with the convoy at all times. The escorts and convoy would remain in radio contact at all times where possible.

The abnormal loads convoys would be no more than three AILs long, or as advised by the police, to permit safe transit along the delivery route and to allow limited overtaking opportunities for following traffic where it is safe to do so.

The times in which the convoys would travel will need to be agreed with Police Scotland who have sole discretion on when loads can be moved.

10.7 Other Measures

The Framework Traffic Management Plan could also include:

- Procedures for liaising with the emergency services to ensure that police, fire and ambulance vehicles are not impeded by the loads. This is normally undertaken by informing the emergency services of delivery times and dates and agreeing communication protocols and lay over areas to allow overtaking; and

- Potential linkages to the Transport Scotland Variable Message Signage (VMS) network to provide addition al information to users of the A75 between Stranraer and the M74.

11 Summary & Conclusions

11.1 Summary

This report was commissioned by ITP Energised, on behalf of ScottishPower Renewables to provide an assessment of the transport issues associated with the proposed Development located to the south-east of Barrhill, near the South Ayrshire / Dumfries & Galloway Council border.

Existing traffic data established a base point for determining the impact during the construction phase and was factored to future levels to help determine the effect of construction traffic on the local road network.

The construction traffic would result in a temporary increase in traffic flows on the road network surrounding the proposed Development. During the construction of the proposed Development, the associated traffic effects are predicted to be greatest on the A714 at the site access junction.

The maximum traffic effect associated with construction of the proposed Development is predicted to occur in Month 5 of the programme. During this month, an average of 54 HGV movements is predicted per day and it is estimated that there would be a further 48 car and light van movements per day to transport construction workers to and from the Site.

A review of the local road network was undertaken to assess the feasibility of transporting turbines to the development Site. No capacity issues are expected on any of the roads assessed due to the additional construction traffic movements associated with the proposed Development as background traffic flows are very low and the road links are of reasonable standard.

11.2 Conclusions

The assessment has identified the following:

- That the construction phase of the project will generate the highest level of traffic and that a robust assessment assuming site supply by ready mix concrete, rather than on-site batching has been used;

- The construction traffic during the most intensive phase of the construction programme will be short lived;

- That total traffic movements are not predicted to increase by more than 10% on all of the study area, with the sole exception of the A714 in the vicinity of the site access junction;

- That total HGV traffic movements will increase between 102% and 165% on the Newton Stewart Bypass and on the A714. Whilst this increase is statistically significant, it is generally caused by the relatively low HGV flows on these two roads and will see an additional 52 HGV journeys per day (26 Inbound and 26 Outbound). This represents nearly 7 HGV journeys every hour during construction activities, which is not considered significant in operational terms;

- Measures such as on-site batching will reduce HGV traffic flows on the Newton Stewart Bypass and on the A714. Such a move is considered highly likely given recent experience of windfarm construction in the area;

- The disruption caused by construction activity is short lived and of a transitory nature. As such, there are no long lasting effects associated with the proposed Development;

- That the surrounding road network has sufficient capacity to accommodate the temporary construction traffic;
- That the route from the proposed ports of entry is suitable for turbine delivery; and
- That a traffic management plan is required to control construction traffic in the interests of road safety and efficiency.

Appendix A
Route Survey Report

Clauchrie Windfarm

Route Survey Report

September 2019

Document Control

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Contents

Appendices

1 INTRODUCTION

Report Purpose

1.1 WYG has been commissioned by ScottishPower Renewables (SPR) to undertake a route review for the delivery of abnormal loads associated with the proposed Clauchrie Windfarm (Proposed Development), South Ayrshire. This report reviews the constraints associated with the transportation of wind turbine components from KGV Docks in Glasgow to the proposed site access.

1.2 This report has been prepared in accordance with instructions from SPR on the above project details. No liability is accepted for the use of all or part of this report by third parties.

1.4 WYG has been commissioned to prepare this route survey report as a source of guidance. The report identifies the key points and issues that may require remedial works to accommodate the predicted loads. The detailed design of these remedial works, however, are beyond the agreed scope of works. It is the responsibility of the turbine supplier (depending on contract) to ensure that the access route from the POE to the site is fit for purpose and that appropriate consideration for all road users has been made in accordance with the relevant health and safety legislation and ruling transport requirements.

Report Structure

1.5 Following this introduction, the proceeding chapters of the report are structured as follows:

- **Chapter Two** describes the location of the proposed windfarm development;
- **Chapter Three** describes the route reviewed as part of the site visit along with areas of potential significant constraints; and
- **Chapter Four** provides a summary of the report and an outline of suggested further works, actions and recommendations for consideration by SPR.

2 PROPOSED SITE AND ACCESS STRATEGY

Site Description and Location

2.1 This study considers the route taken to the proposed Site's access taken 4km west of Bargrennan via A714 is illustrated below in Figure 2.1:

Figure 2.1: Site Access Location

Candidate Turbine

2.2 SPR have indicated that they wish to consider a Vestas V150 turbine as being the worst-case turbine for the proposed site.

2.3 A worst-case blade and tower combination have been assumed with the dimensions illustrated within Table 2.1.

Table 2.1: Worst Case Turbine Loads and Dimensions

Component	Length	Maximum Width on Vehicle
Blade	74m	4.03m
Tower	33.88m	4.5m

2.4 WYG has assumed that all loads will follow the relevant manufacturers transport guidelines.

2.5 The components can be delivered on a variety of transport platforms all of which feature independent rear wheel steering and would be provided with both Police and civilian escorts.

2.6 At this point in time, no assessment of the erection crane has been undertaken.

3 ROUTE REVIEW

3.1 Access to the Proposed Development site could be taken from a suitable port of entry (POE) such as Glasgow KGV Docks. This provides direct access onto the trunk road network and is already known as a renewable energy delivery hub.

3.2 If consented, SPR would then engage in detailed discussions with the turbine suppliers, haulage contractors, Transport Scotland, Police Scotland and road authorities regarding the port of entry strategy and delivery route. Blades for previous developments in the vicinity of the Clauchrie site have been undertaken from Glasgow and a significant number of road junction improvements have been made on the A75 and A714 to support these deliveries (for Kilgallioch and other nearby windfarms).

3.3 A route review was undertaken by video survey on 13th May 2019 from Glasgow KGV to the proposed site and its access. This method allows a full record of the route to be undertaken, with notes recorded following completion of the survey. Not only is this process efficient, it also provides a much safer working environment for staff. The video survey allows a full record of the route to be kept for future reference. To accompany the video survey, various Points of Interest (POIs) were recorded using a Global Positioning System (GPS) tracker that logs the locations of points on the route to Ordnance Survey (OS) co-ordinates.

3.4 The site visit did not include any geotechnical, utility or environmental reviews and as such the information provided in this report is based solely on the observations noted on the site visit and subsequent swept path assessments.

3.5 Plans illustrating the location of the constraints and a detailed list of POI's are provided in Appendix A.

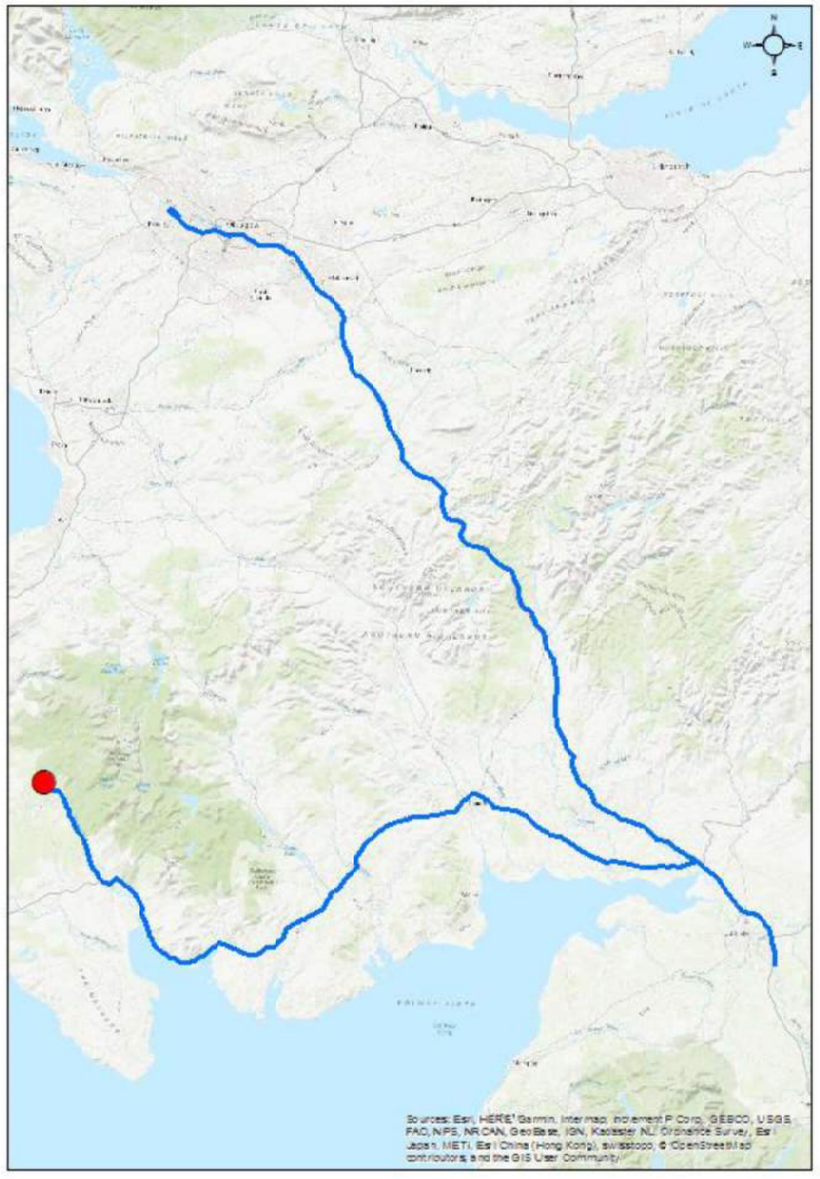
Route Description

3.6 It is proposed that all loads will follow the route described below from KGV docks, Glasgow to the proposed site access:

- Depart KGV Docks and proceed to M8;
- Join M74 and proceed south onto M6;
- U turn to the south of Carlisle at Junction 44 or 42 (Police dependent) and proceed northbound on the M6 and M74;
- Diverge from the M74 and proceed westbound on the A75;
- Depart the A75 to the west of Newton Stewart and proceed north via an unclassified minor road and continue north on the A714; and
- Continue A714 at Bargrennan for another 5km to the site access junction.

3.7 Within the windfarm site, loads would then proceed ahead to the turbine locations. All on-site access roads should be designed to the selected turbine manufacture's minimum standards and as such are excluded from this report.

Figure 3.1: Proposed Access Route



Clauchrie Windfarm – Route Survey

Figure 3.2: Site Access Location

Network Constraints

3.8 Tables 3.1 details the potential constraint point locations on the route from Glasgow KGV Docks to the proposed site access.

3.9 Where street furniture is to be removed to allow movement, it is suggested that socket foundations are used. All elements can then be reinstated following the manoeuvre.

Table 3-1: KGV to Site Access - Constraint Points

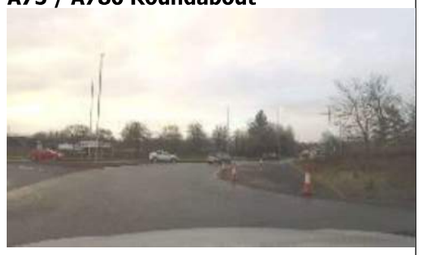
POI	Constraint	Details
1	**KGV Docks Gate** 	Loads exit the docks and proceed across the roundabout using the existing over-run surface. All signage in the existing over-run area to be removed in advance of deliveries commencing. Two lit road signs to be removed from the exit arm splitter island in the over-sail area. Loads will over-sail the southern verge on the exit arm. Swept path drawing SPA001 is included in **Appendix B**.
2	**Kings Inch Roundabout 1** 	Loads will proceed ahead at the junction, taking the second exit. Escorts should hold side traffic back and ensure the loads have full access to the circulating and exit lanes. Loads will over-sail the northern and southern footways on approach to the roundabout. Loads will over-sail the southern edge of the central island. Swept path drawing SPA002 is included in **Appendix B**.

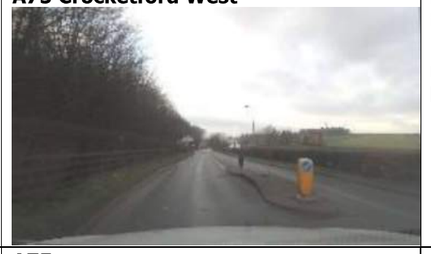
3	**Kings Inch Roundabout 2** 	Loads will proceed ahead at the junction, taking the second exit. Escorts should hold side traffic back and ensure the loads have full access to the circulating and exit lanes. Loads will over-sail the southern edge on entry to the roundabout. Swept path drawing SPA003 is included in **Appendix B**.
4	**M8 Junction 25A / Kings Ince Drive**  	Loads will turn left onto the M8 Spur Road. Loads will over-sail the central reservations into the oncoming traffic lanes of both roads, escorts should hold oncoming traffic at a safe distance. Loads will over-sail and over-run the inside of the bend where an over-run should be laid, vegetation should be cleared back and the pedestrian call button column on the inside of the turn is to be set down. Loads will over-run and over-sail the central reservation after the turn. Load bearing surfaces to be laid in over-run areas and traffic held back. All signage on the reservation within the indicated area to be removed. Swept path drawing SPA004 is included in **Appendix B**.

5	**Junction 42, M6** 	Loads will undertake a U turn at this junction to allow a northbound diverge onto the A75. Loads will proceed around the junction, taking the M6 northbound exit. Various sections of verge are over-run and over-sailed by the loads to minimize alterations to lighting columns. Load bearing surfaces to be laid in all over-run areas and verges confirmed suitable for proposed load weights. On entry loads will over-sail both western and eastern where tree canopy's to be trimmed and proximity to one road sign should be confirmed during test run or topographical survey. The height of the barrier in the western verge should be confirmed suitable for blade-tip over-sail. One road sign should be removed. On the south east side on the junction loads will over-run and over-sail both verges of the carriageway where one lit chevron sign is to be removed and vegetation trimmed back. Loads are to be raised to over-sail a section of barrier on the inside bend. Heights to be confirmed suitable for proposed loads. On approach a test-run or topographical survey should be utilised to confirm proximity to one road sign on the south east splitter island. On the south west side of the junction loads will over-run and over-sail both verges of the carriageway where one lit chevron sign is to be removed and vegetation trimmed back on both sides. Loads are to be raised to over-sail a section of barrier on the inside bend. Heights to be confirmed suitable for proposed loads. On the north west of the junction loads will over-run the inside verge and over-sail both sides of the carriageway. Vegetation should be trimmed from both locations. Swept path drawing SPA005 is included in **Appendix B**.

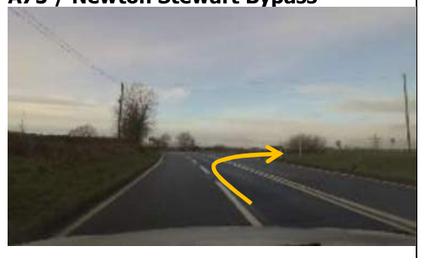
6	**M74 Junction 22 Diverge** 	Loads will diverge from the M74 at this location. Escorts must ensure that the lanes are clear of traffic and that traffic does not try to cut into the convoy.
7	**A75 / A780 Roundabout** 	Loads will proceed ahead on the A75, taking the 2nd exit using a contra flow manoeuvre. Loads will over-sail the northern and southern verges on approach. In the southern verge vegetation is to be trimmed back and the proximity to one road sign confirmed through topographical survey or test-run. Loads will over sail the north eastern verge of the centre island and the eastern verge of the exit arm. Swept path drawing SPA006 is included in **Appendix B**.
8	**A75 / A709 Roundabout**  	Loads will proceed ahead on the A75, taking the 2nd exit using a contra flow manoeuvre. Confirmation is required that the existing mitigation measures are available for use. The existing over-run surface on the approach arm verge will be reused. A small area of additional load bearing surface will need to be laid and the length of the existing safety barrier shortened. Vegetation is to be trimmed back and the limits of adoption confirmed. Loads will over-sail the roundabout centre island and one chevron sign should be relocated. Vegetation to be cleared and the height of the roundabout confirmed suitable for proposed loads. Loads will over-sail the eastern verge on the exit arm. Swept path drawing SPA007 is included in **Appendix B**.

9	**A75 / A701 Roundabout**  	Loads will take the 2nd exit, proceeding ahead on to the A75. Confirmation is required that the existing mitigation measures are available for use. Loads will over-sail the splitter island and southern verges on approach. Trees and vegetation to be cleared from the southern verge and the barrier height confirmed suitable for proposed blade-tip over-sail. Limits of adoption to be confirmed. One chevron sign on the central island of the junction should be removed or socketed for removal during deliveries. Loads to utilise the existing mitigation measures in the north west verge. Swept path drawing SPA008 is included in **Appendix B**.
10	**A75 / A76 Roundabout** 	Loads will take the 4th exit, proceeding ahead on to the A75. Loads will over-sail the southern verge on approach where vegetation is to be cleared to allow blade-tip over-sail. Loads will over-sail the south eastern verge of the centre island where one lit chevron sign should be set-back and the proximity to the bridge support should be confirmed through a topographical survey. Loads will over-sail the south western verge of the centre island where one lit chevron sign should be set-back and the roundabout height confirmed suitable for over-sail by proposed loads. On exit loads over-sail the southern verge. Swept path drawing SPA009 is included in **Appendix B**.

11	**A75 / A780 Roundabout** 	Loads would pass through the junction, taking the second exit. Confirmation is required that the existing mitigation measures are available for use. The existing over-run surface on the central island should be utilised, where one chevron sign should be removed. Loads will over sail the eastern verges on entry and exit. Both entry and exit slitter islands will be over-sailed on the eastern edges. Swept path drawing SPA010 is included in **Appendix B**.
12	**A75 Garroch Roundabout** 	Loads would pass through the junction, taking the third exit using a contra flow manoeuvre. The central island will be over-run and over-sail. A load bearing surface is to be laid in the over-run area and two chevron signs should be socketed for removal. Loads will over-sail the northern verge where a test-run or topographical survey should be undertaken to confirm proximity to one road sign. Swept path drawing SPA011 is included in **Appendix B**.
13	**Drummore Roundabout** 	Loads will procced ahead at the junction, taking the second exit. Confirmation is required that the existing mitigation measures are available for use. Loads will over-sail the southern verge on approach. The existing over-run surface on the central island should be reused with two lit chevron signs to be removed or socketed to allow over-sail. Swept path drawing SPA012 is included in **Appendix B**.

14	**A75** 	Loads will procced ahead on the A75 at this location where trees should be trimmed.
15	**A75 Crocketford East** 	Loads will proceed ahead through the village. The street furniture on the central islands will need to be cleared to accommodate the wider loads.
16	**A75 Crocketford West** 	Loads will proceed ahead on the A75 though this location. The street furniture on the central islands will need to be cleared to accommodate the wider loads.
17	**A75** 	Loads will proceed ahead on the A75 though this location. Loads will over-sail the footway/verge of the carriageway through this section and the proximity to the traffic signal pole should be confirmed following a test run. Swept path drawing SPA013 is included in **Appendix B**.

18	**A75 / A745 Roundabout** 	Loads will proceed ahead on the A75. Confirmation is required that the existing mitigation measures are available for use. Loads will over-sail the eastern verge on approach where one lighting column should be removed. Loads to utilise existing mitigation area on central island. One lit chevron sign and one partial chevron sign to be removed. Loads will over-sail the splitter island and southern verge on exit. Swept path drawing SPA014 is included in **Appendix B**.
19	**A75 / B736 Roundabout** 	Loads will proceed ahead on the A75. Confirmation is required that the existing mitigation measures are available for use. Loads will over-sail both the splitter island and eastern verge on approach. One bollard and one road sign to be removed from the splitter island. Loads to utilise existing mitigation area on central island. Loads will over-sail outwith this area. Two socketed lit chevron signs to be removed during deliveries. Loads will over-sail the splitter island on exit where one road sign plate should be turned or removed during deliveries to increase available clearances. Swept path drawing SPA015 is included in **Appendix B**.
20	**A75** 	Loads will proceed ahead on the A75 though this location. Low utilities were observed at this location. It is recommended a utility search is undertaken to ensure suitable clearances.

21	**A75 / A714 Roundabout** 	Loads will proceed ahead onto the A75 westbound using a contra-flow manoeuvre. Loads over-sail both northern and southern verges of the carriageway where vegetation should be cleared. Loads will over-run and over-sail the northern edge of the centre island where a load bearing surface should be laid and two chevron signs be removed. Loads will over-sail the northern verge on exiting the roundabout utilising the existing mitigation works. Loads to over-sail a section of barrier, height clearances to be confirmed suitable during test-run. Loads will over-sail the exit splitter island where one road sign is to be removed and one bollard over-sailed. Swept path drawing SPA016 is included in **Appendix B**.
22	**A75 / Newton Stewart Bypass** 	Loads will turn right onto the bypass route, thus avoiding a transit through the town centre. A load bearing surface is required on the inside of the junction. Three road signs on the inside of the junction will need to be relocated and three bollards removed. Vegetation should be trimmed back from the southern verge. Swept path drawing SPA017 is included in **Appendix B**.

23	**A714 / Barnkirk Road Junction** 	Loads will turn left onto the A714. The existing junction widening works will be reused. Loads will over-sail both sides of the carriageway. Inside the bend one road sign, trees, vegetation and section of fence should be removed. Loads will over-sail and over-run the eastern verge where one tree is to be removed. Blade tip will over-sail the fence and a load bearing surface should be laid in the over-run area. **Third party land required**. SPR are noted to already have secured ownership of the required extents. Swept path drawing SPA018 is included in **Appendix B**.
24	**A714 / Left bend** 	Loads will continue ahead on the A714. No mitigation works are required at this location. Swept path drawing SPA019 is included in **Appendix B**.
25	**A714 left bend** 	Loads will continue ahead on the A714. No mitigation works are required at this location. Low utilities were observed at this location. It is recommended a utility search is undertaken to ensure suitable clearances. Swept path drawing SPA020 is included in **Appendix B**.
26	**A714 right bend** 	Loads will continue ahead on the A714. No mitigation works are required at this location. Low utilities were observed at this location. It is recommended a utility search is undertaken to ensure suitable clearances. Swept path drawing SPA021 is included in **Appendix B.**

27	**A714 / Left bend** 	Loads will continue ahead on the A714 through the left bend. Low utilities were observed at this location. It is recommended a utility search is undertaken to ensure suitable clearances.
28	**A714 alongside River Cree** 	Loads will continue ahead on the A714. No mitigation works are required at this location. Swept path drawing SPA022 is included in **Appendix B**.
29	**A714 Double Bend River Cree** 	Loads will proceed ahead on the A714 though this location. Tree canopies should be trimmed within the over-sail area. The embankment height should be confirmed in the western verge of the second bend to ensure loads can over-sail safely. Minor re-profiling works may be required. These would take place within the existing highway boundary, there are no requirements for third party land. Swept path drawing SPA023 is included in **Appendix B**.
30	**A714 Series of Bends River Cree** 	Loads will proceed ahead on the A714 though this location. Trees to be removed from within the over-sail area. Swept path drawing SPA024 is included in **Appendix B**.

31	**A714 / Clachaneasy** 	Loads will continue ahead on the A714. No mitigation works are expected at this location. Tree canopy to be trimmed back to provide a minimum 5m clearance.
32	**A714 Bargrennan Bridge** 	Loads will proceed ahead through the right turn bend at Bargrennan. Confirmation is required that the existing mitigation measures are available for use. Loads will over-sail the sides of the carriageway into **third party land and require an over-run area to the west of the carriageway**. Section of fence, road signs and one telegraph pole to be removed from the western side of the carriageway. The blade tip will over-sail the section of barrier. In the eastern verge two road signs to be removed, section of fence and associated gate to be set-back and stone wall to be over-sailed. Loads will over-sail the bridge parapet and confirmation of height clearances should be confirmed. Parapet reductions may be required. **Third party land is required at multiple locations**. SPR are noted to already have secured land rights at this location to allow for any modifications. Swept path drawing SPA025 is included in **Appendix B**.

33	**A714 Bargrennan Series of Bends** 	Loads will proceed ahead through the series of bends on the A714 at this location. Loads will over-run and over-sail the eastern verge upon exiting the bridge. A load bearing surface is to be laid, the land re-profiled to carriageway level and the ditch culverted. Utilities to be protected, section of crash barrier to be set-back and trees and vegetation to be cleared. Loads will over-sail both verges of the carriageway where one road sign, one telegraph pole and vegetation to be removed. Swept path drawing SPA026 is included in **Appendix B**.
34	**A714, 2.8km northwest of Bargrennan** 	Loads will continue northwest along the A714 from Bargrennan. Loads will straddle the full width of the carriageway through this section.
35	**A714, 4.9km northwest of Bargrennan** 	Loads will continue ahead on the A714. No physical mitigation is required at this location
36	**A714, Clauchrie Site Access** 	Loads will turn right departing the A714 into the site access track continuing within the site. The access junction at this point should be suitably designed to manufacturer standards in order to ensure this manoeuvre can be performed safely.

Swept Path Assessment Results

3.10 The drawings in Appendix B illustrate tracking undertaken at each location with a number of locations based upon the Kilgallioch Wind Farm reinstatement proposals that are currently being agreed with Transport Scotland. The colours provided on the swept paths are:

- Green – vehicle/trailer outline (body swept path);
- Red – wheel tracked pathway (wheel swept path); and
- Purple – load over-sail tracked path (load swept path).

3.11 Where mitigation works are required, the locations are illustrated on the swept path drawings. Please note that any alterations to the specified load or vehicle details will invalidate the assessment results.

3.12 It is important to note that a number of the swept path assessments undertaken have been based on OS data. There can be measurement errors associated with the use of this data.

3.13 The drawings illustrate the street furniture modifications required to enable transit. The exact individual location of all street furniture in the vicinity of the POIs is not shown as these cannot be accurately plotted on the OS data without recourse to the various road authorities. Please note that WYG cannot accept any liability for errors on the data source.

Route Summary

3.14 Where required SPR have secured the necessary land to accommodate the proposed route. Assuming that the outlined mitigation is performed, the route from the KVG Docks to the site access is considered feasible for the delivery of proposed components.

Land Ownership and Utilities

3.15 The limits of road adoption can vary depending upon the location of the site and the history of the adopting agency. In general, the adopted area is that contained within a defined boundary where the affected Council areas or Transport Scotland holds the maintenance rights for the land from the original land owner. In urban areas, this usually defined as the area from the edge of the footway across the road to the opposing footway back edge.

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

General Comments

3.17 WYG has undertaken a review of the potential access route from the KVG Docks to the proposed Clauchrie Wind Farm site access. WYG would strongly suggest that a review of the following is undertaken prior to the delivery of the abnormal loads, to ensure load and road user safety:

- A review of maximum 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.
- The chosen haulier is recommended to ensure with utility providers that there is sufficient clearance with an appropriate safety factor (especially with respect to power lines);
- That any vegetation which may foul the loads is trimmed back to allow passage (this is of concern once the load is on the local road network and should be assessed for summer conditions);
- That there are no roadworks or closures that could affect the passage of the loads. A check with the affected Council areas and Transport Scotland should be made before the transit of the first abnormal load;
- That a test run is completed to further assess the route for all components and confirm findings of the swept path assessments;
- That there are no new or diverted underground services on the access route that are at risk from the abnormal loads.

4 SUMMARY AND FURTHER WORKS

Summary

4.1.1 This report identifies the key points and issues associated with the proposed access route from Glasgow KVG Docks to the proposed Clauchrie Windfarm site access on the A714.

4.1.2 The route to site is presented for consideration by ScottishPower Renewables. The route is considered feasible subject to the implementation of the proposed mitigation measures however these will need to be agreed with Transport Scotland and affected Council areas.

Initial Considerations and Further Work

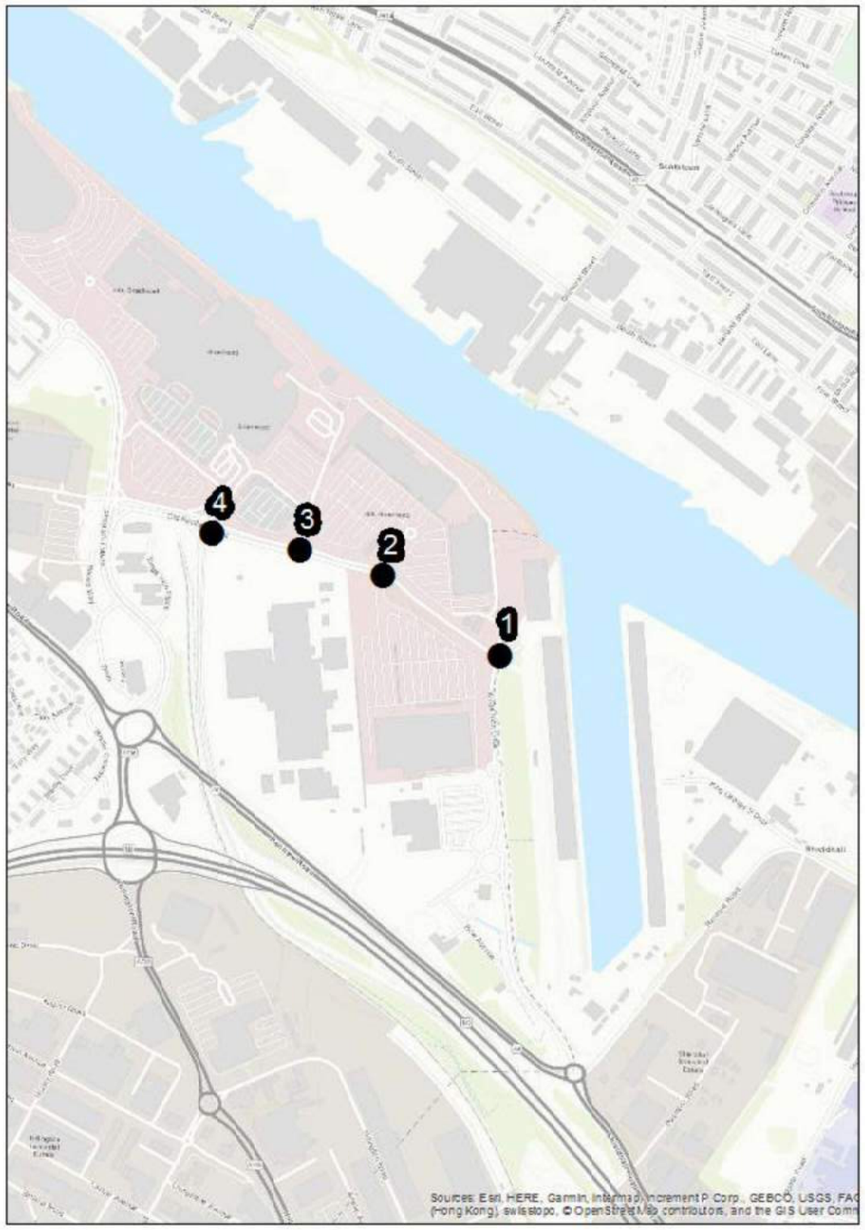
4.1.3 From this review, WYG would suggest any mitigation works are designed to be permanent to ensure that future windfarm maintenance can be undertaken without the need to re-open land and access rights on site.

4.1.4 The following work is recommended to ScottishPower Renewables for consideration in relation to the proposed access route:

- Detailed design review of the proposed mitigation works;
- A test run is recommended in order to confirm the required mitigation due to the limited clearances in a number of locations;
- Topographical surveys are undertaken at the identified locations in order to confirm the required mitigation; and
- Traffic Management Plan - a detailed Traffic Management Plan (TMP) will be essential for this project given the level of constraint in a number of areas.

APPENDIX A

POI PLANS



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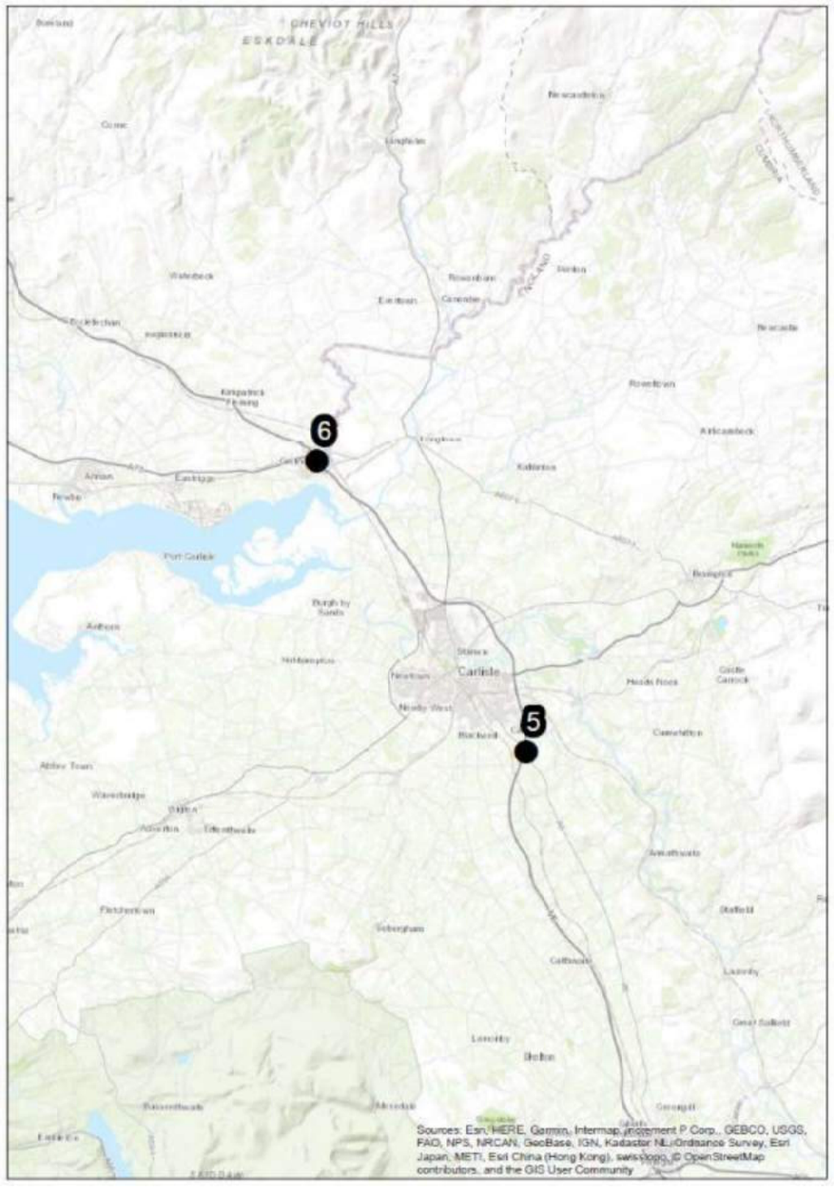

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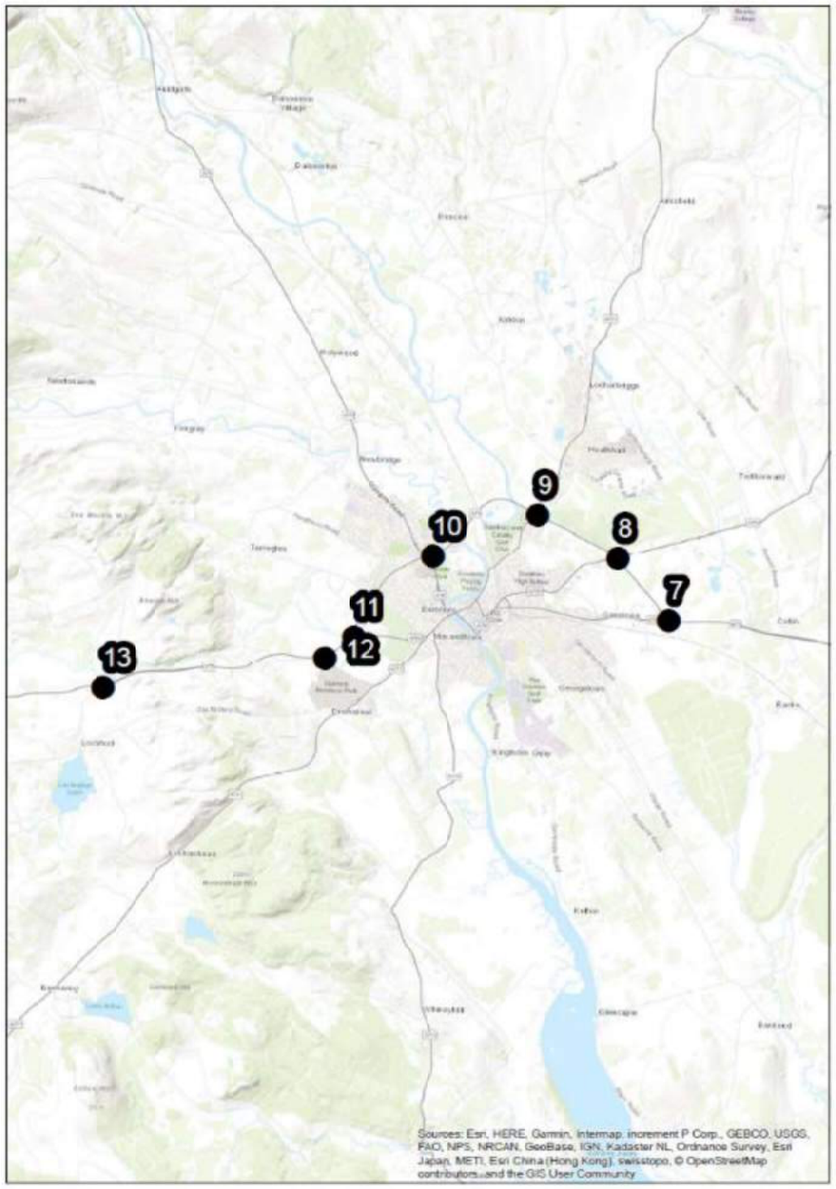

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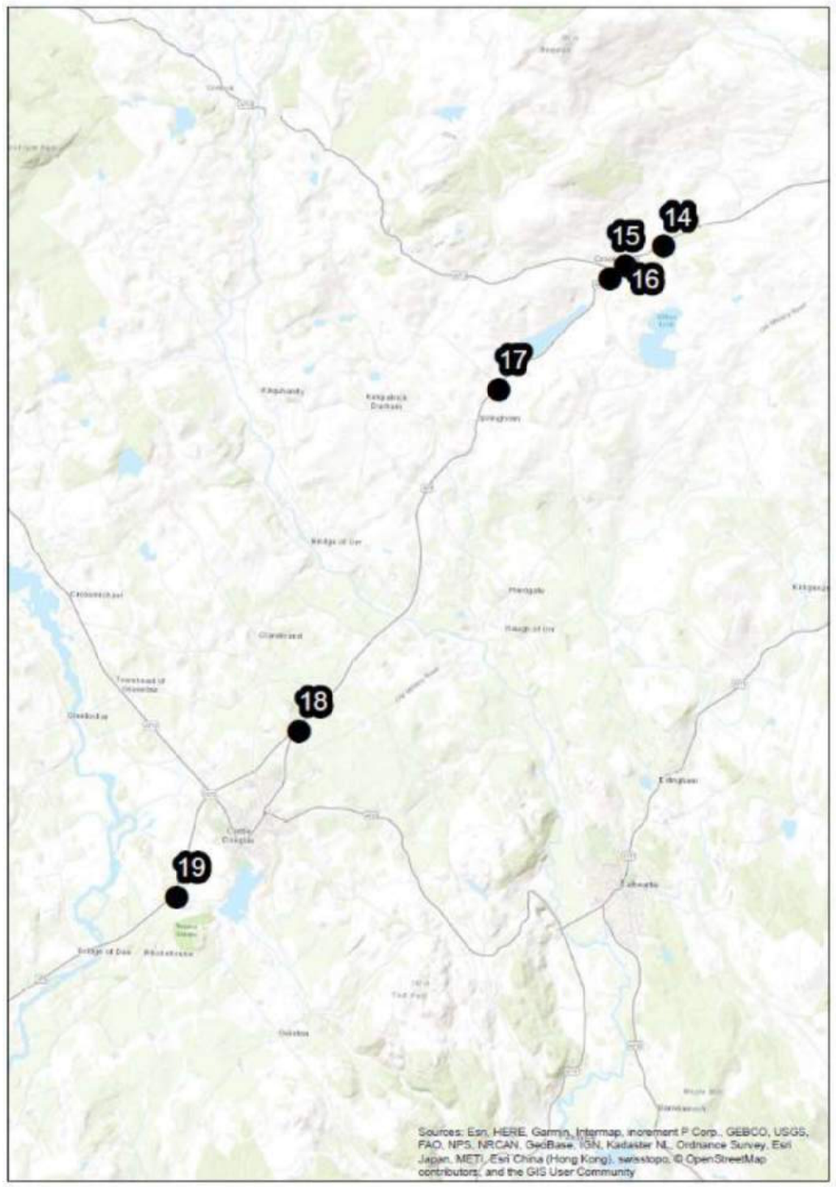

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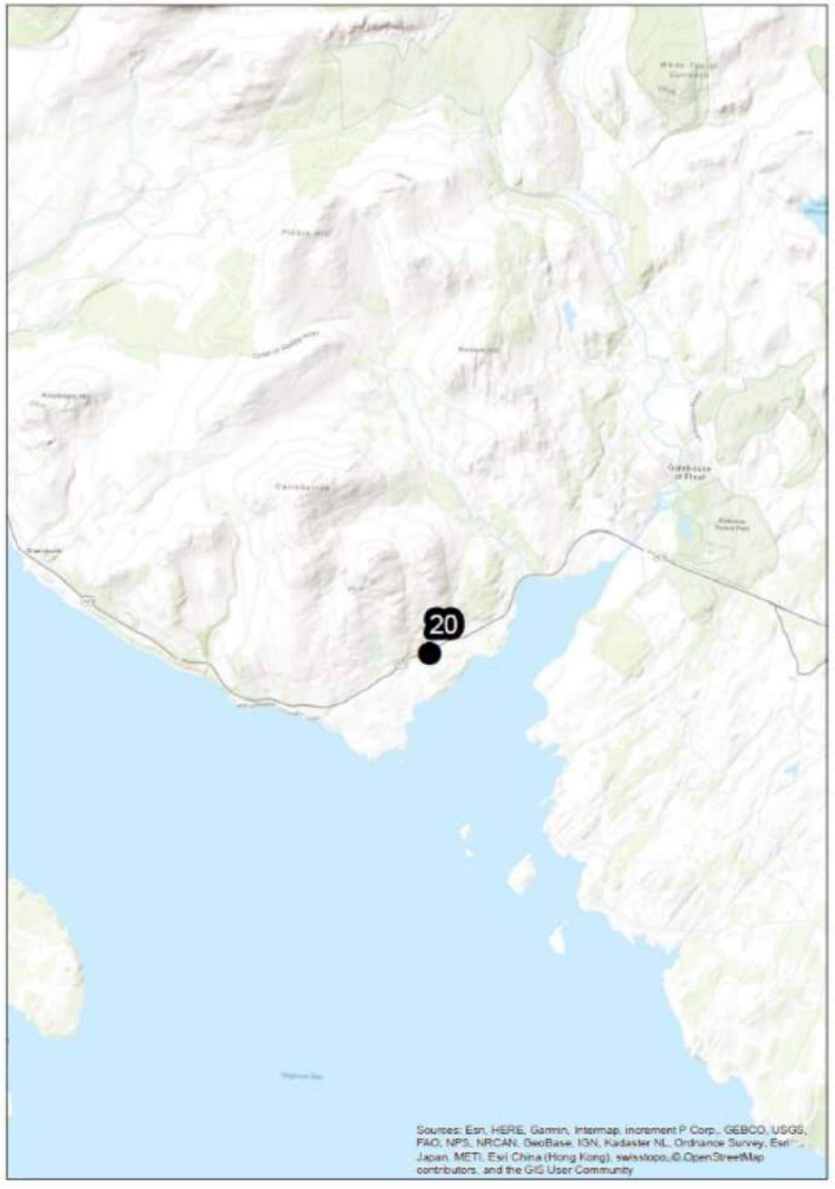

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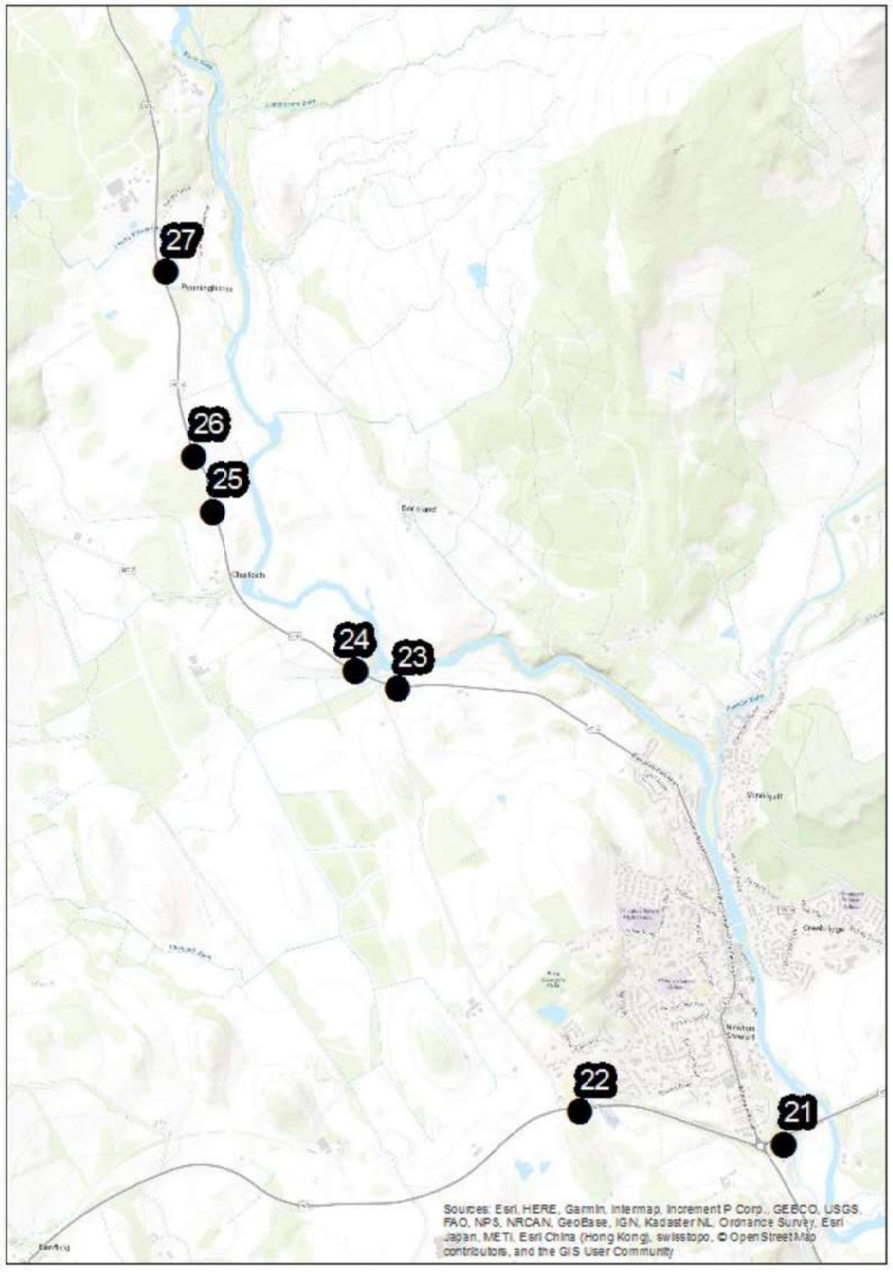

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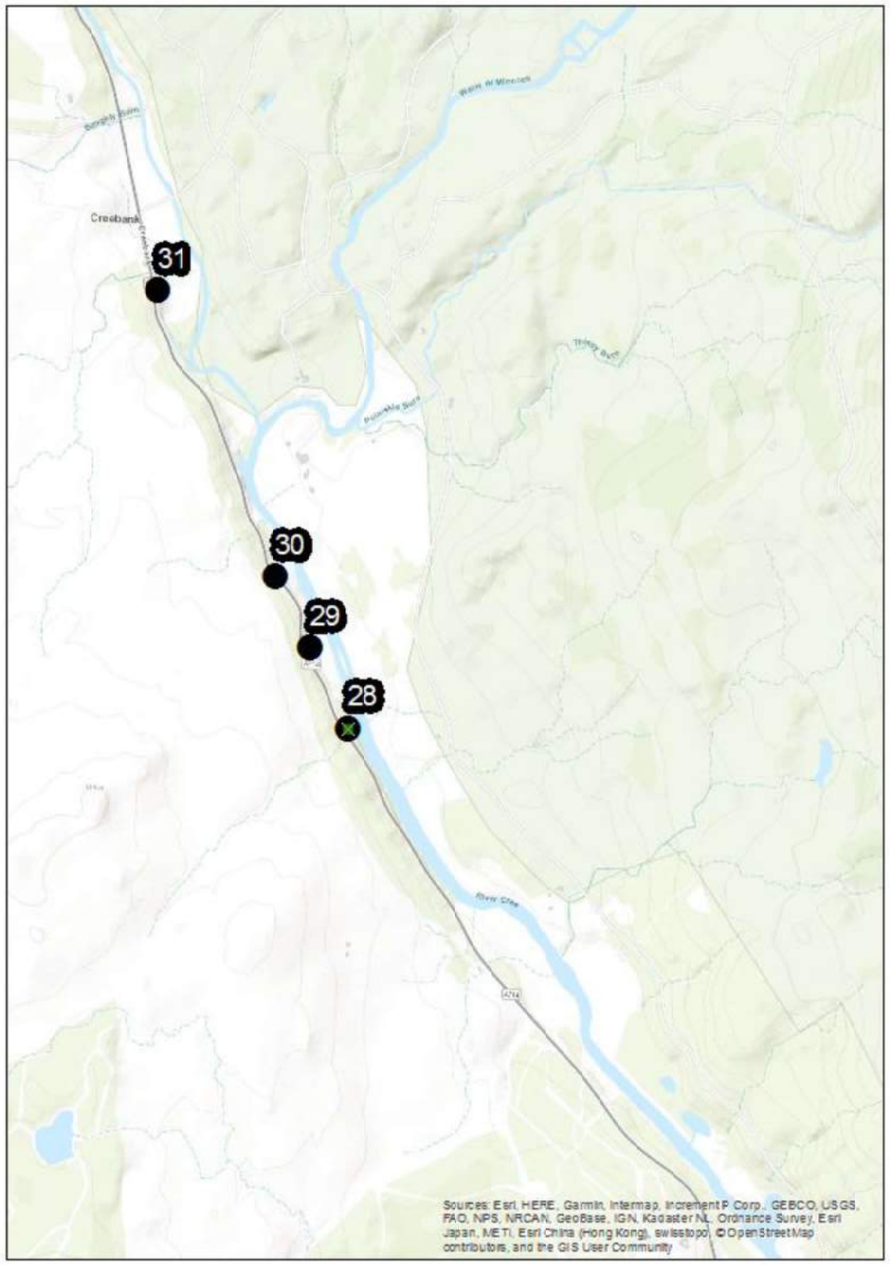

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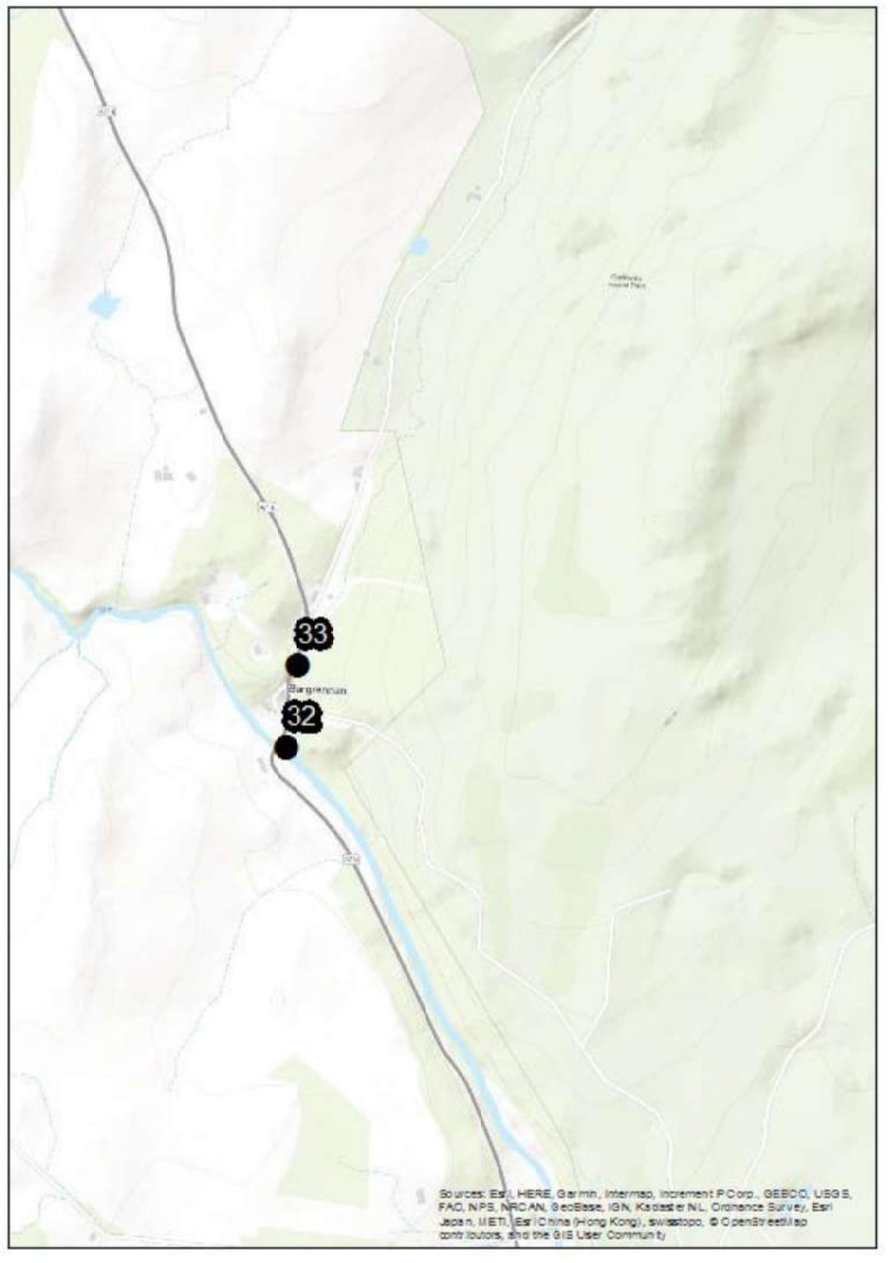

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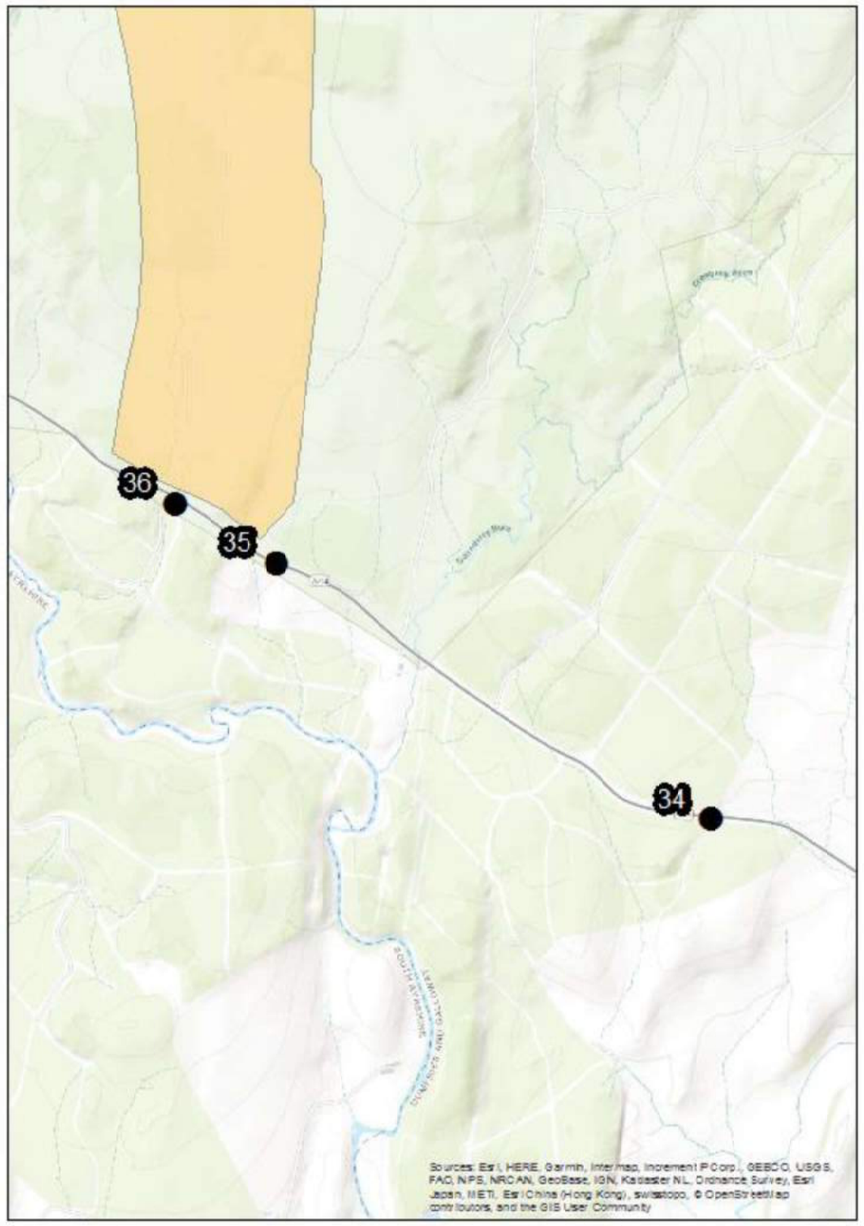

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APPENDIX B

Swept Path Assessment Drawings

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Blade

Mid Tower

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: KVG Dock

POI: 1

COMPONENTS:

Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

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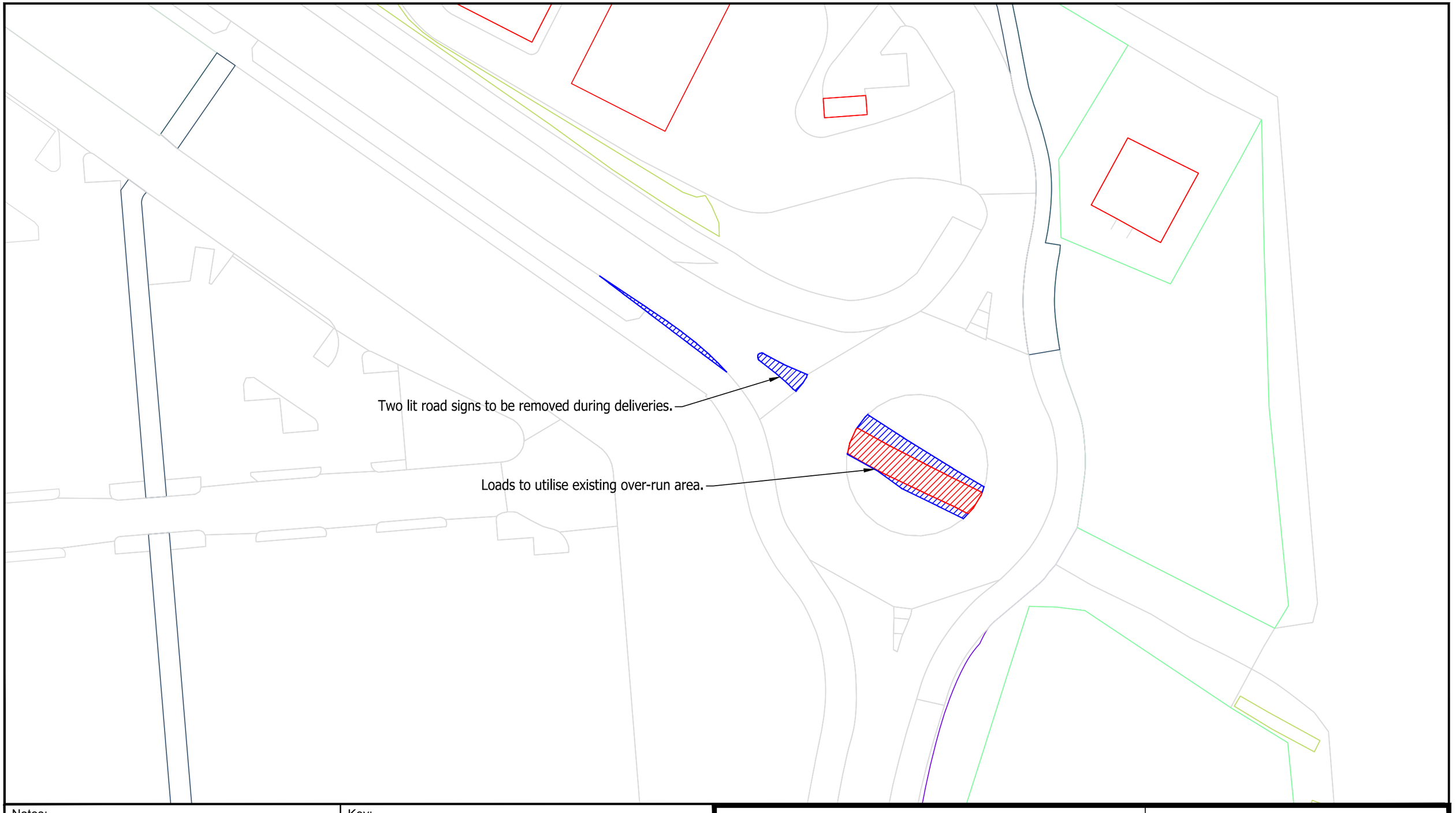

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: KVG Dock

POI: 1

COMPONENTS:

Vestas V150 Blade and Mid Tower

Required Remedial Works

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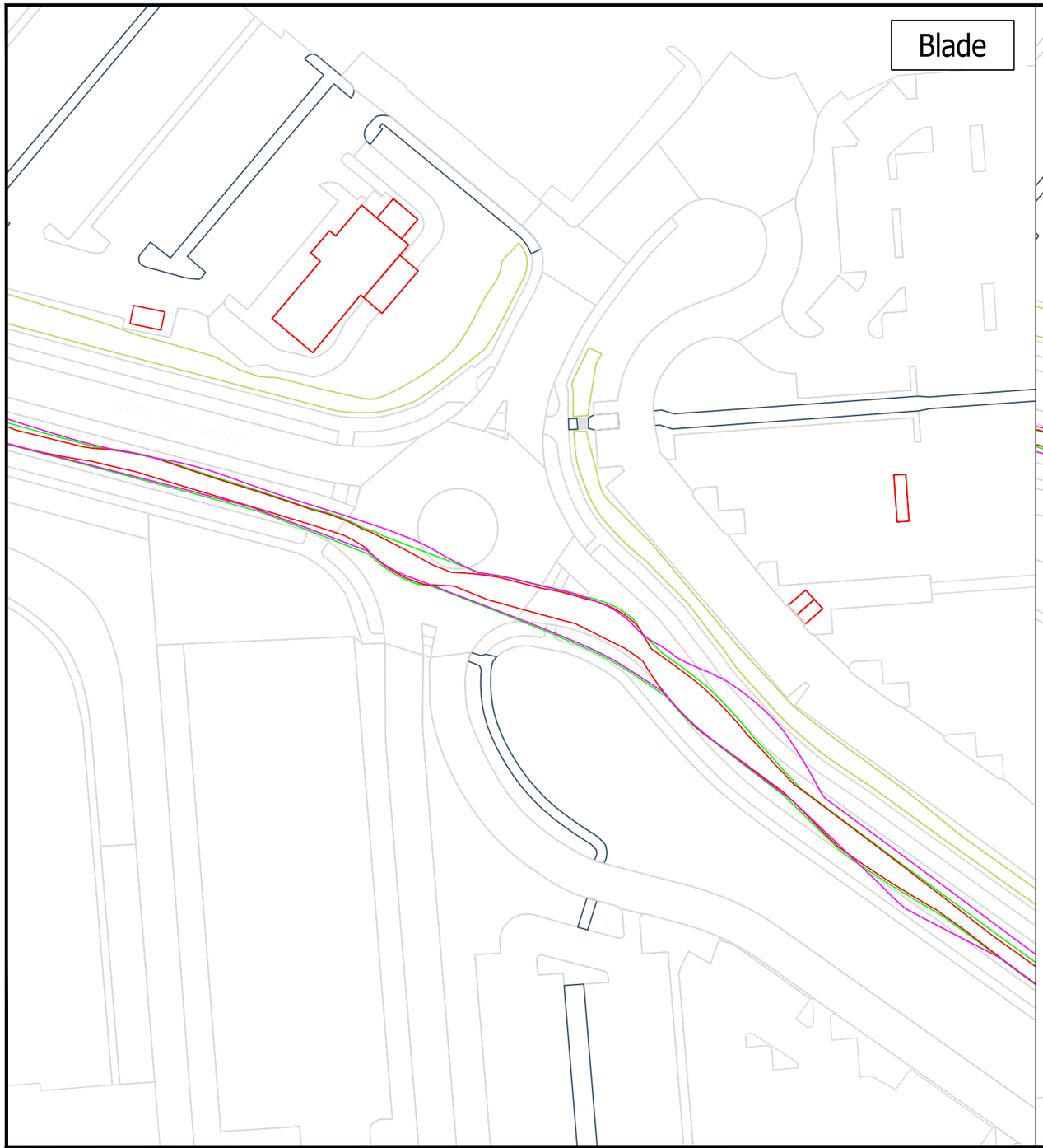

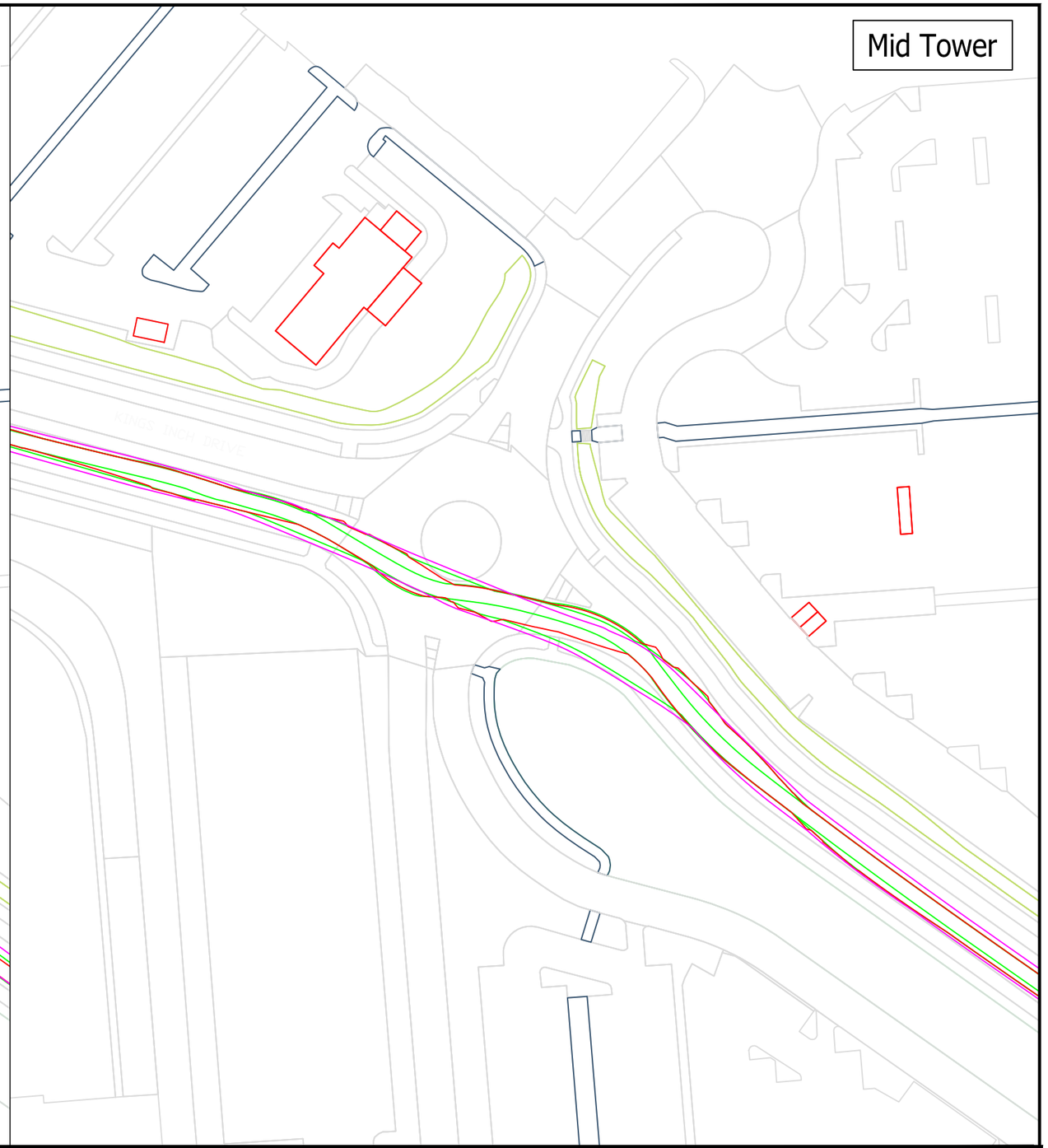

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

ScottishPower Renewables

LOCATION: Kings Inch Roundabout 1 | POI: 2

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

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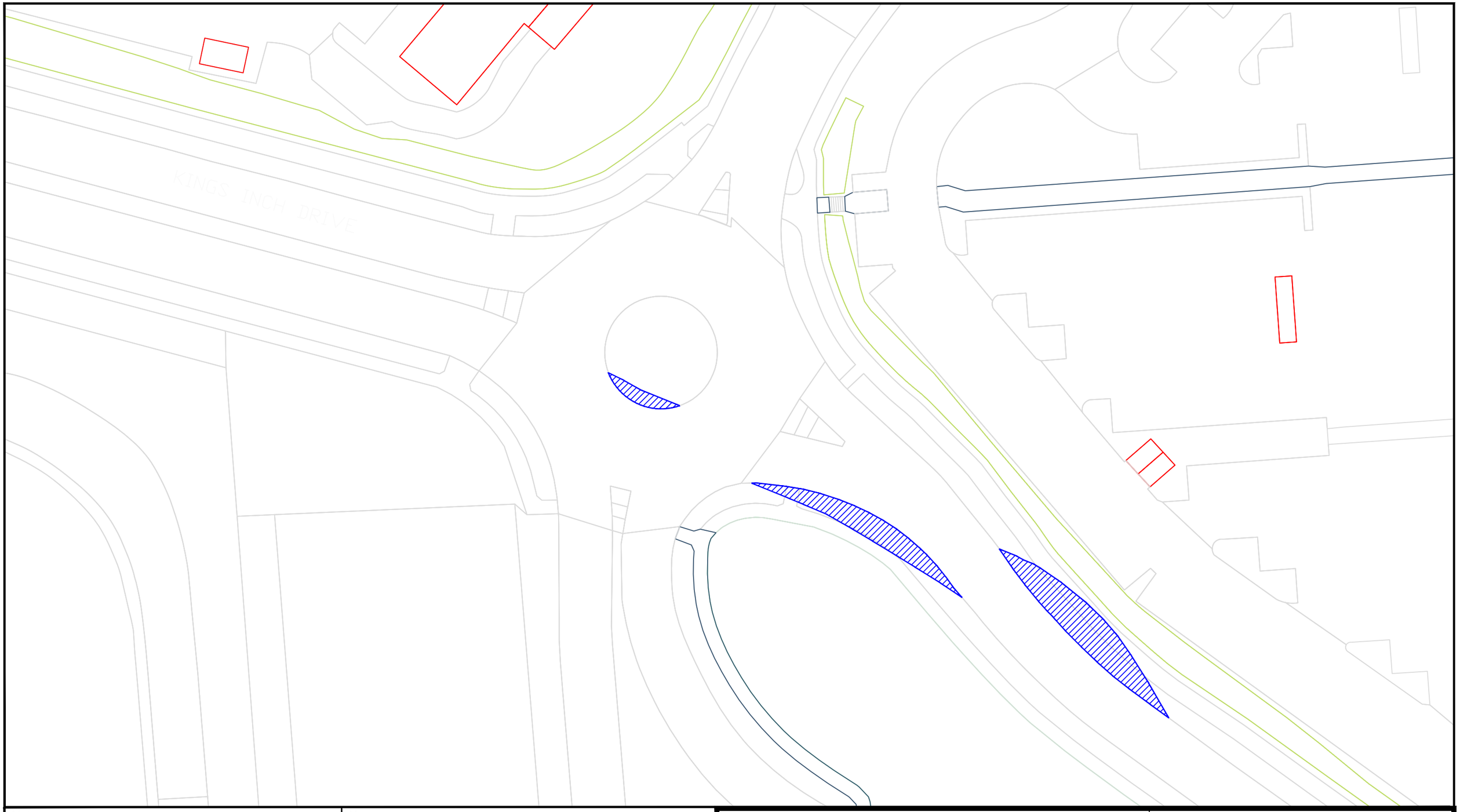

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

ScottishPower Renewables

LOCATION: Kings Inch Roundabout 1

POI: 2

COMPONENTS:

Vestas V150 Blade and Mid Tower

Required Remedial Works

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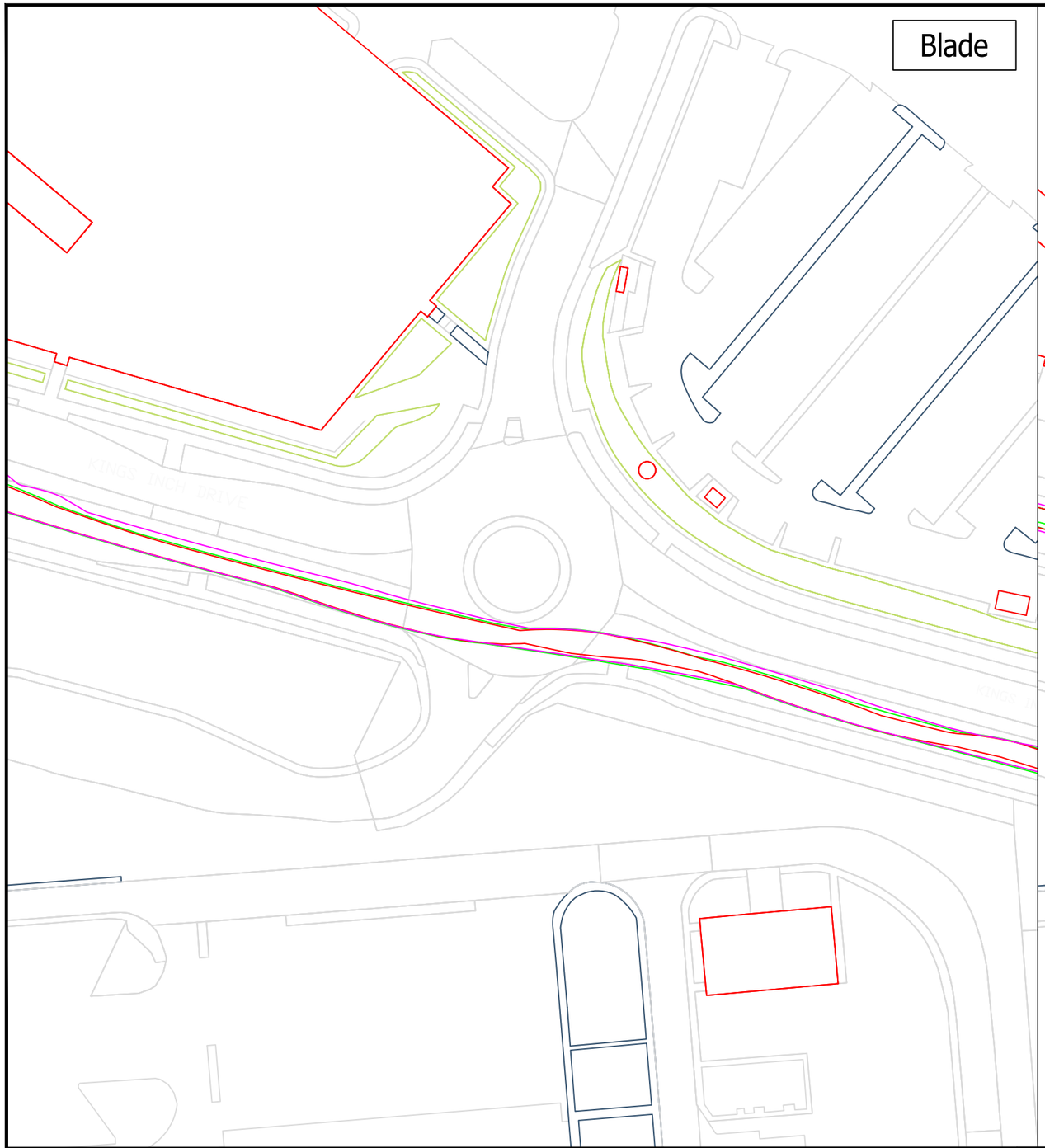

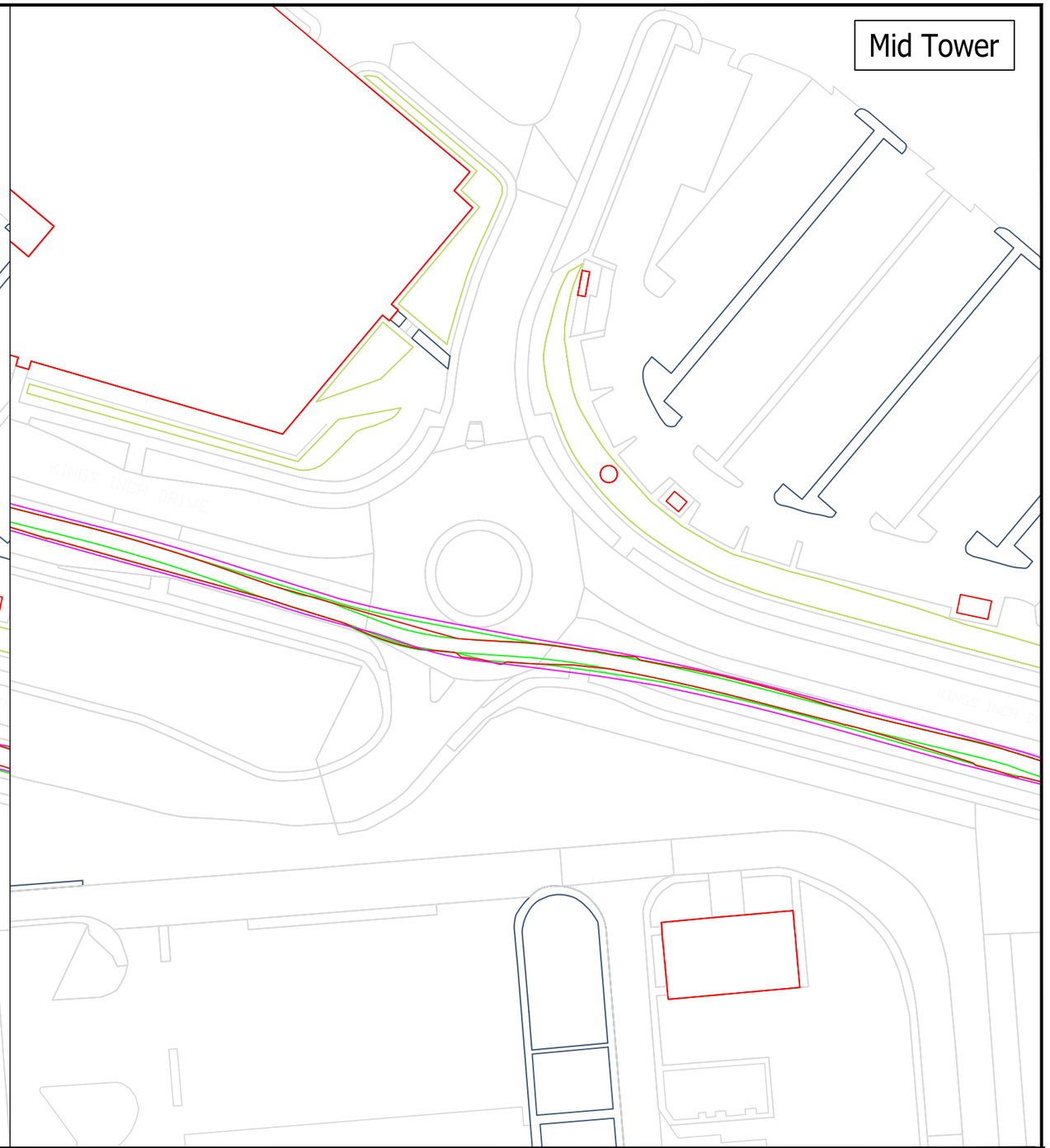

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: Kings Inch Roundabout 2

POI: 3

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

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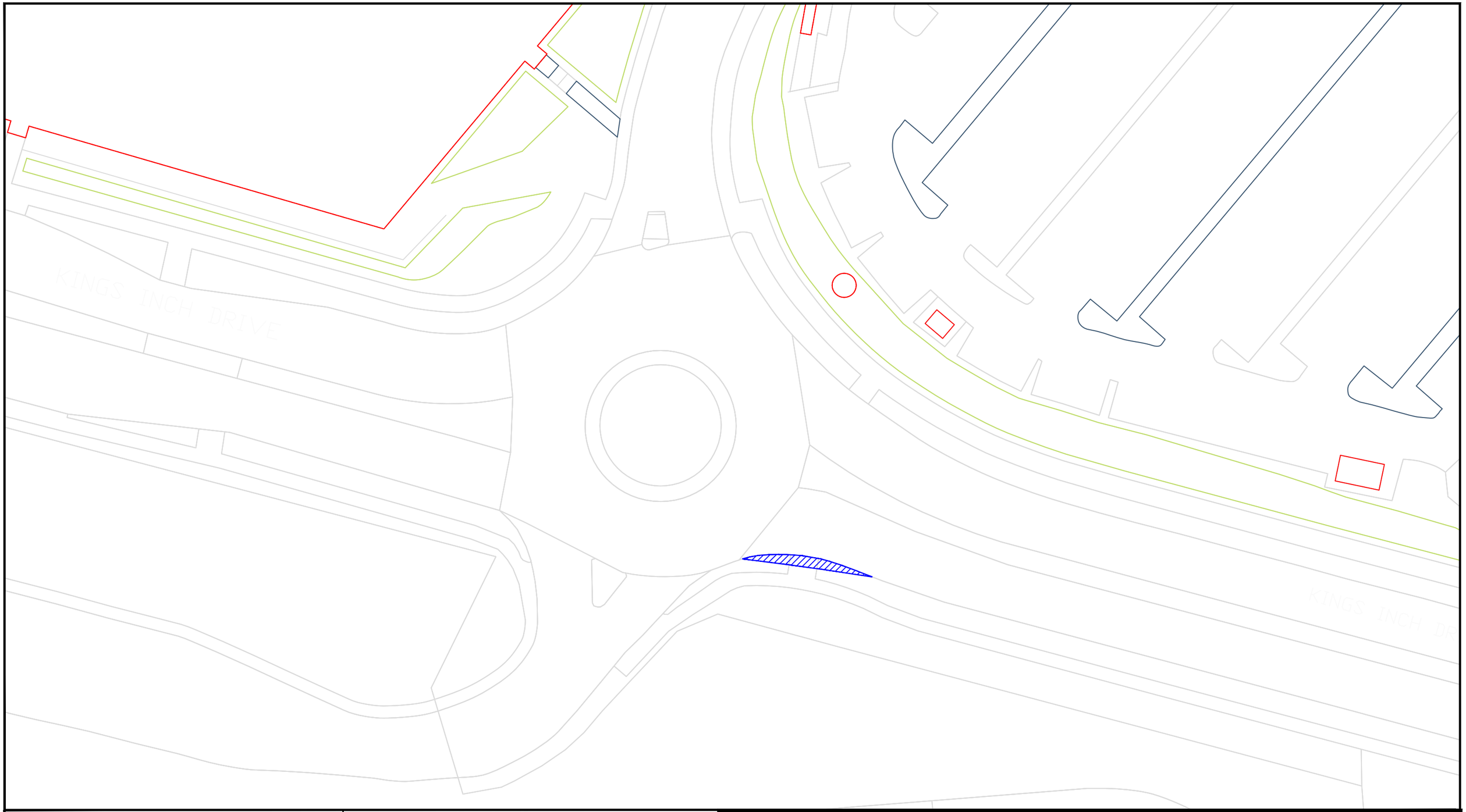

Notes:

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Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: Kings Inch Roundabout 2

POI: 3

COMPONENTS: Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
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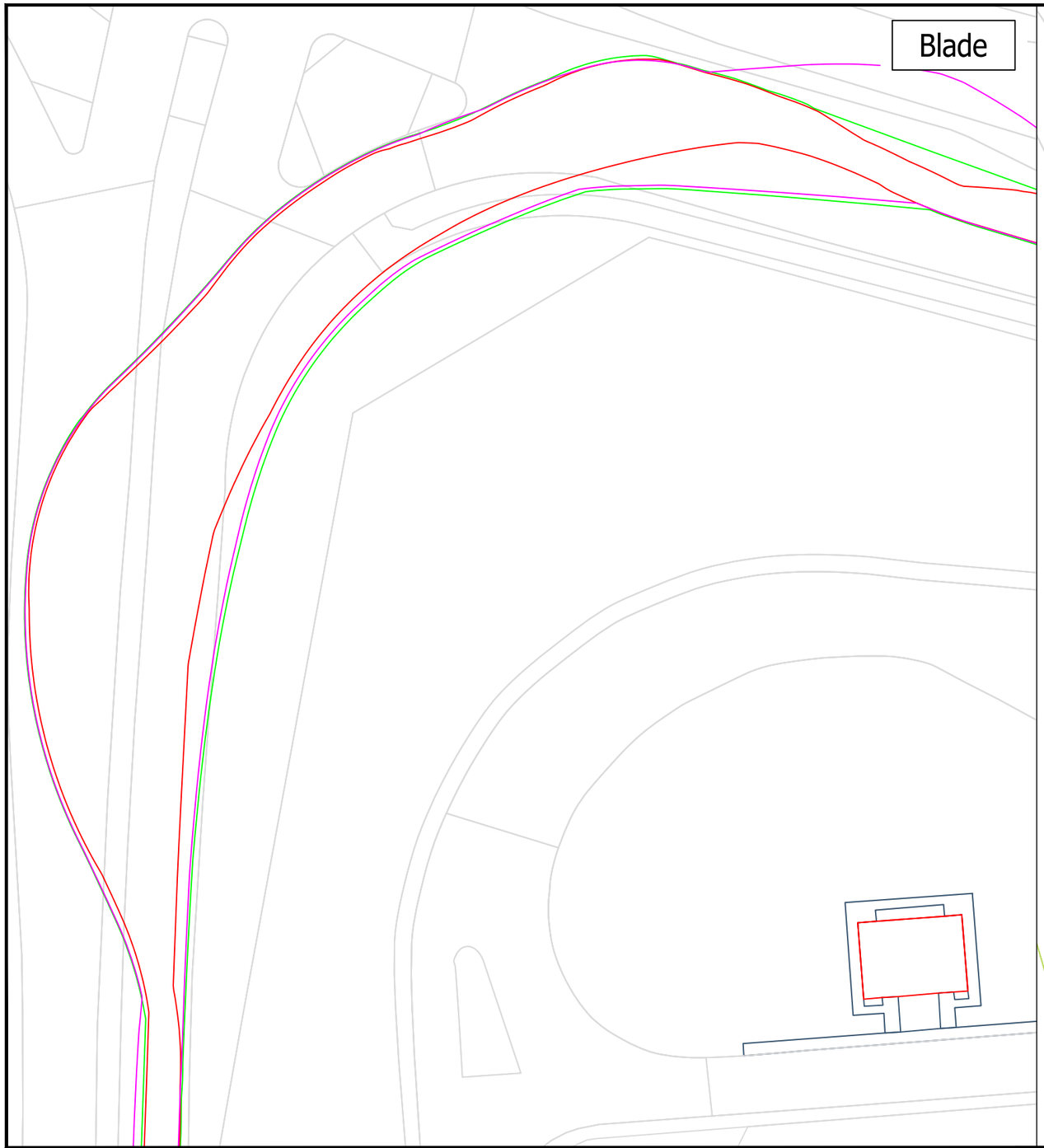

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: M8 Junction 25A / Kings Inch Drive

POI: 4

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
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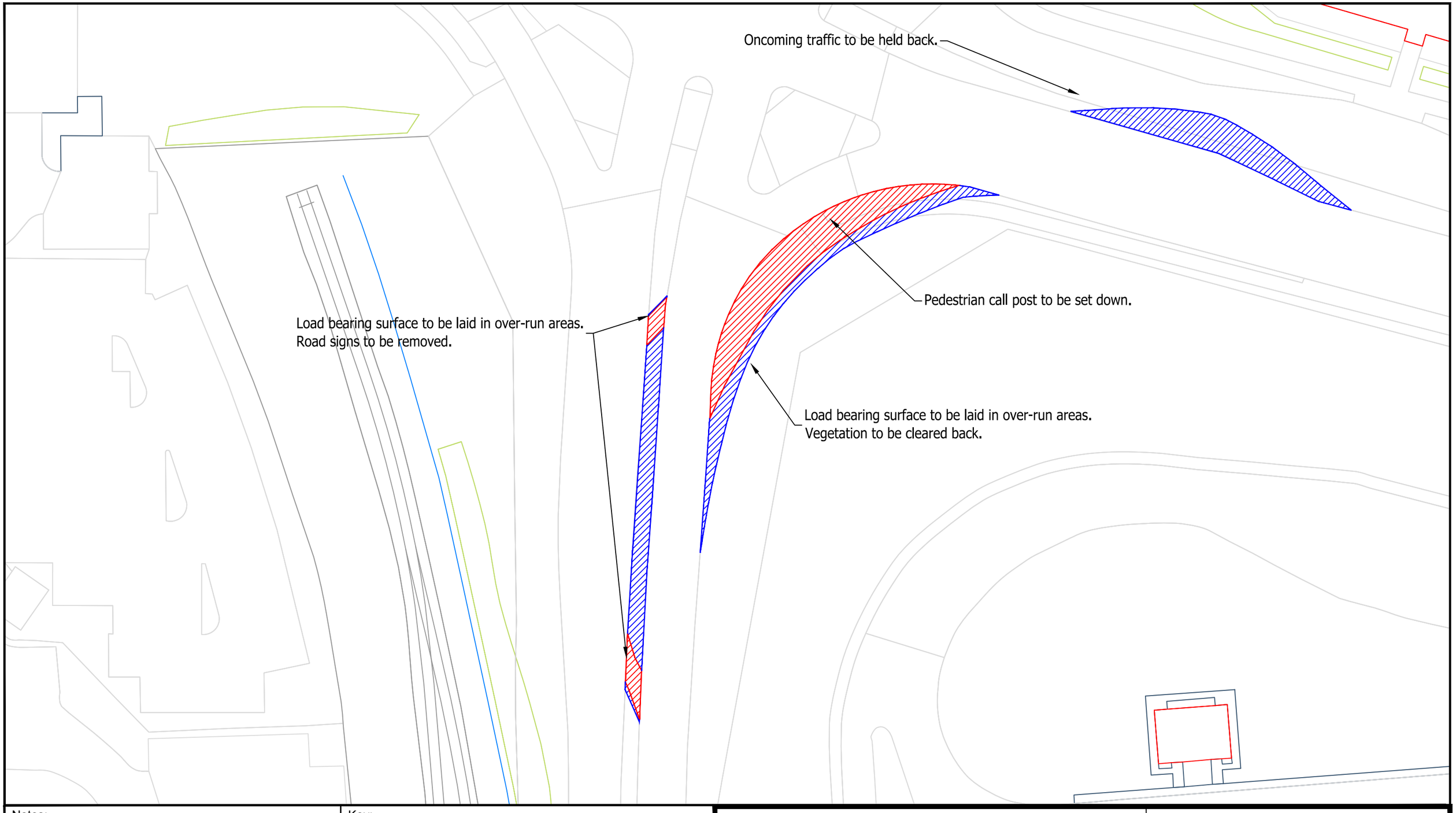

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: M8 Junction 25A / Kings Inch Drive

POI: 4

COMPONENTS: Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
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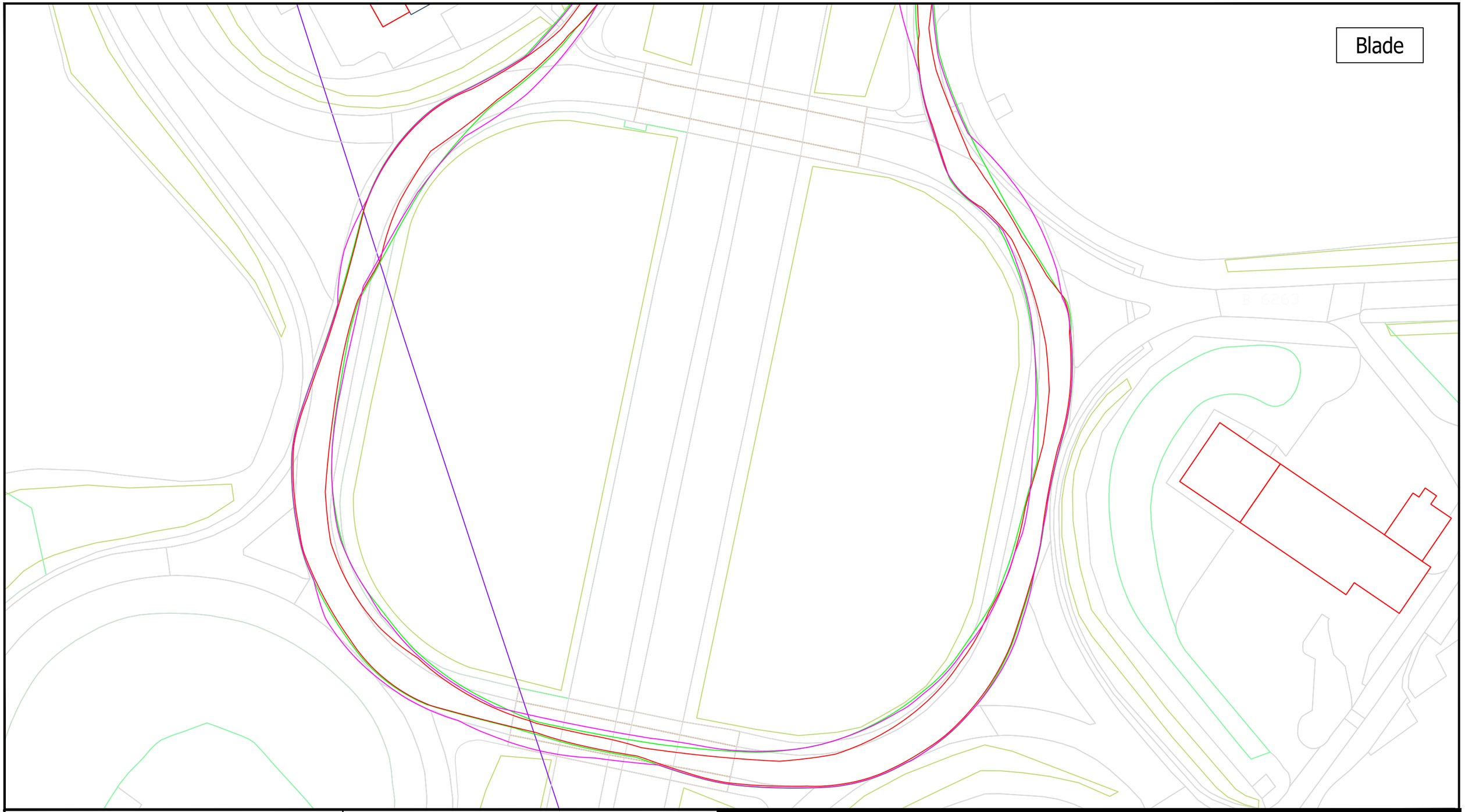

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: M74 Junction 22 Diverge

POI: 5

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
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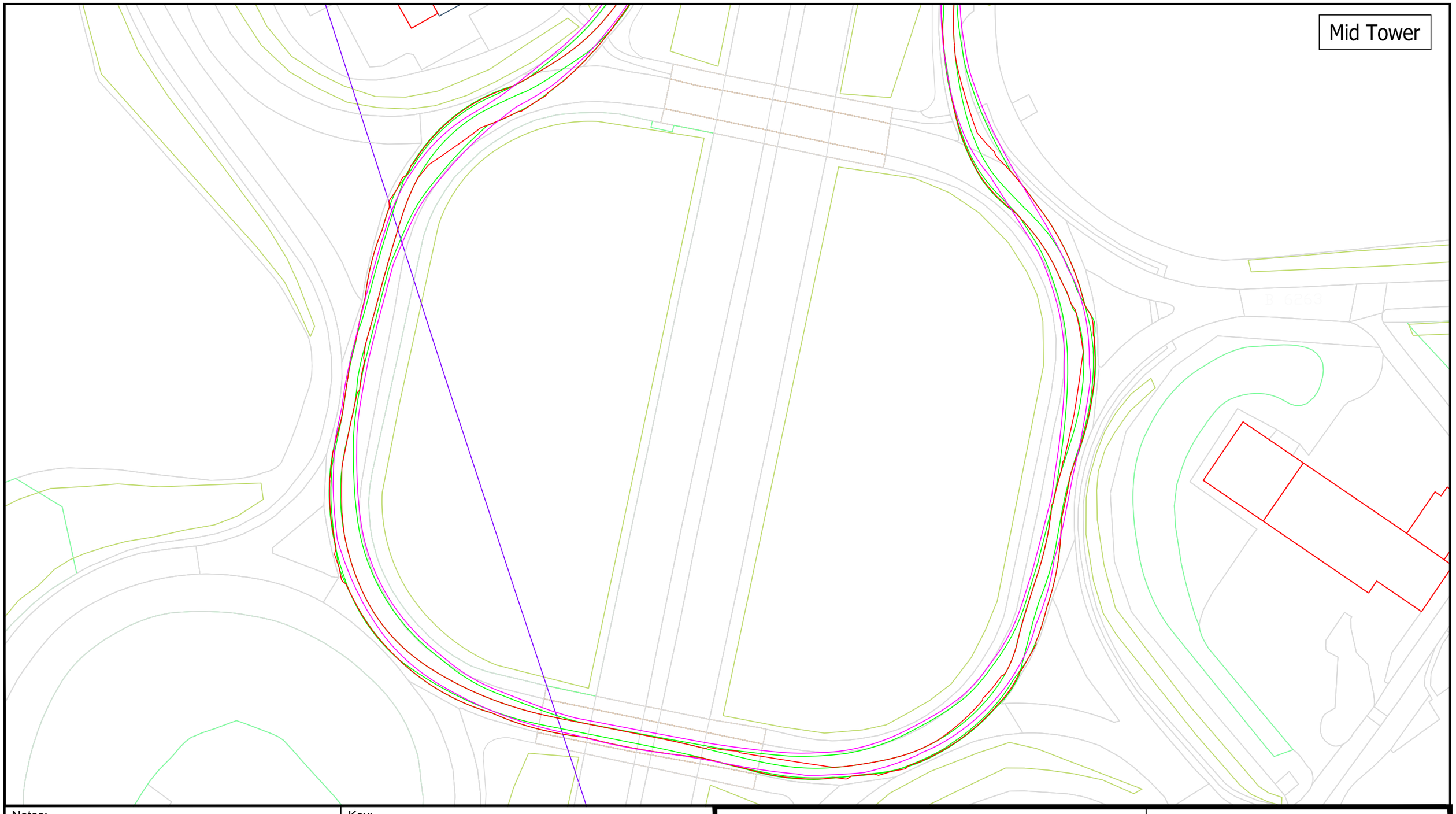

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: M74 Junction 22 Diverge

POI: 5

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

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PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
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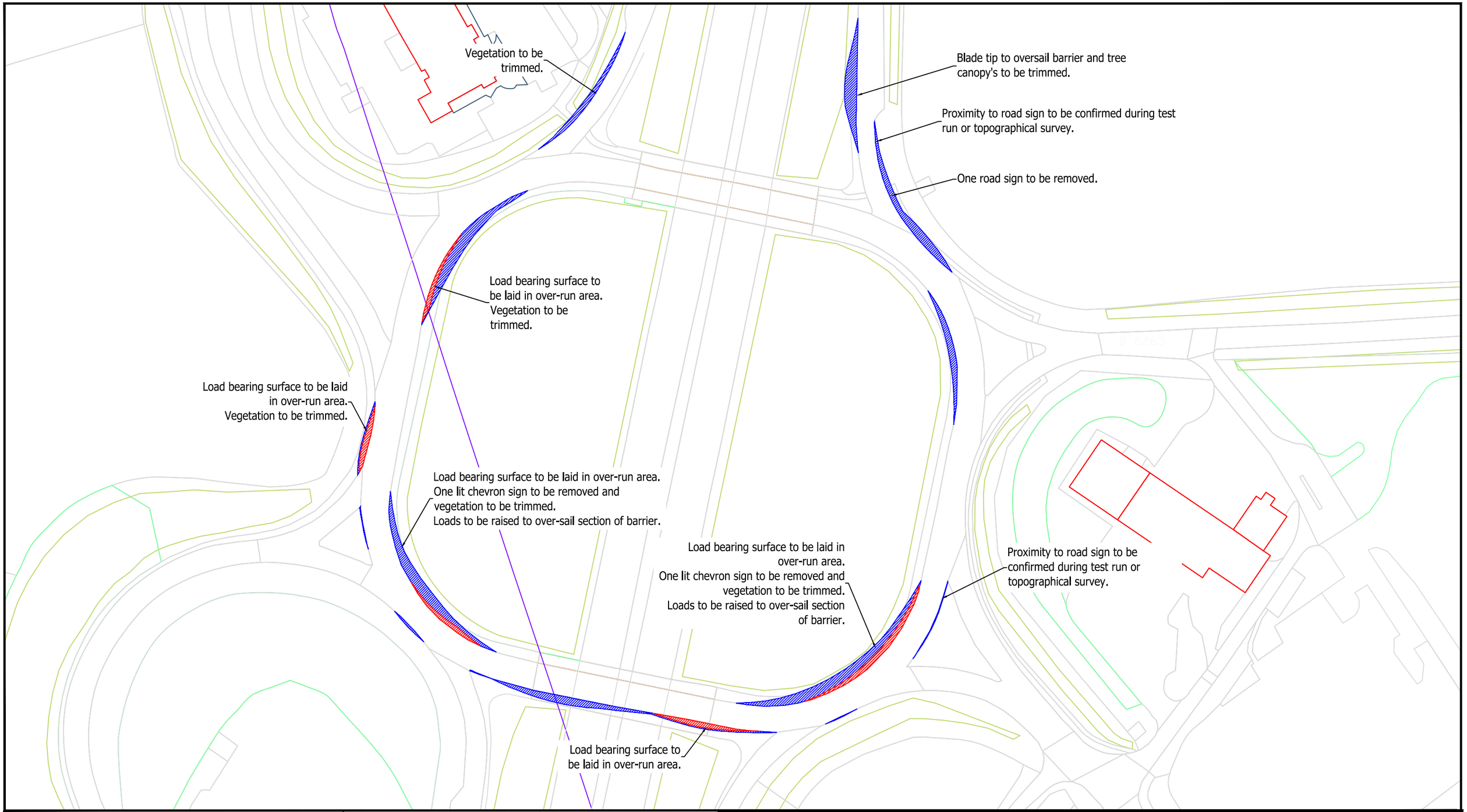

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: M74 Junction 22 Diverge

POI: 5

COMPONENTS:

Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	NTS @ A3

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PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
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Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 / A780 Roundabout

POI: 7

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

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PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA006	-

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 / A780 Roundabout

POI: 7

COMPONENTS:

Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

ScottishPower Renewables

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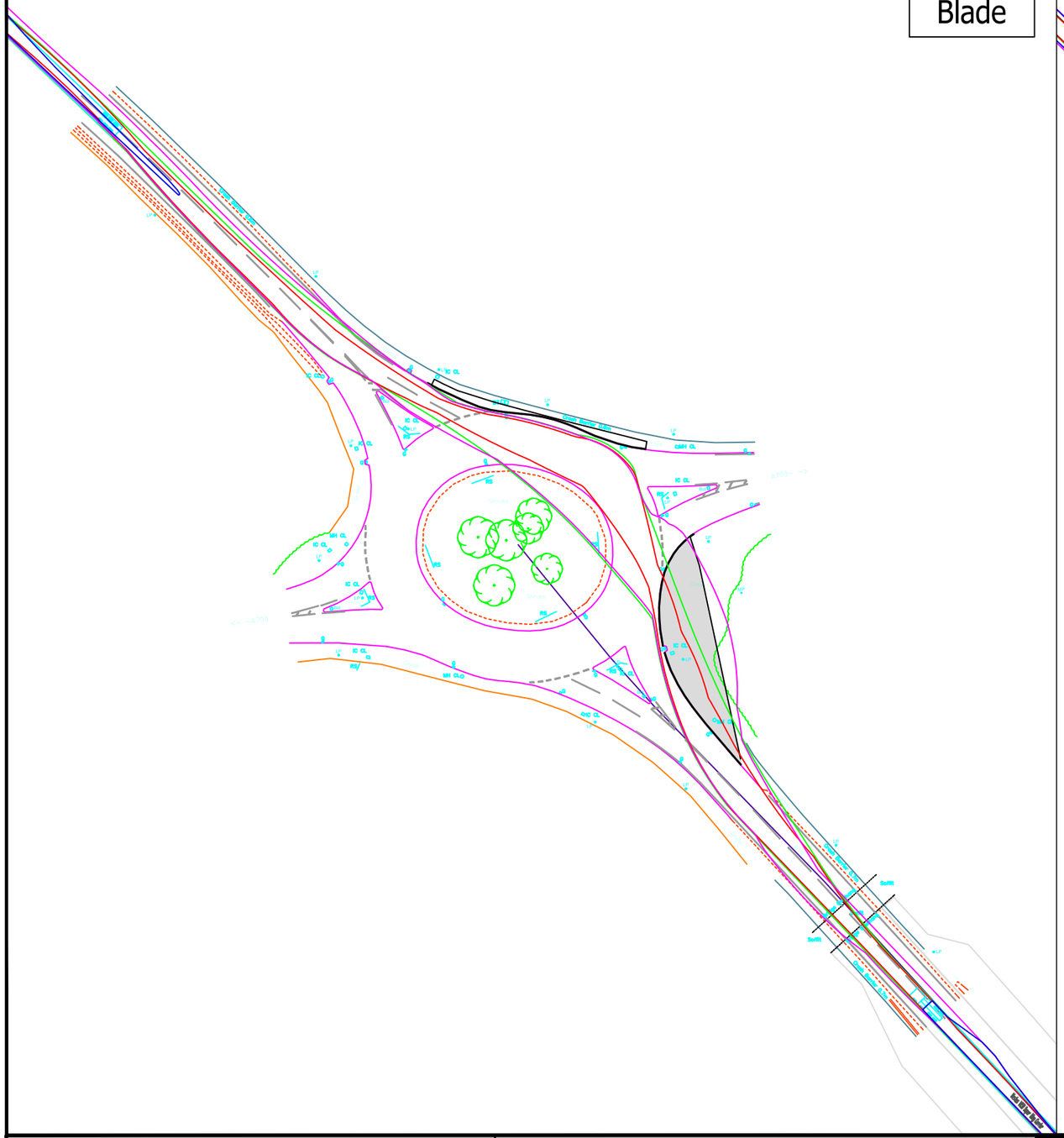
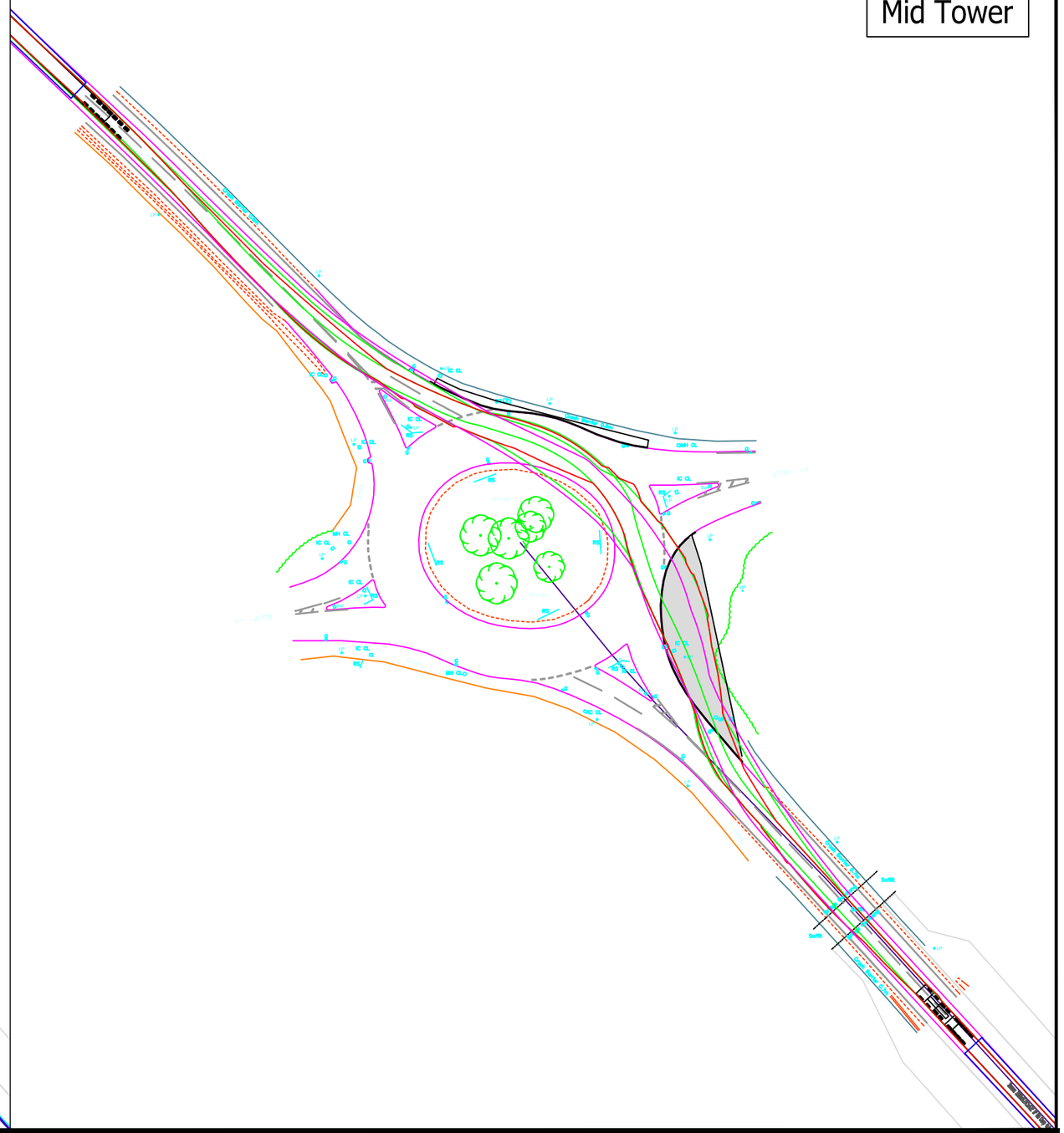
PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA006-2	-

Blade



Mid Tower



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

ScottishPower Renewables

LOCATION: A75 / A709 Roundabout

POI: 8

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

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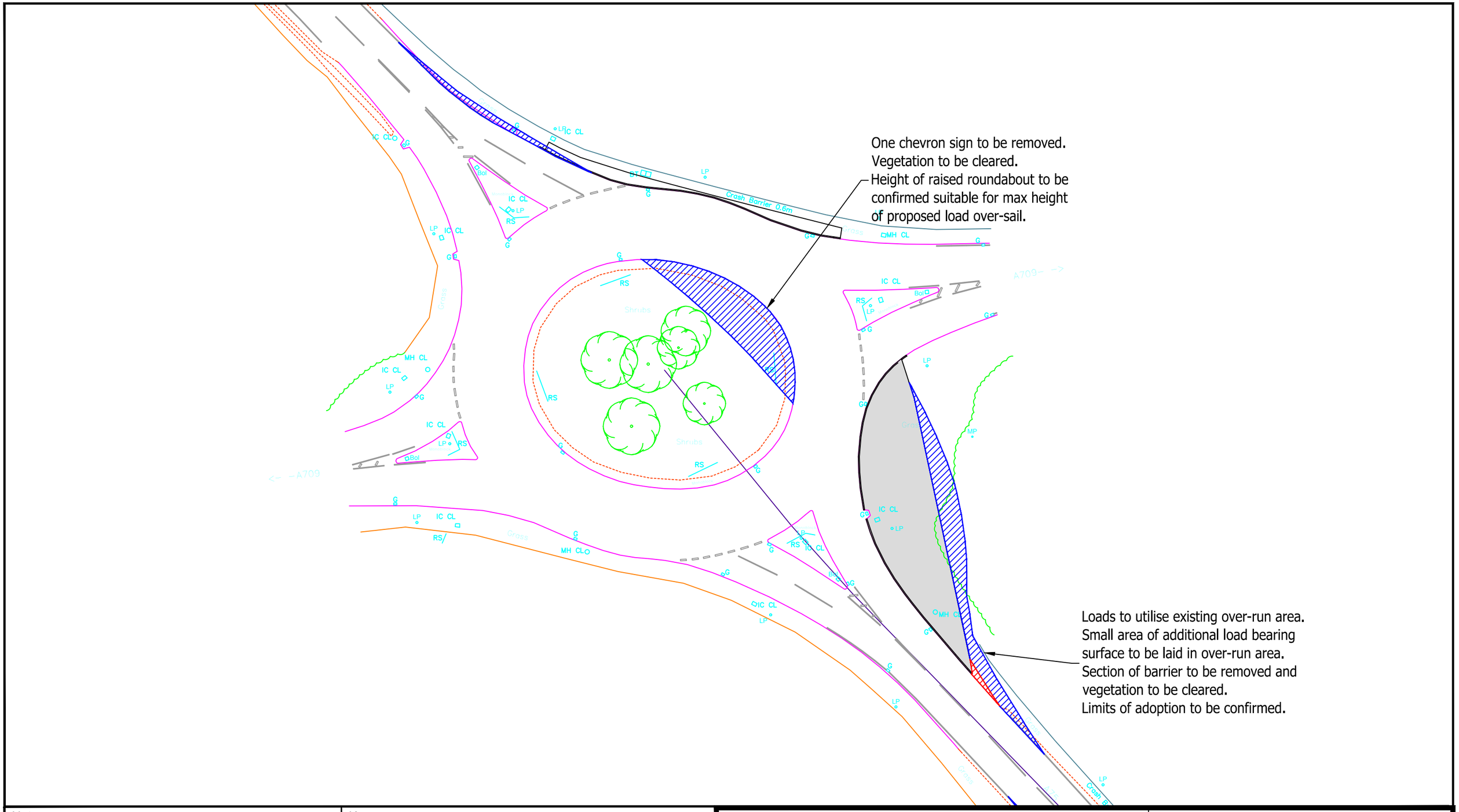
PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA007	-



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

ScottishPower Renewables

LOCATION: A75 / A709 Roundabout

POI: 8

COMPONENTS: Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

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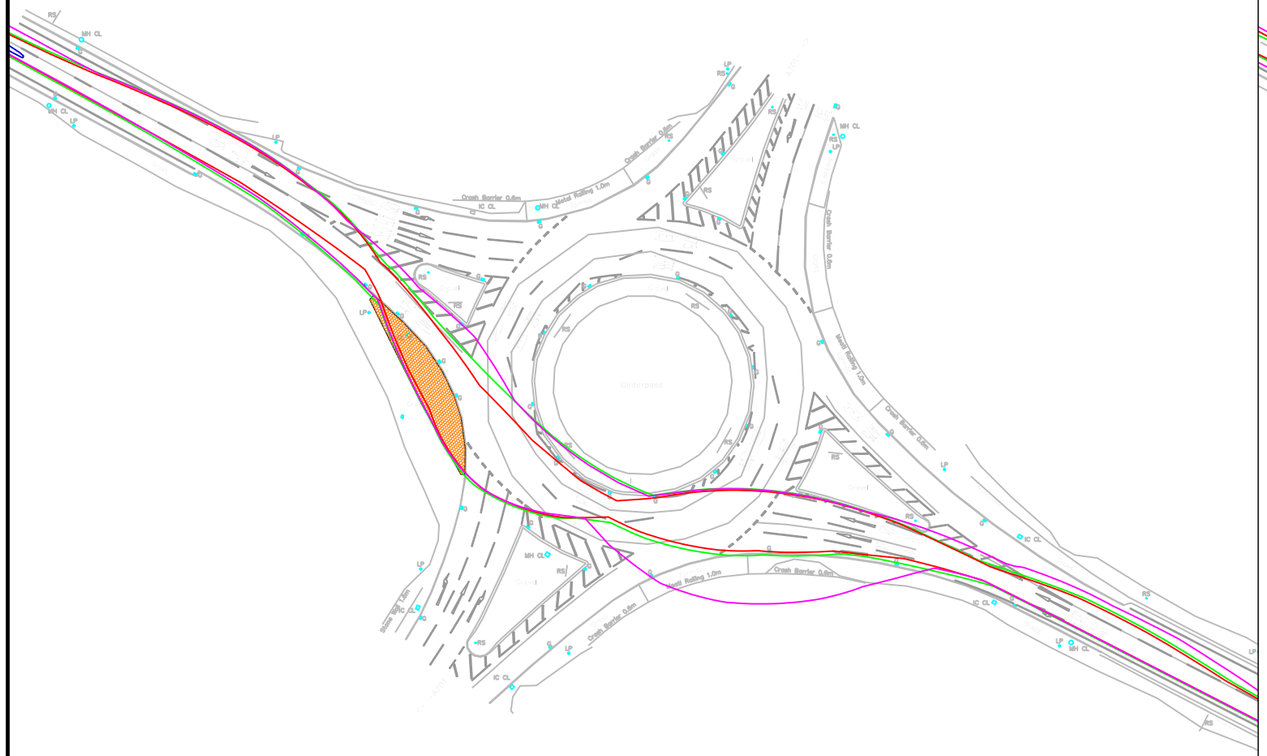
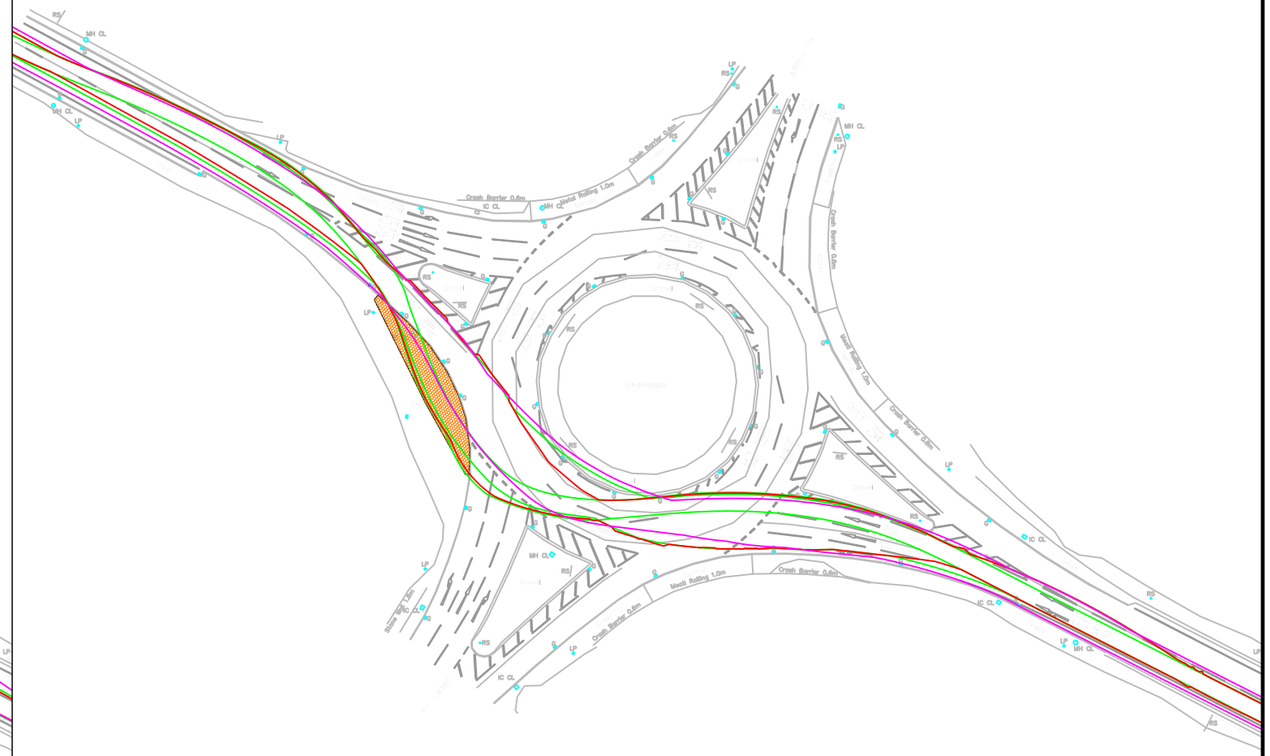
PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA007-2	-

Blade



Mid Tower



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

ScottishPower Renewables

LOCATION: A75 / A701 Roundabout

POI: 9

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

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part of the WYG group

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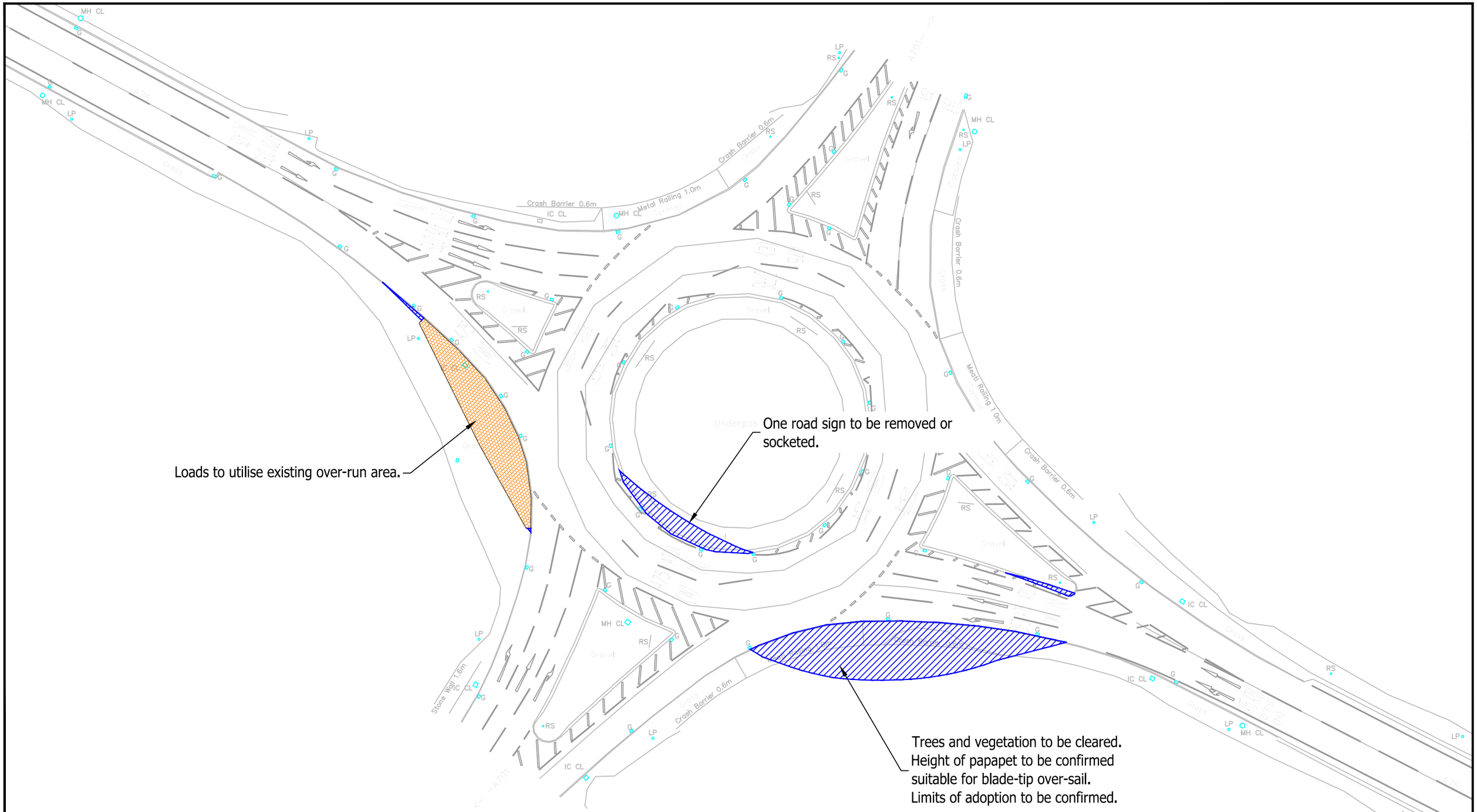
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA008	-



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 / A701 Roundabout

POI: 9

COMPONENTS:

Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

ScottishPower Renewables

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PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA008-2	-

Blade

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 / A76 Roundabout

POI: 10

COMPONENTS:

Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

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PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA009	-

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 / A76 Roundabout

POI: 10

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

ScottishPower Renewables

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PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA009-2	-

One lit chevron sign to be set back. Height of roundabout to be confirmed suitable for load over-sail. Proximity to bridge support to be confirmed.

Vegetation to be cleared to allow for blade-tip over-sail.

One lit chevron sign to be set back. Height of roundabout to be confirmed suitable for load over-sail.

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 / A76 Roundabout

POI: 10

COMPONENTS:

Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

ScottishPower Renewables

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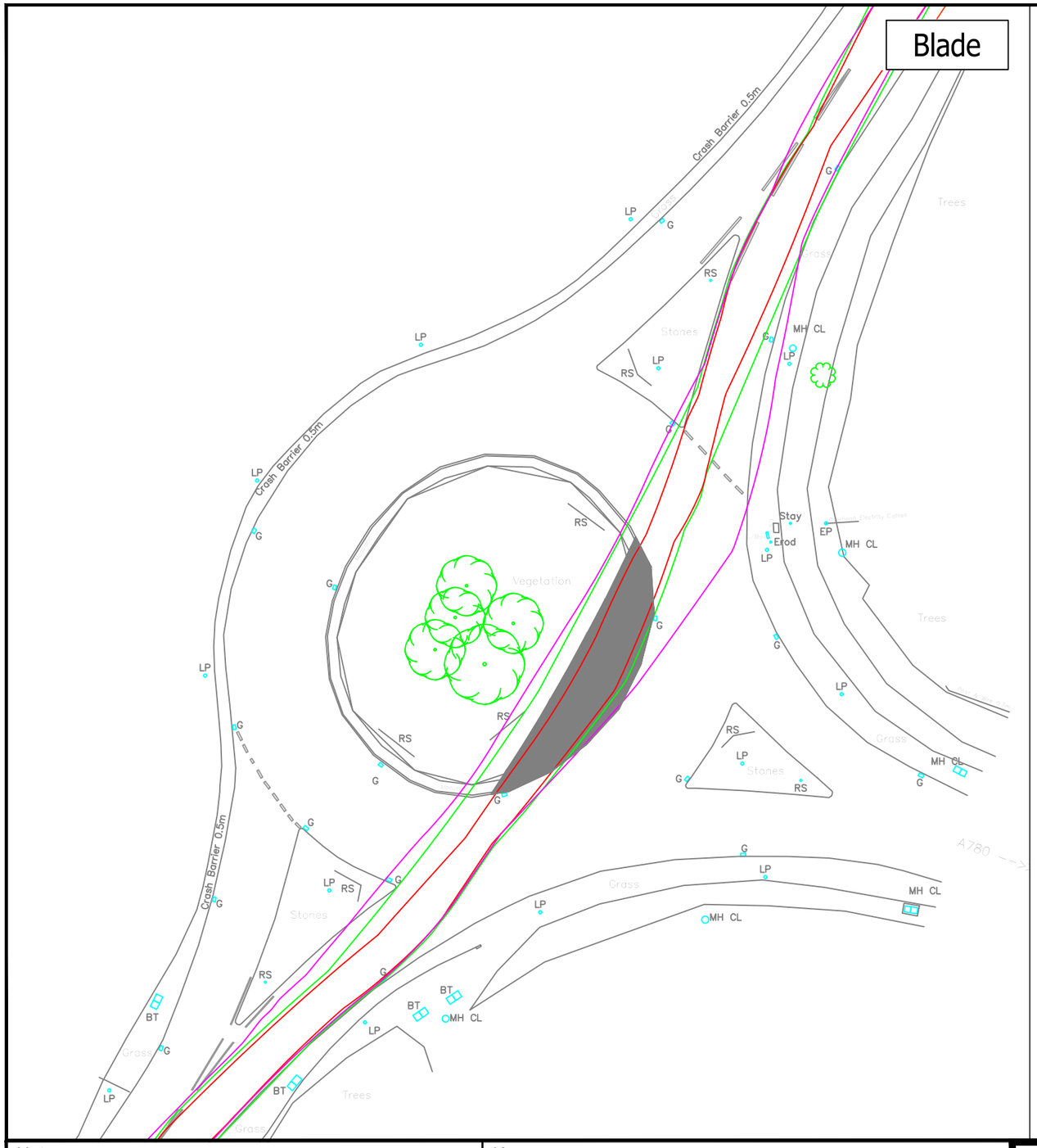
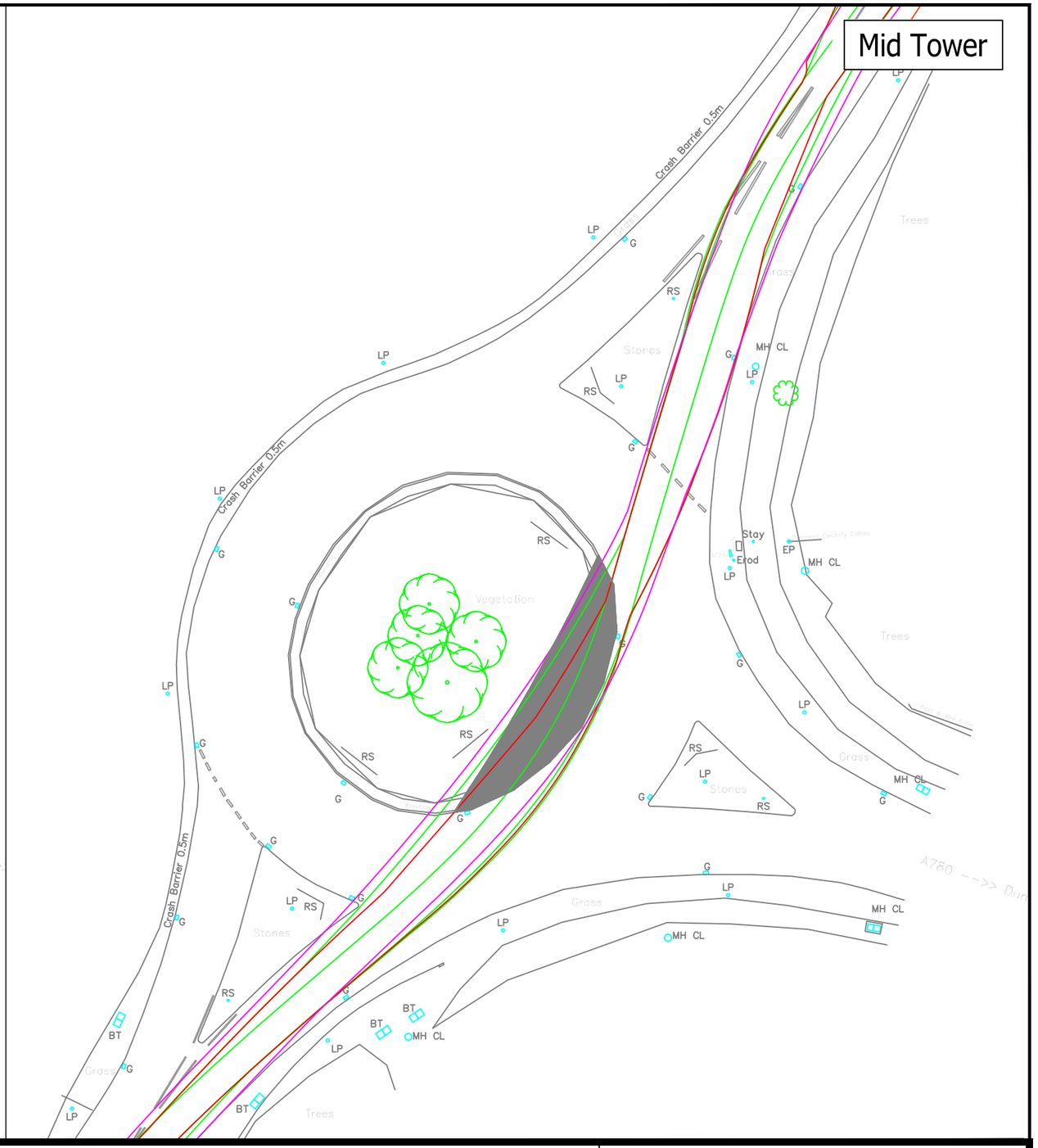
PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA009-3	-

Blade



Mid Tower



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

ScottishPower Renewables

LOCATION: A75 / A780 Roundabout

POI: 11

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

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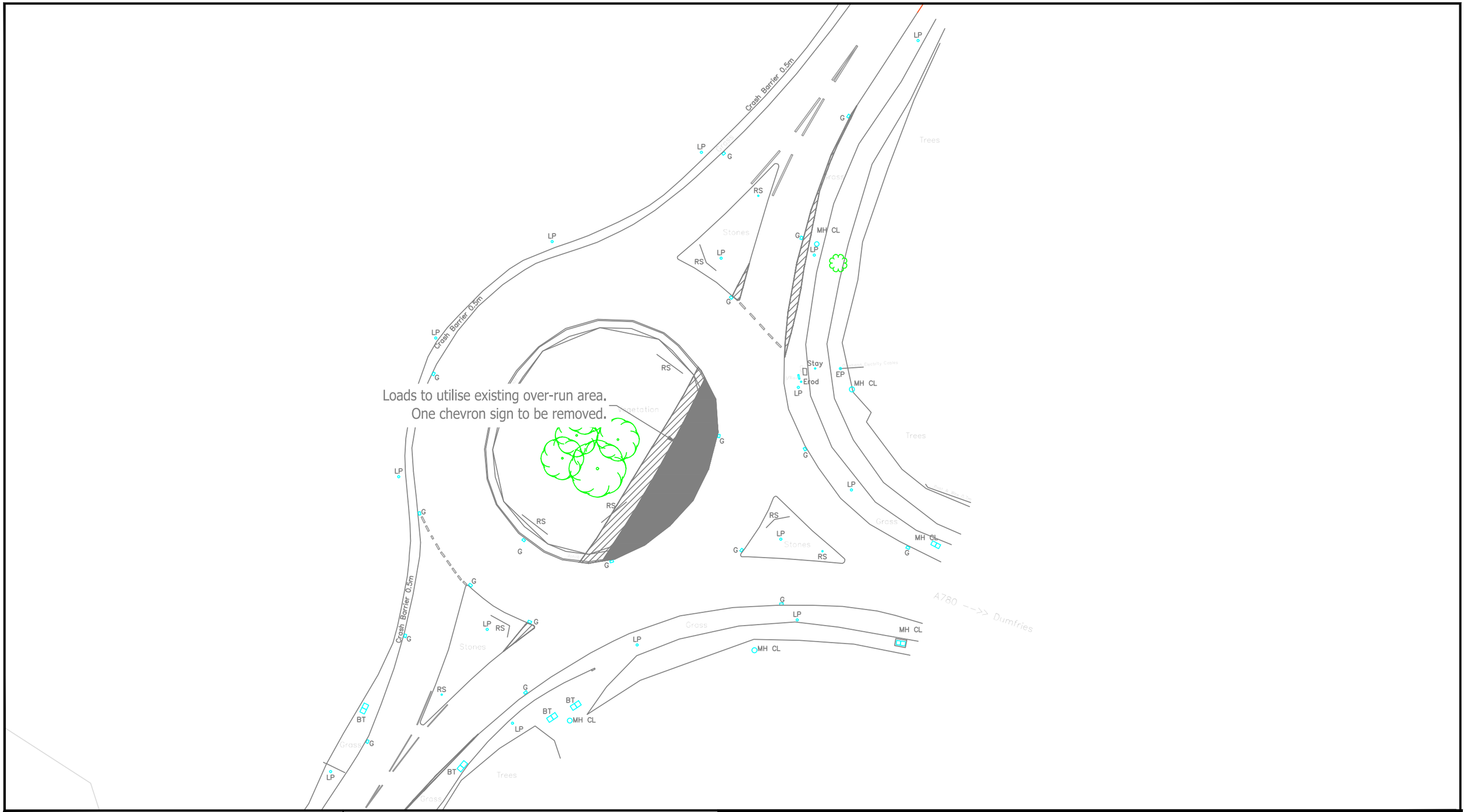
PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA0010	-



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 / A780 Roundabout

POI: 11

COMPONENTS: Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

ScottishPower Renewables

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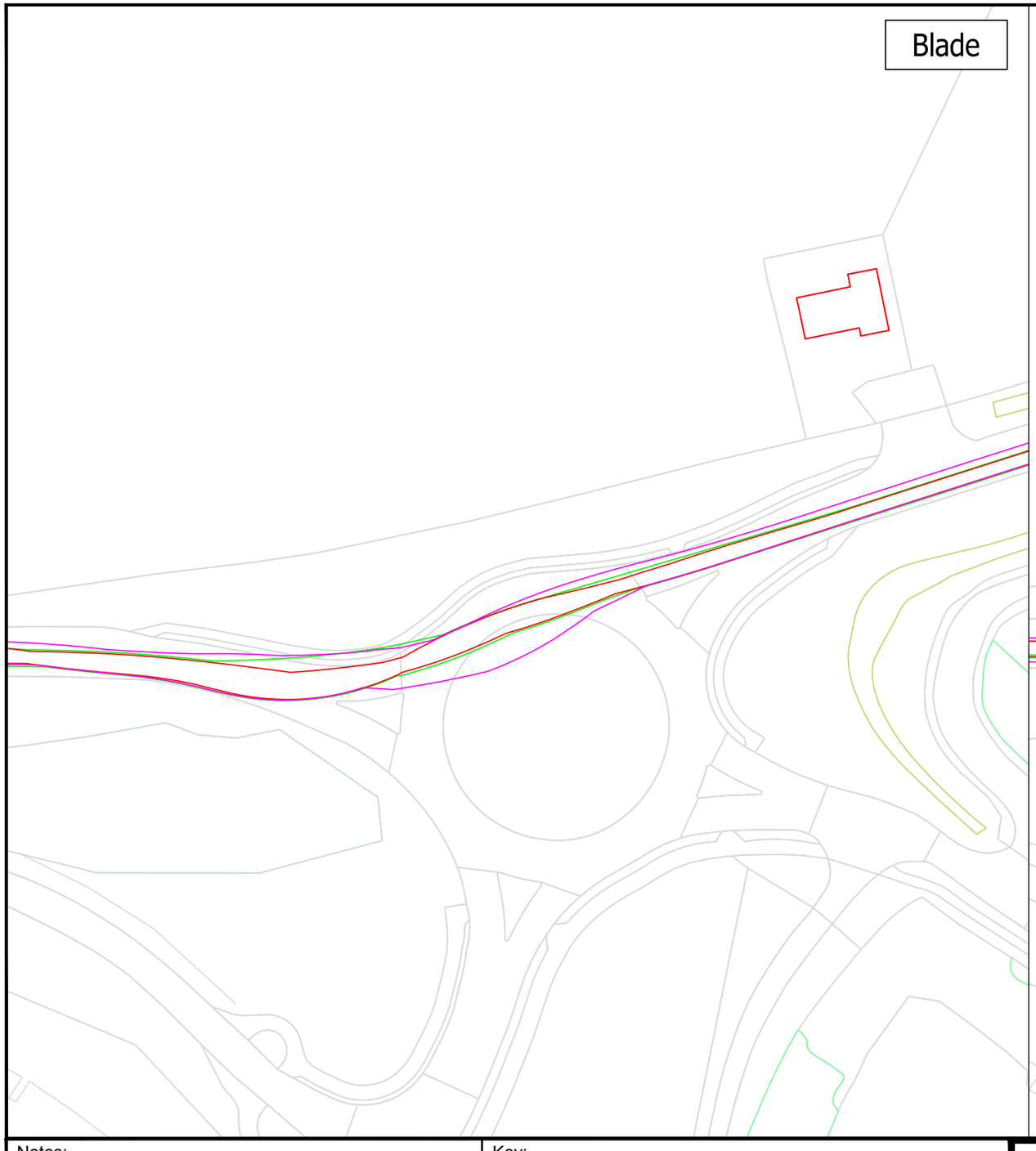
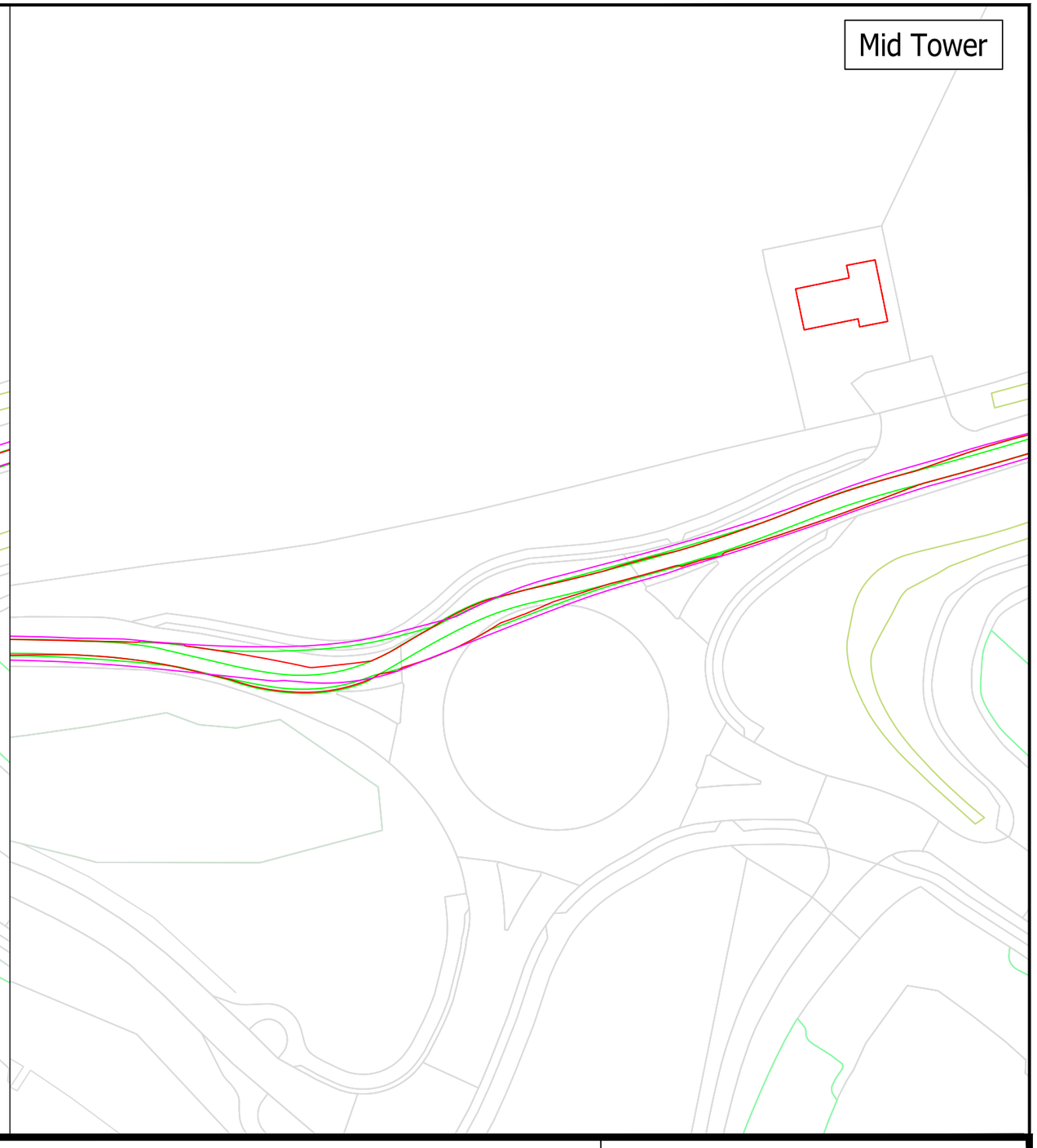
PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA010-2	-

Blade



Mid Tower



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 Garroch Roundabout

POI: 12

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

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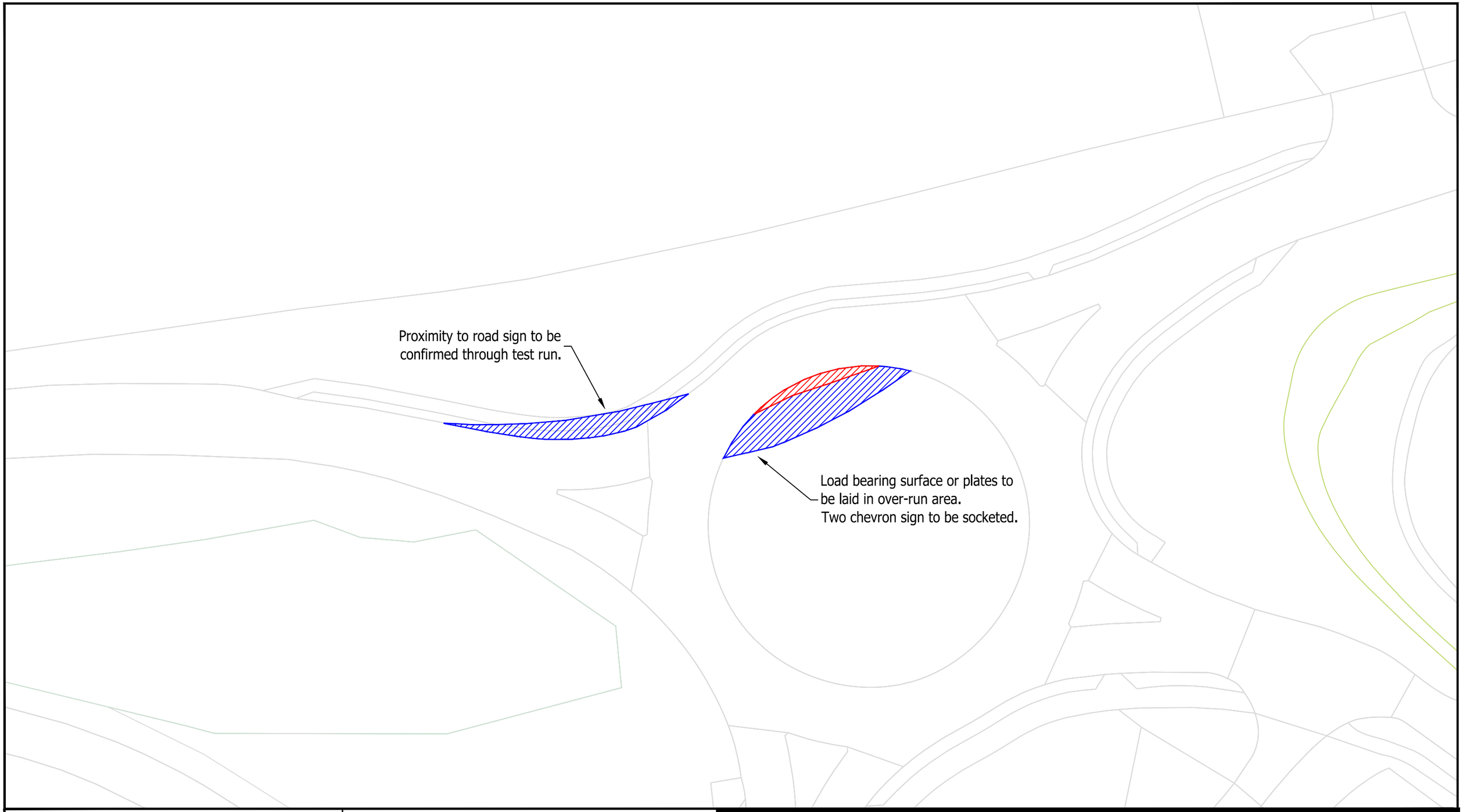
PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA011	-



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 Garroch Roundabout

POI: 12

COMPONENTS:

Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

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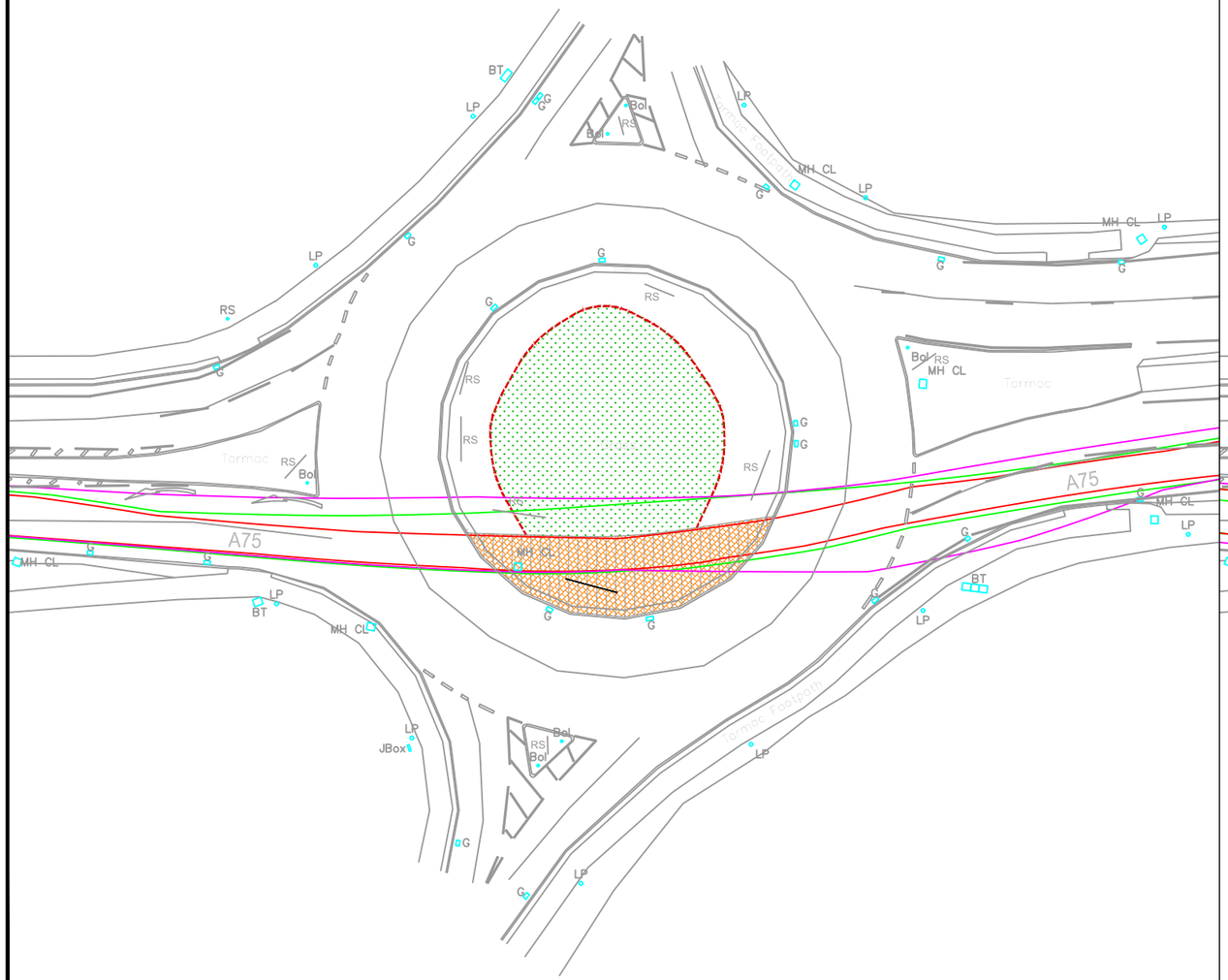
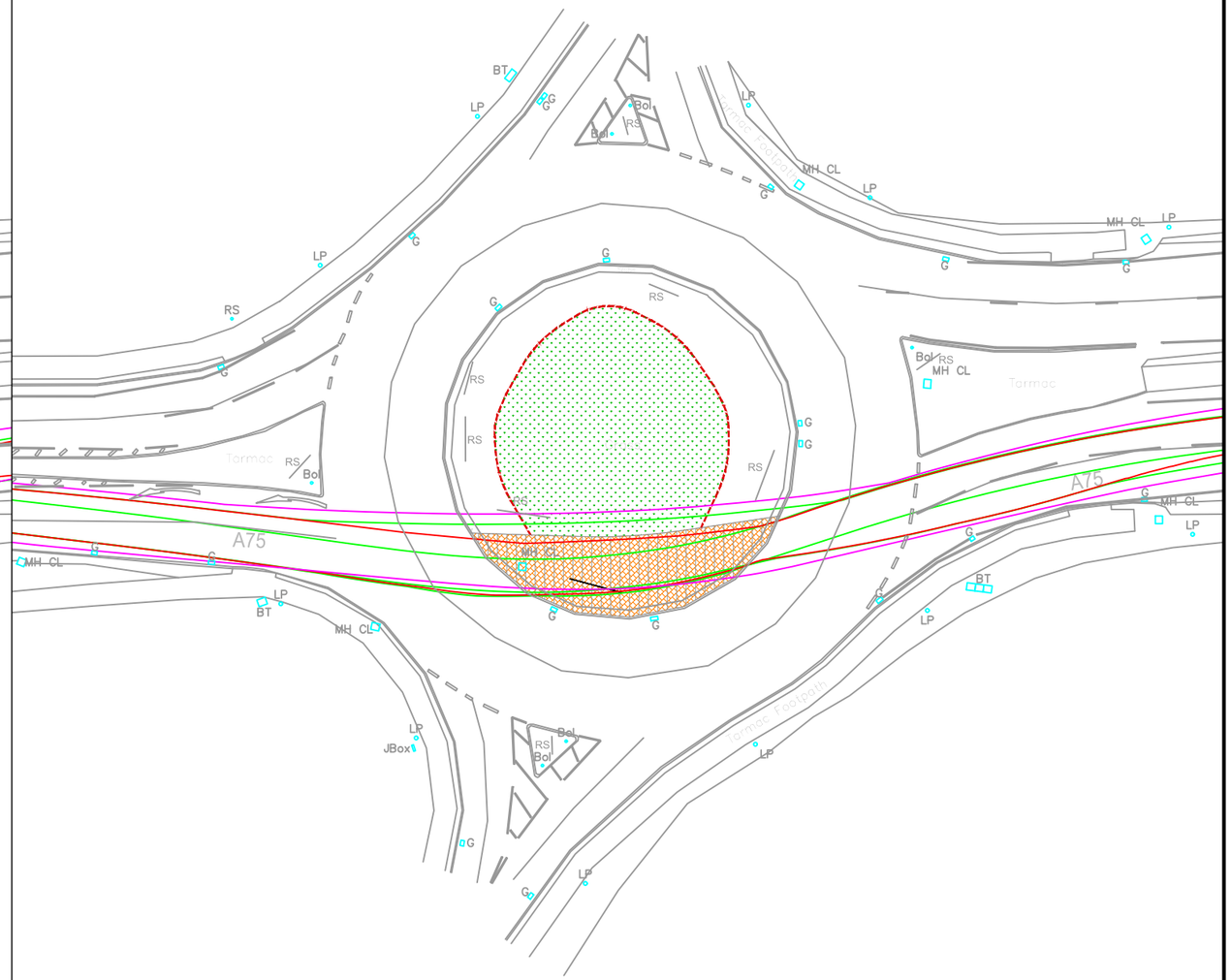
PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA011-2	-

Blade



Mid Tower



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

ScottishPower Renewables

LOCATION: A75 Drummore Roundabout

POI: 13

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

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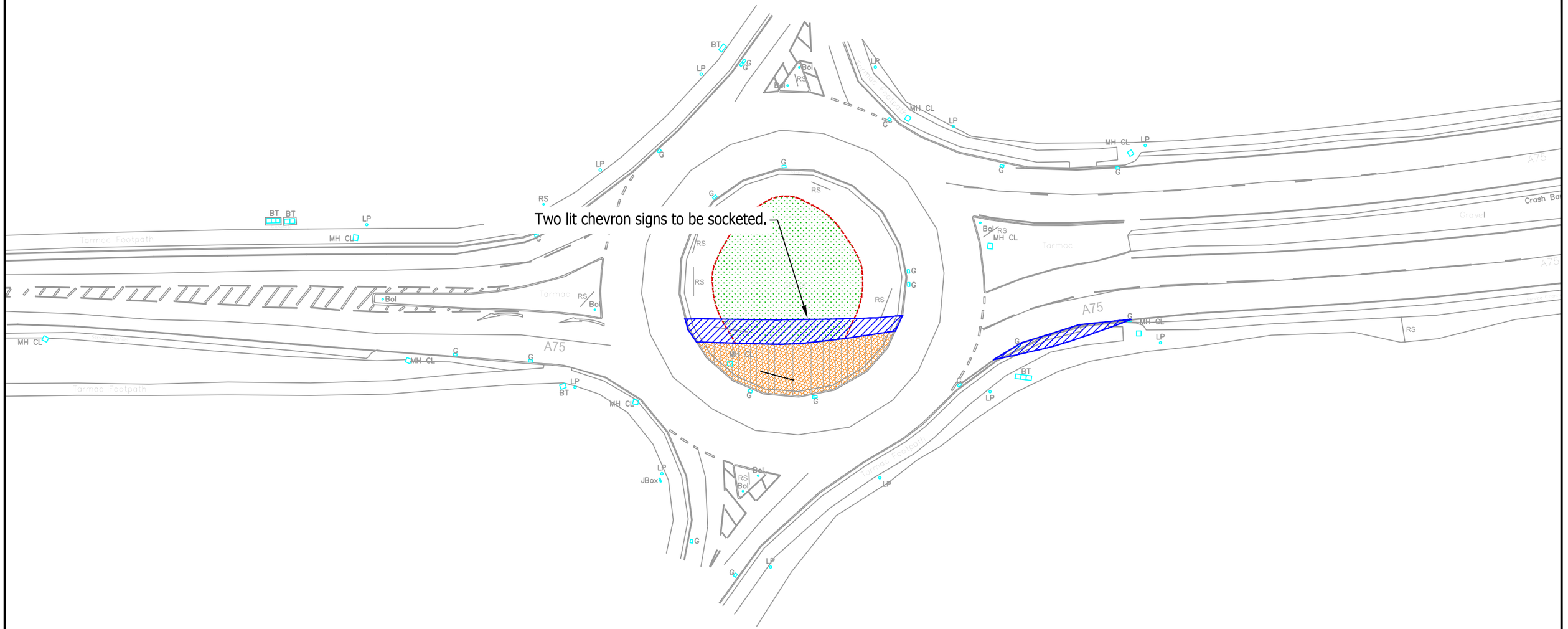
PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA012	-



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 Drummore Roundabout

POI: 13

COMPONENTS: Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

ScottishPower Renewables

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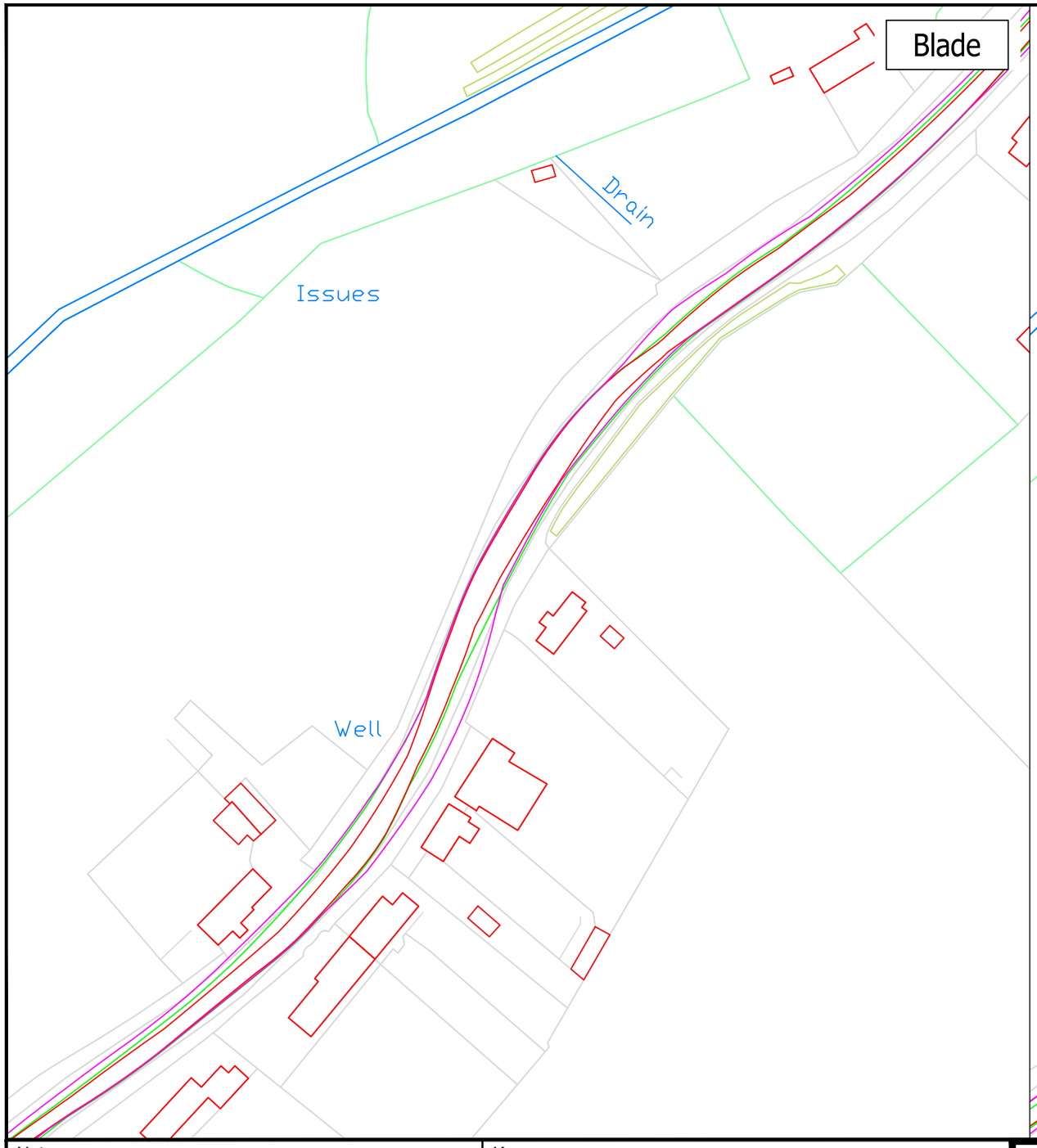
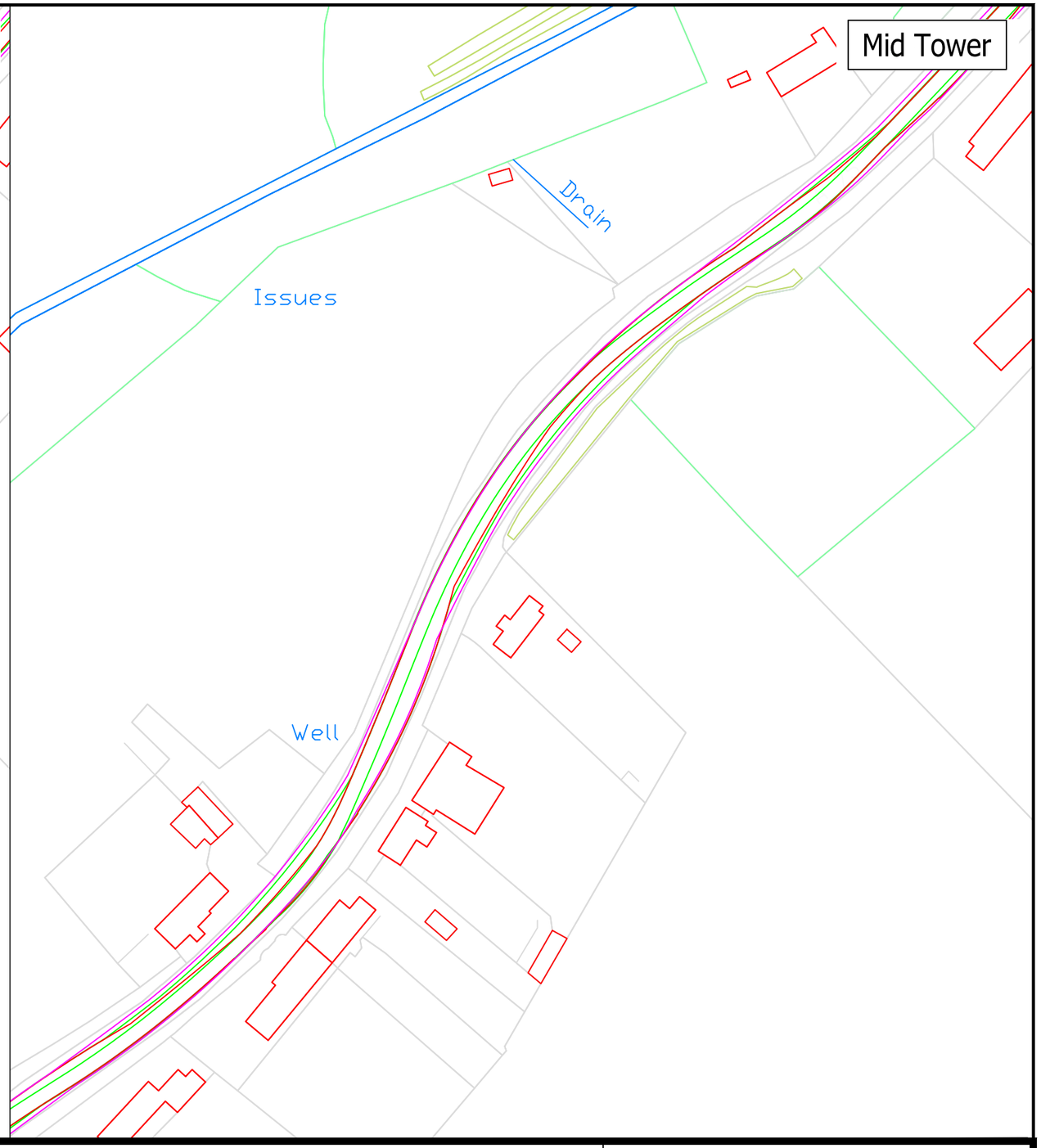
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA012-2	-





Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

ScottishPower Renewables

LOCATION: A75 Springholm

POI: 17

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

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PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA013	-

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 Springholm

POI: 17

COMPONENTS: Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

ScottishPower Renewables

WYG Transport Planning
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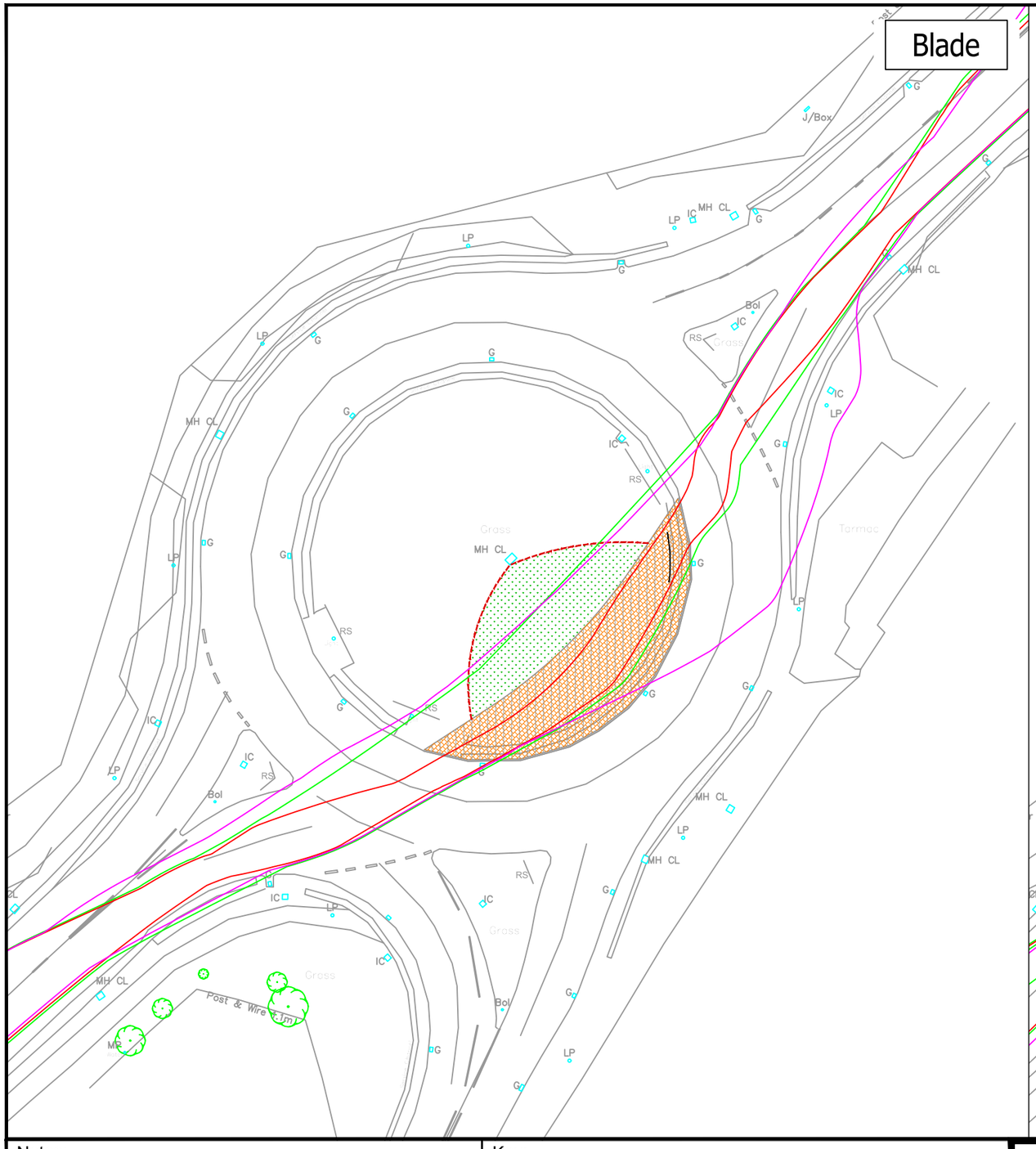
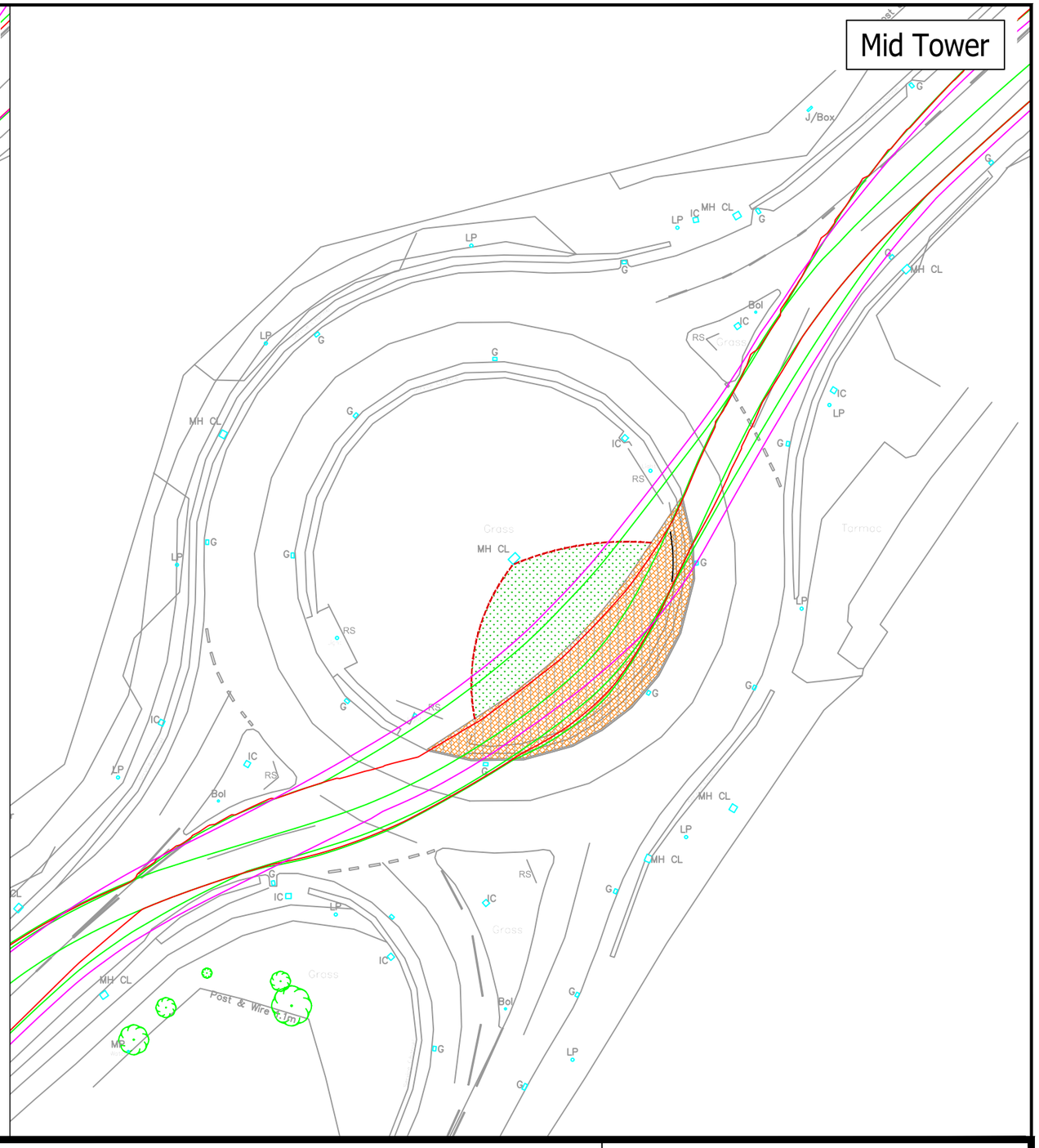
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA013-2	-





Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 / A745

POI: 18

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

ScottishPower Renewables

WYG Transport Planning
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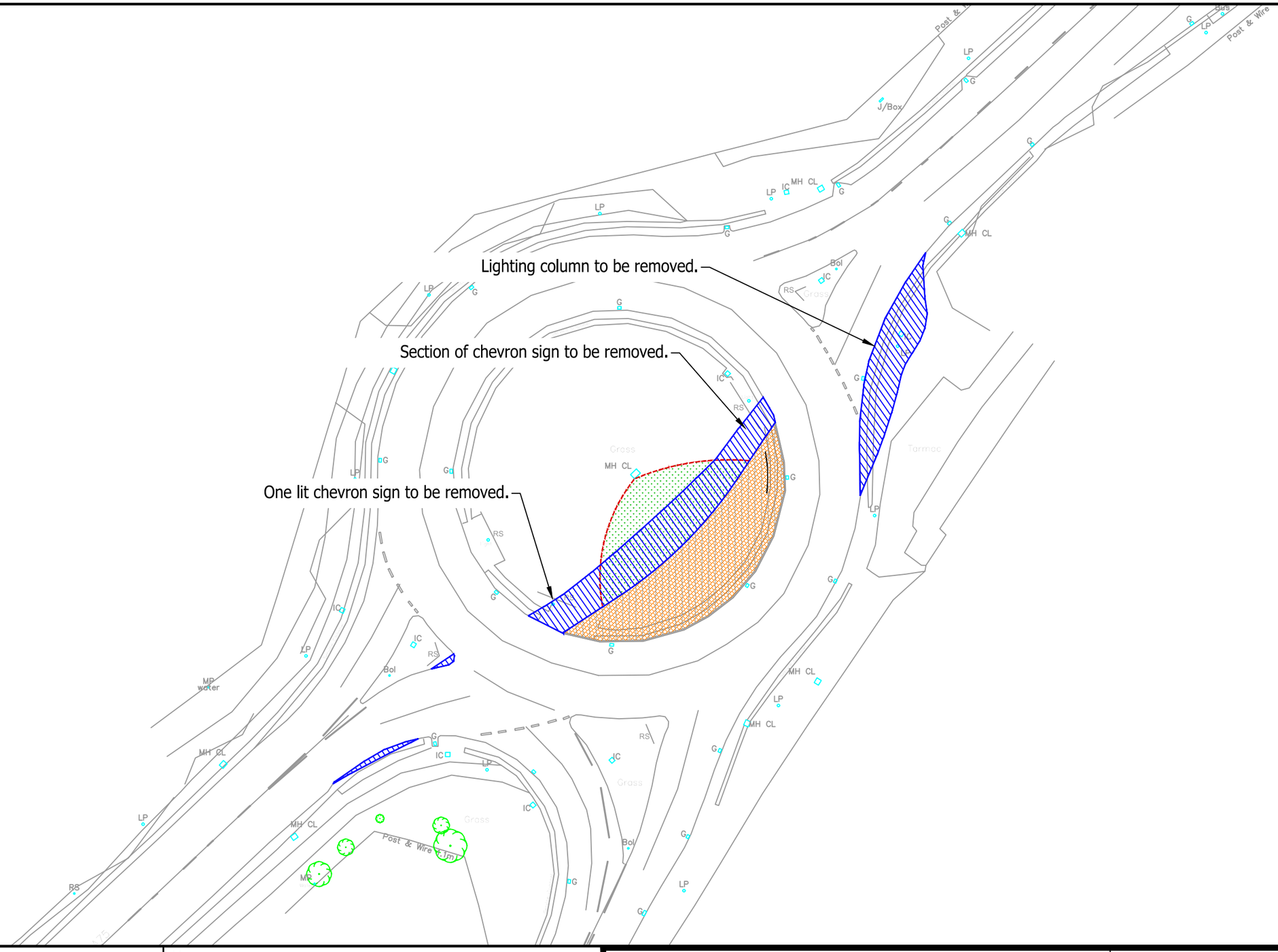
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA014	-



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 / A745

POI: 18

COMPONENTS:

Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

ScottishPower Renewables

WYG Transport Planning
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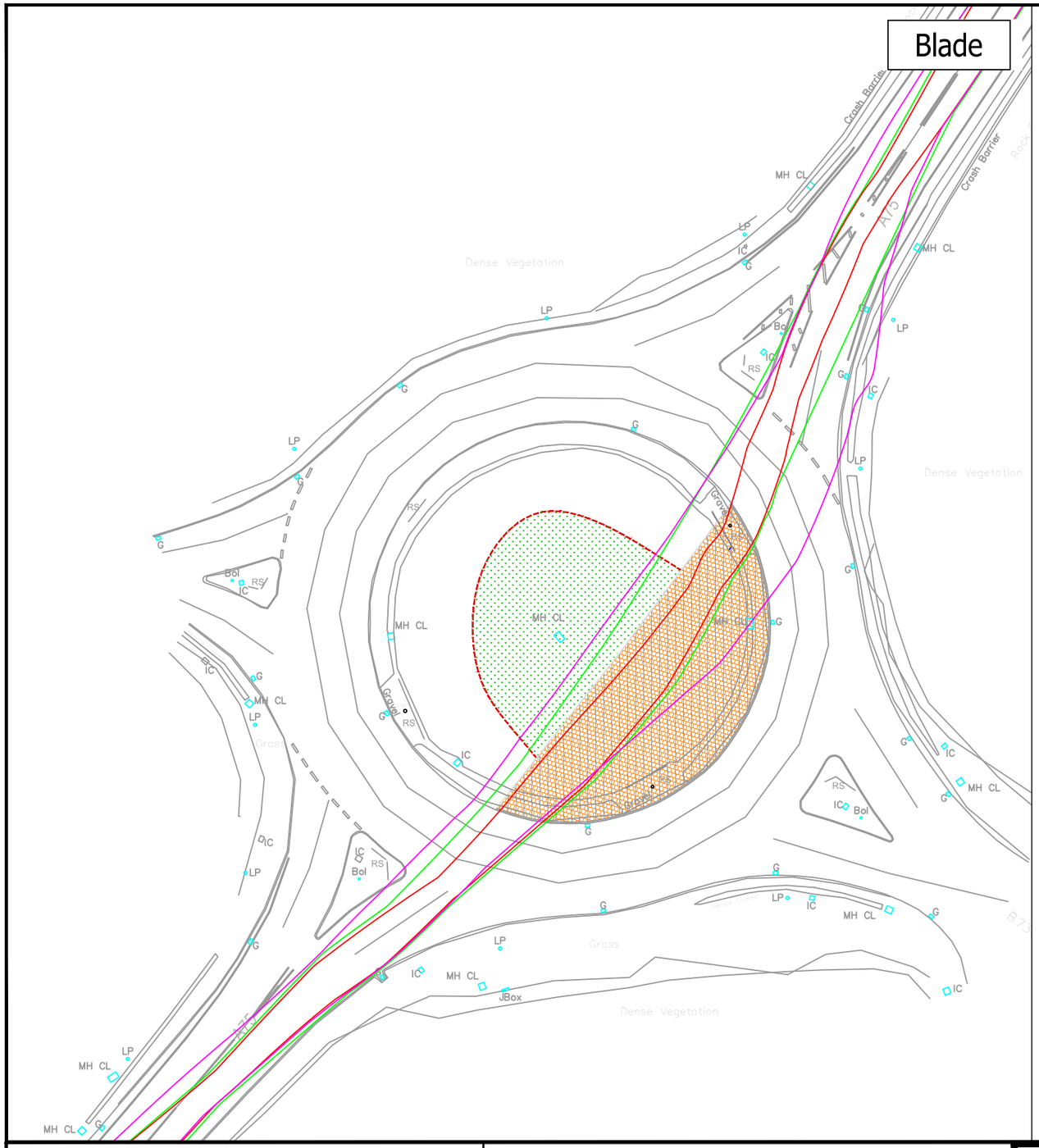
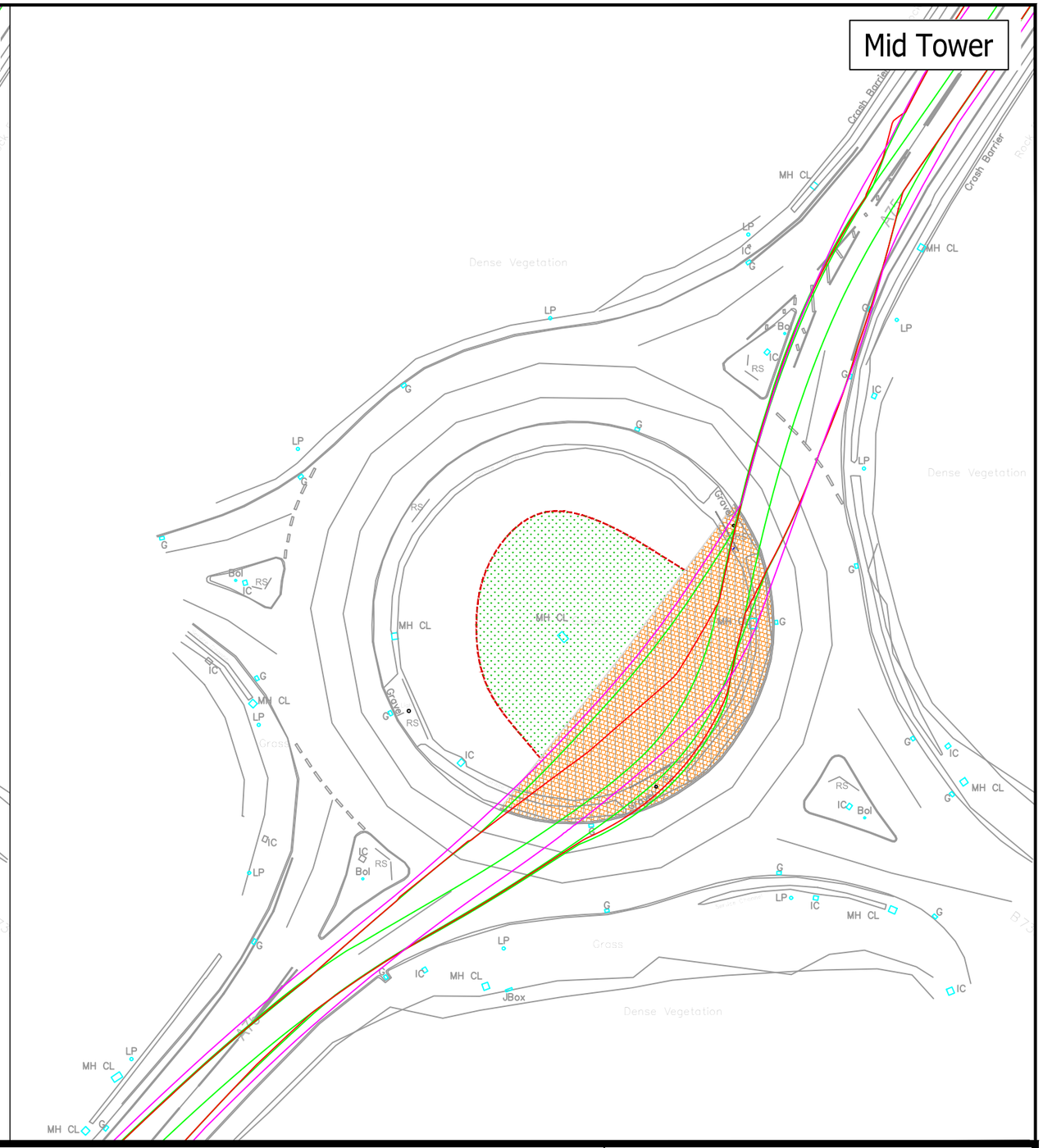
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA014-2	-





Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

ScottishPower Renewables

LOCATION:	POI:
A75 / B736	19

COMPONENTS:

Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

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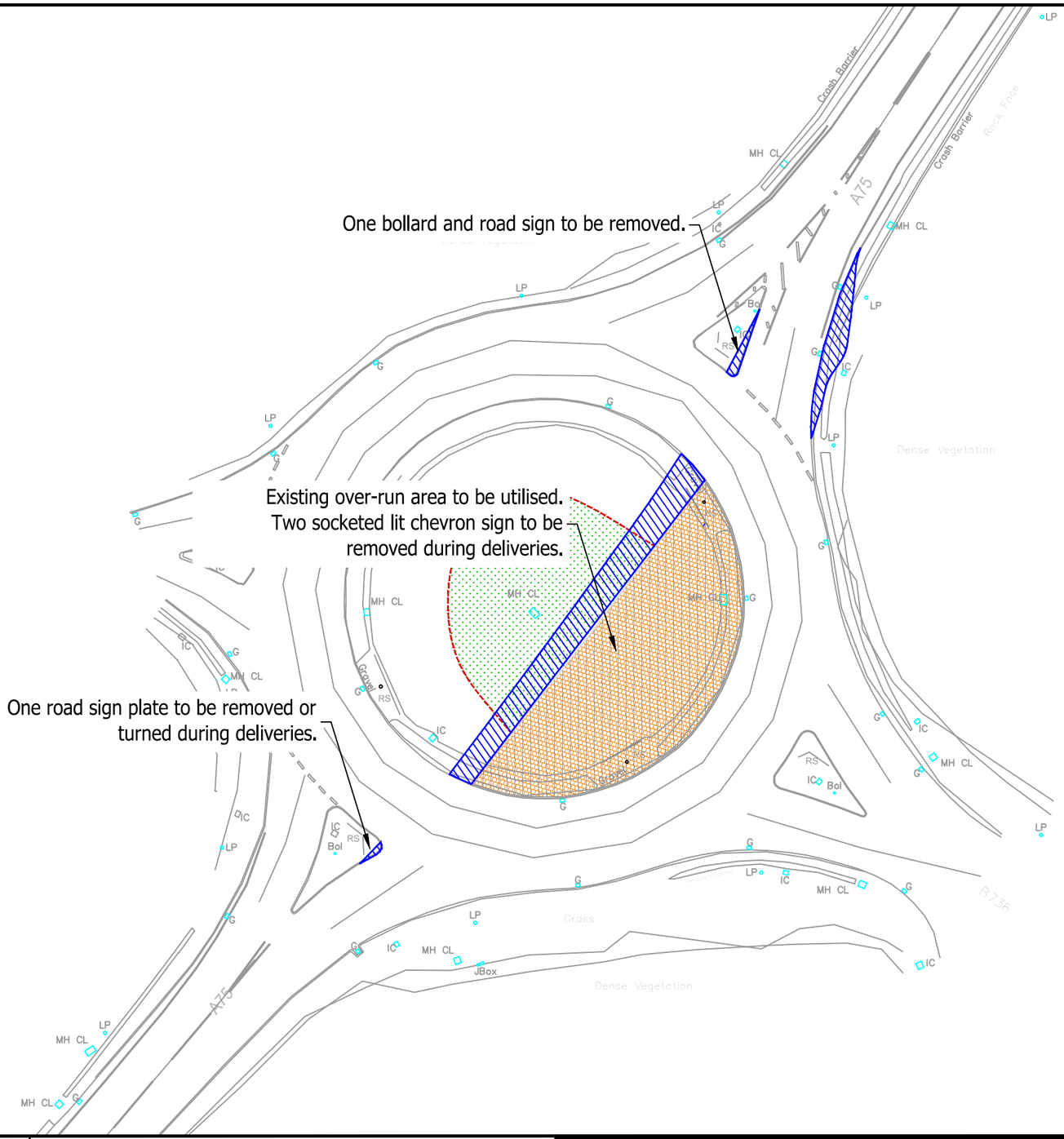
PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA015	-



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 / B736

POI: 19

COMPONENTS:

Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

ScottishPower Renewables

WYG Transport Planning
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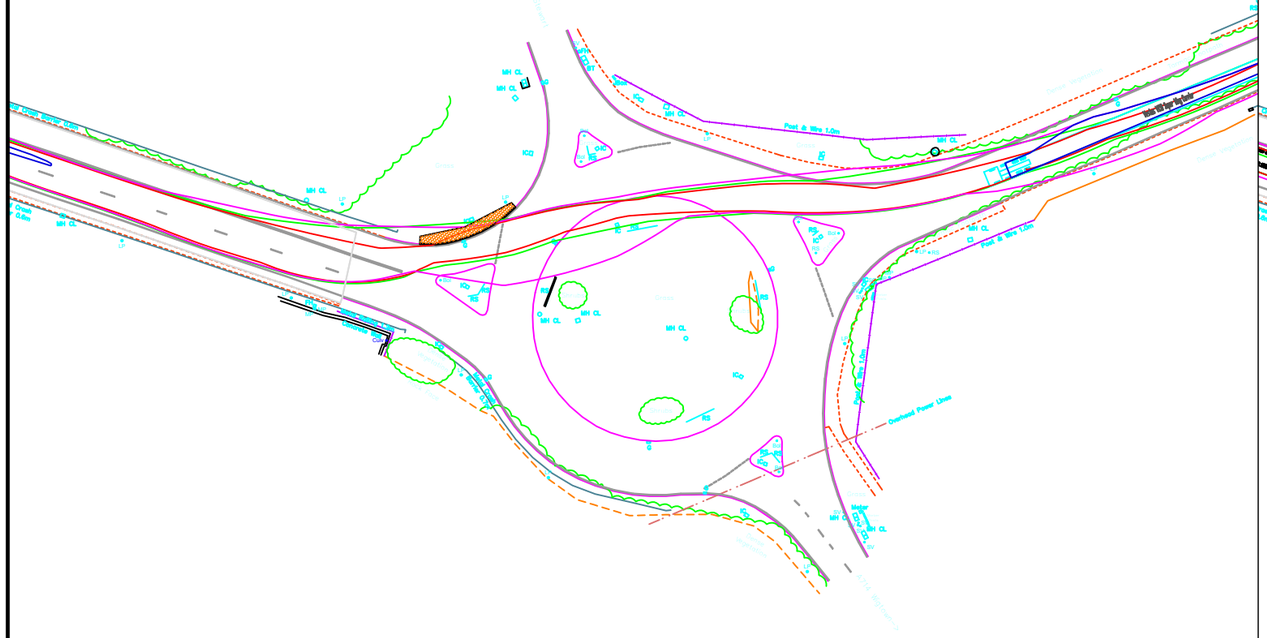
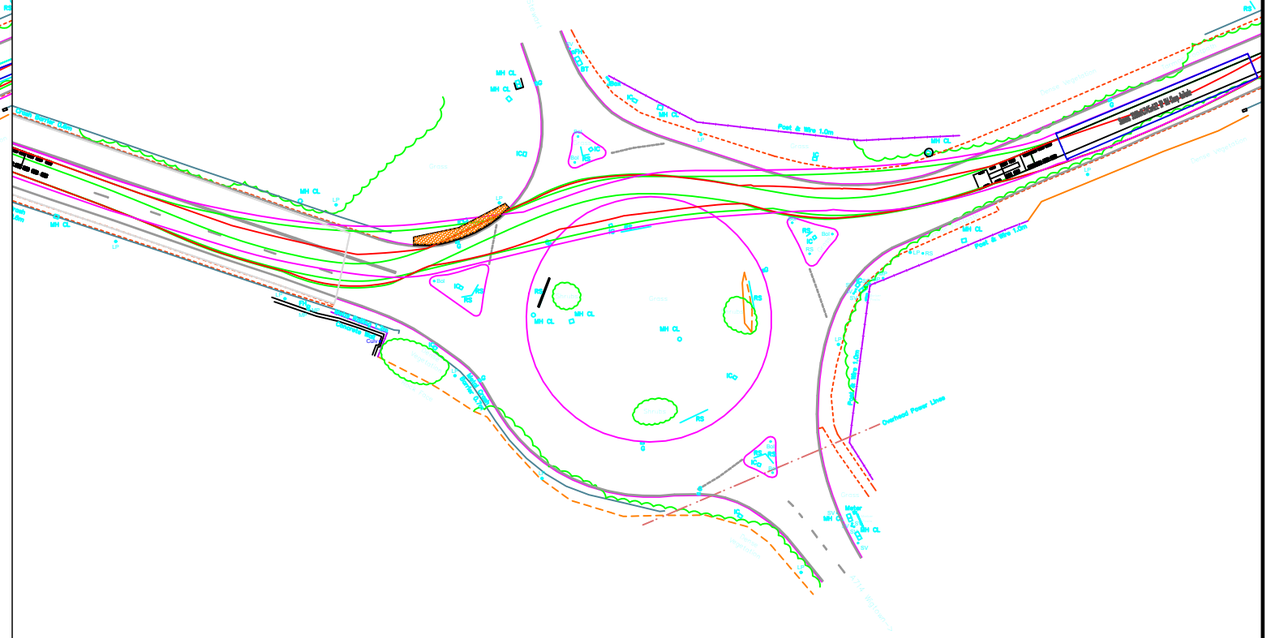
PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA015-2	-

Blade



Mid Tower



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping
- Existing overrun area

Clauchrie Wind Farm

ScottishPower Renewables

LOCATION: A75 / A714 Roundabout

POI: 21

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

WYG Transport Planning
part of the WYG group

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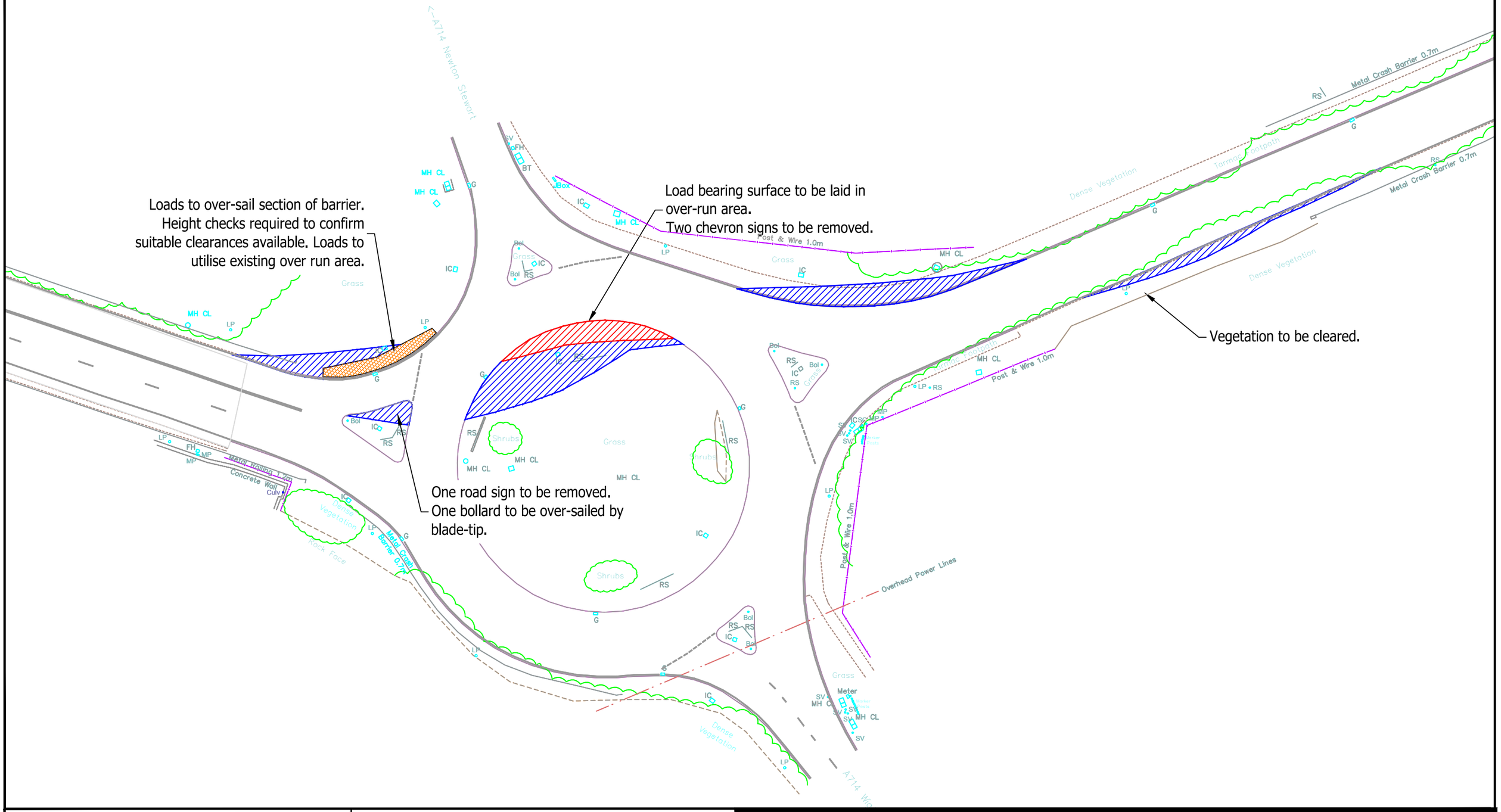
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA016	-



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping
- Existing overrun area

Clauchrie Wind Farm

LOCATION: A75 / A714 Roundabout

POI: 21

COMPONENTS: Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

ScottishPower Renewables

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PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA016-2	-

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 / Newton Stewart Bypass

POI: 22

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

ScottishPower Renewables

WYG Transport Planning
part of the WYG group

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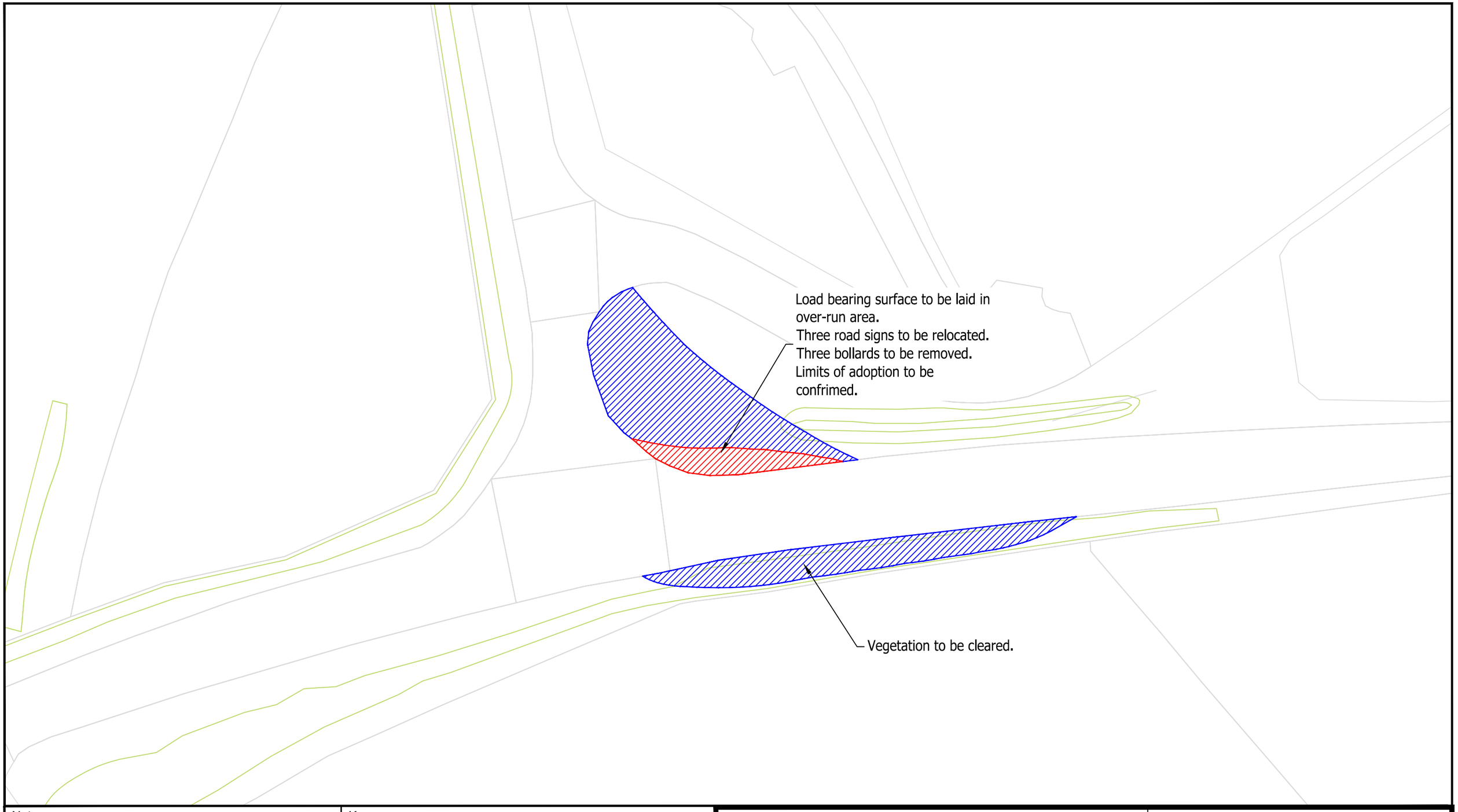
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA017	-



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A75 / Newton Stewart Bypass

POI: 22

COMPONENTS:

Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

ScottishPower Renewables

WYG Transport Planning
part of the WYG group

The Cube 45 Leith Street Edinburgh EH1 3AT
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA017-2	-

Blade

Mid Tower

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

ScottishPower Renewables

LOCATION: A714 / Barnkirk Road Junction

POI: 23

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

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part of the WYG group

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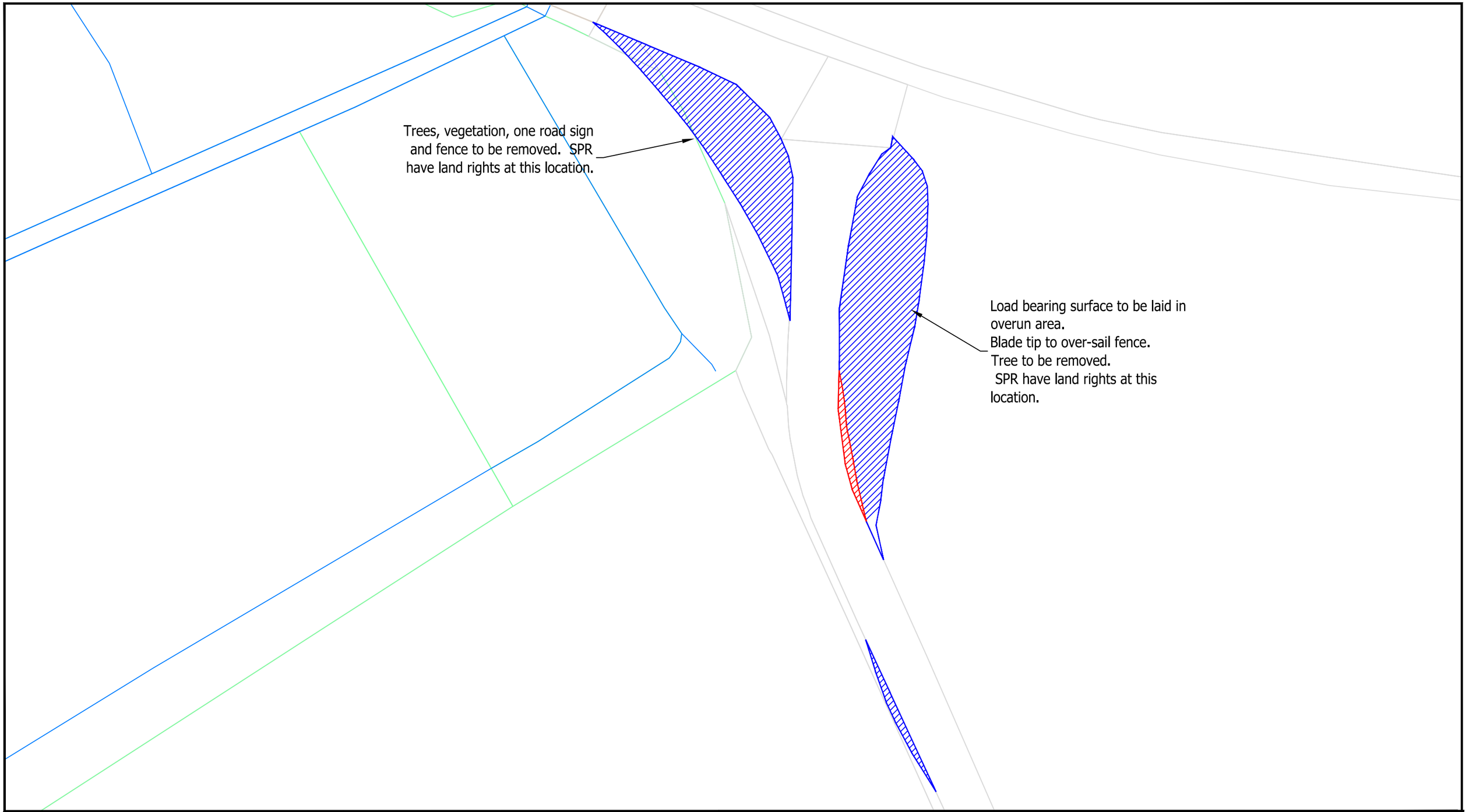
PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA018	-



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A714 / Barnkirk Road Junction

POI: 23

COMPONENTS: Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

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t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA018-2	-

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

NO MITIGATION REQUIRED

Clauchrie Wind Farm

LOCATION: A714 bend

POI: 24

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

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WYG Transport Planning
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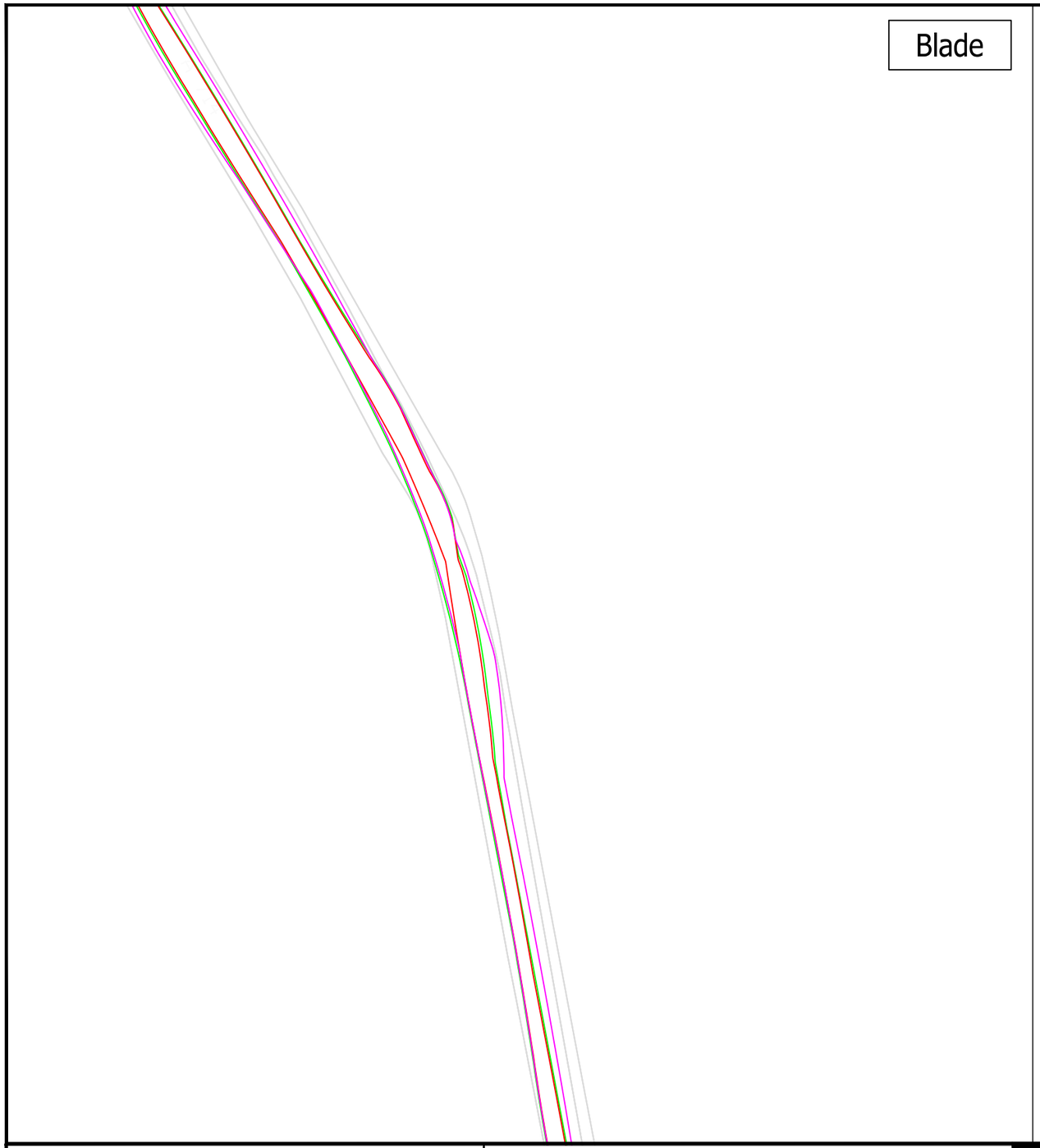
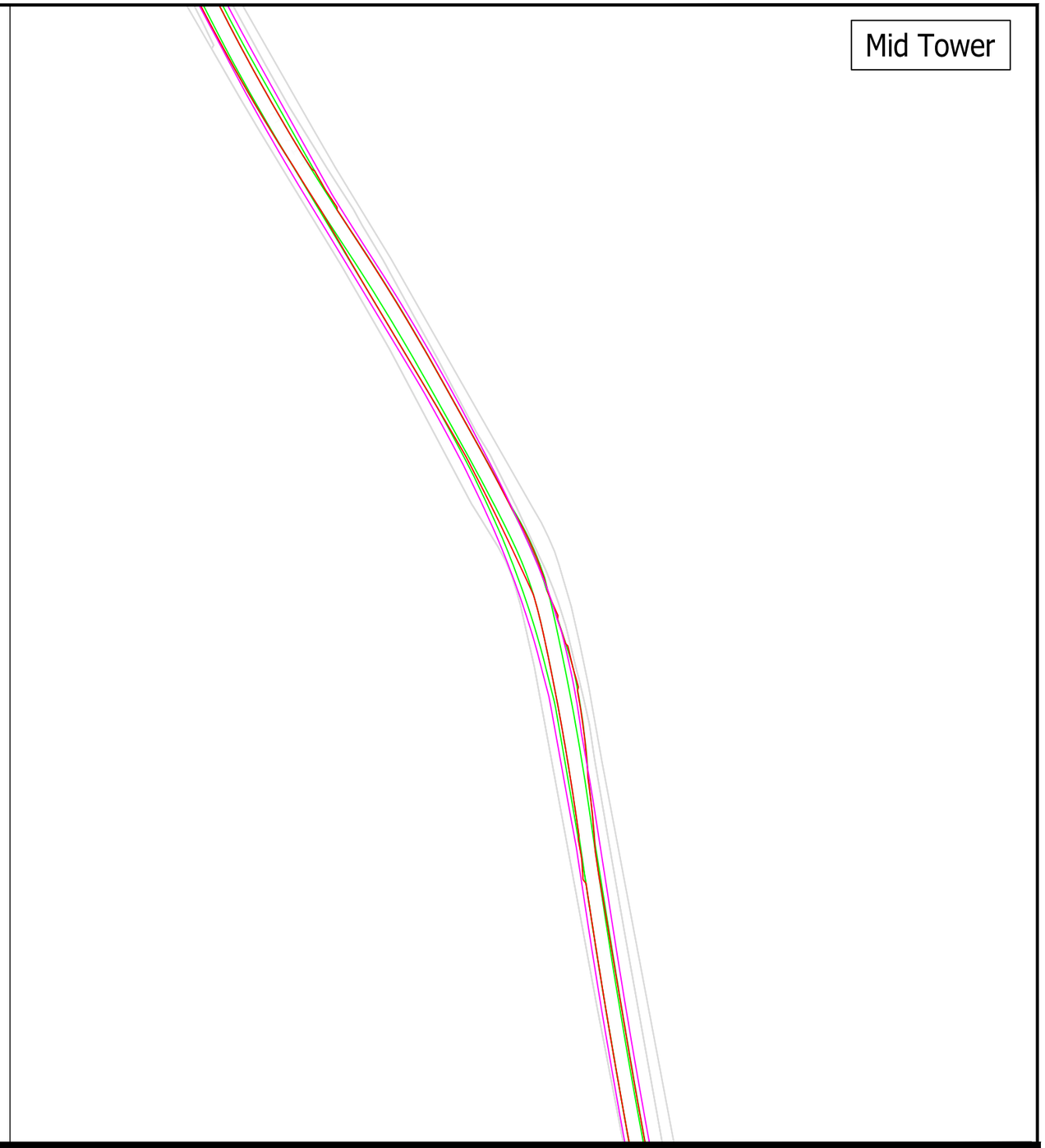
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA019	-





Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

NO MITIGATION REQUIRED

Clauchrie Wind Farm

ScottishPower Renewables

LOCATION: A714 Left Bend

POI: 25

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

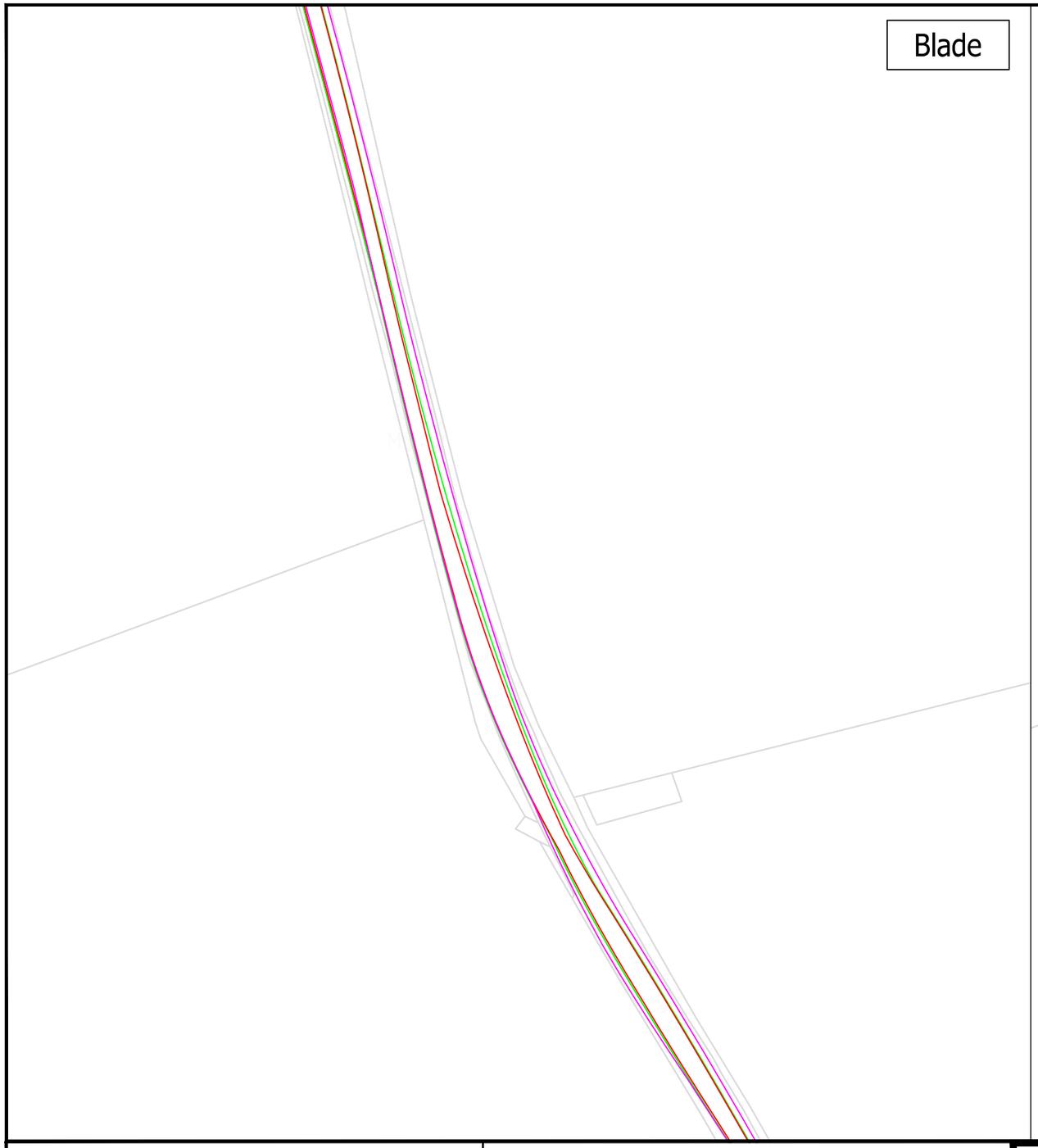
DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

WYG Transport Planning
part of the WYG group

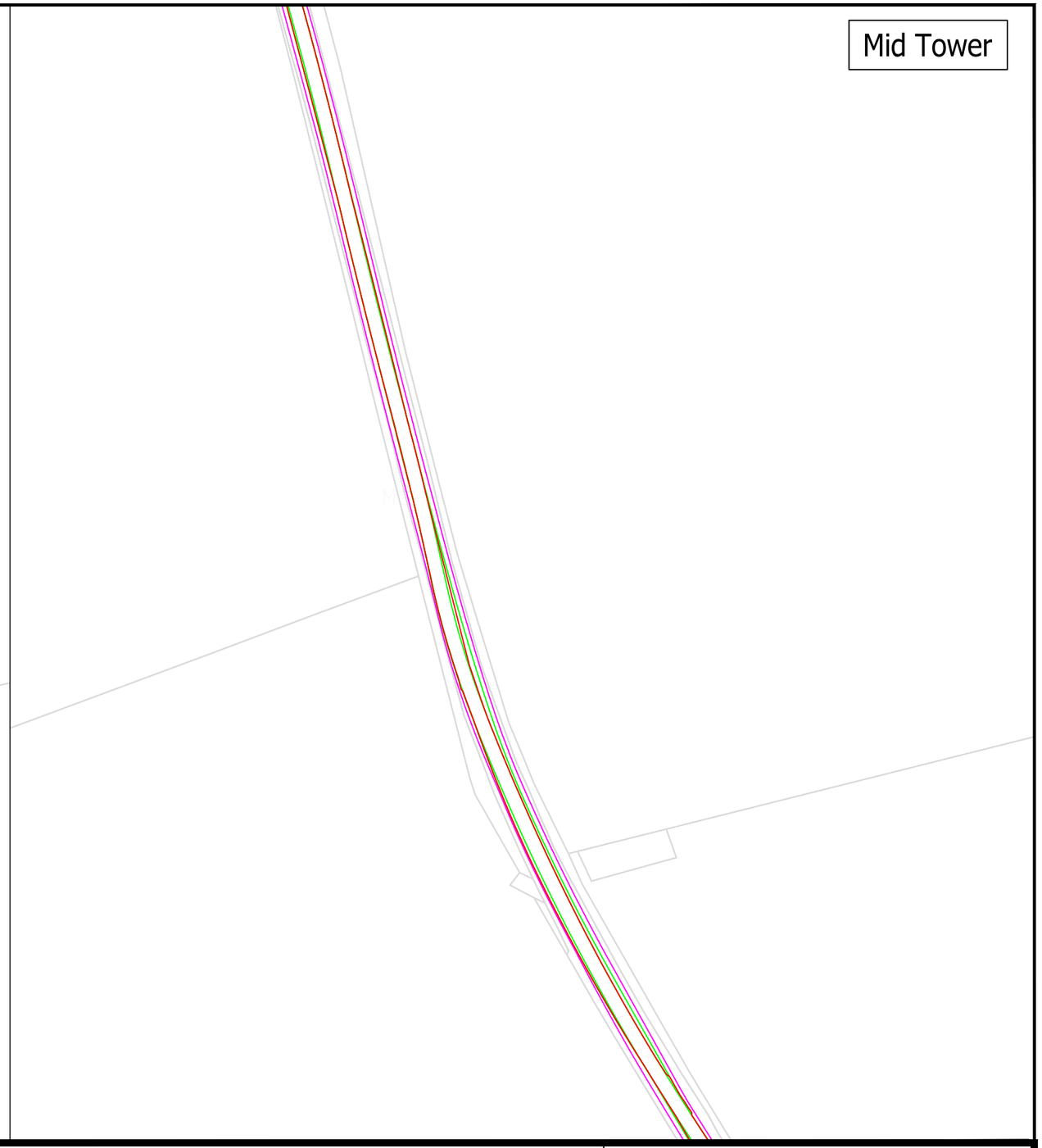
The Cube 45 Leith Street Edinburgh EH1 3AT
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA020	-

Blade



Mid Tower



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

NO MITIGATION REQUIRED

Clauchrie Wind Farm

LOCATION: A714 Right Bend

POI: 26

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

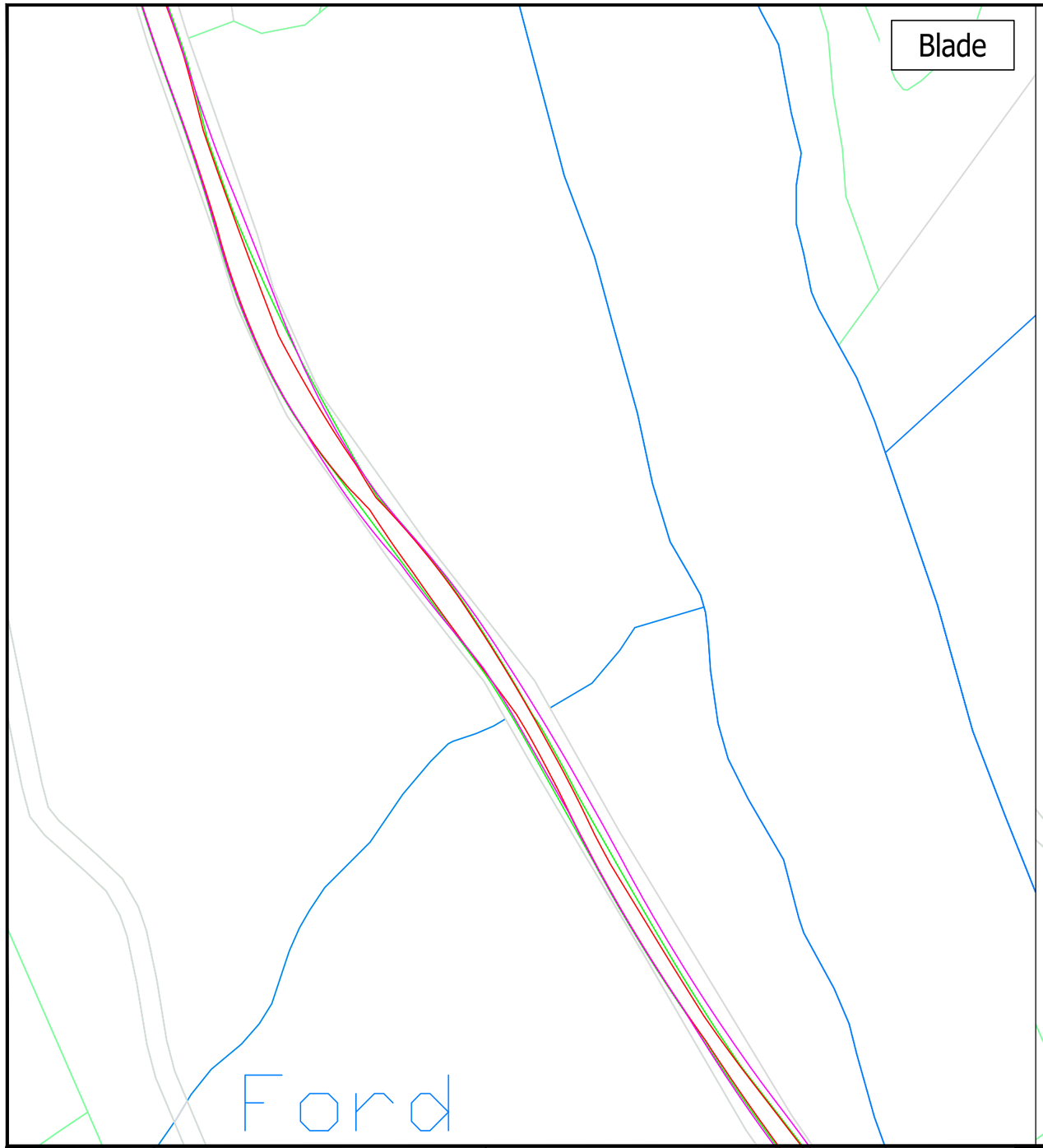
DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

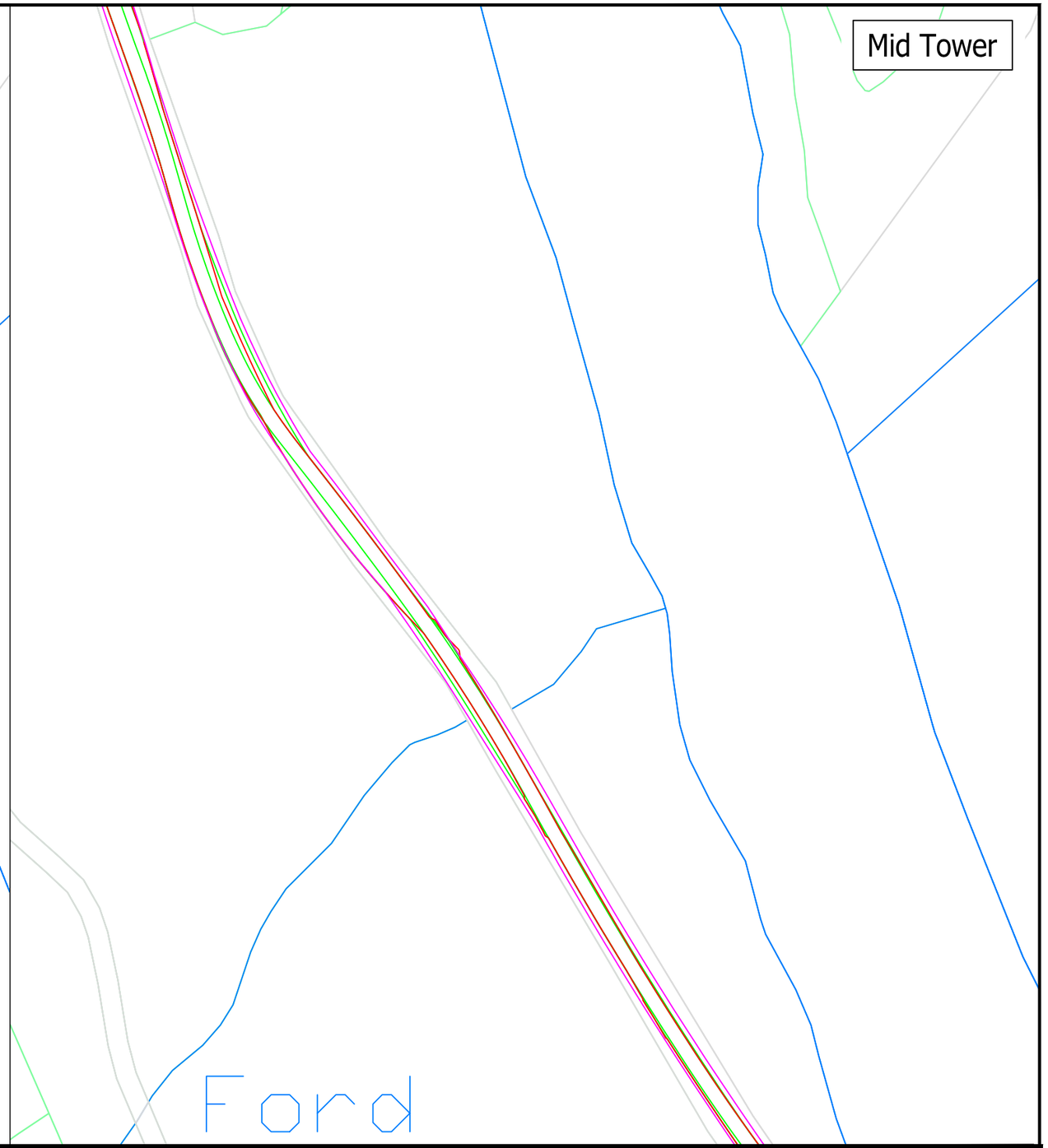
ScottishPower Renewables

WYG Transport Planning
part of the WYG group

The Cube 45 Leith Street Edinburgh EH1 3AT
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA021	-





Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

NO MITIGATION REQUIRED

Clauchrie Wind Farm

ScottishPower Renewables

LOCATION:	POI:
A714 alongside River Cree	28

COMPONENTS:

Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

WYG Transport Planning
part of the WYG group

The Cube 45 Leith Street Edinburgh EH1 3AT
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA022	-

Blade

Mid Tower

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A714 Double Bend River Cree

POI: 29

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

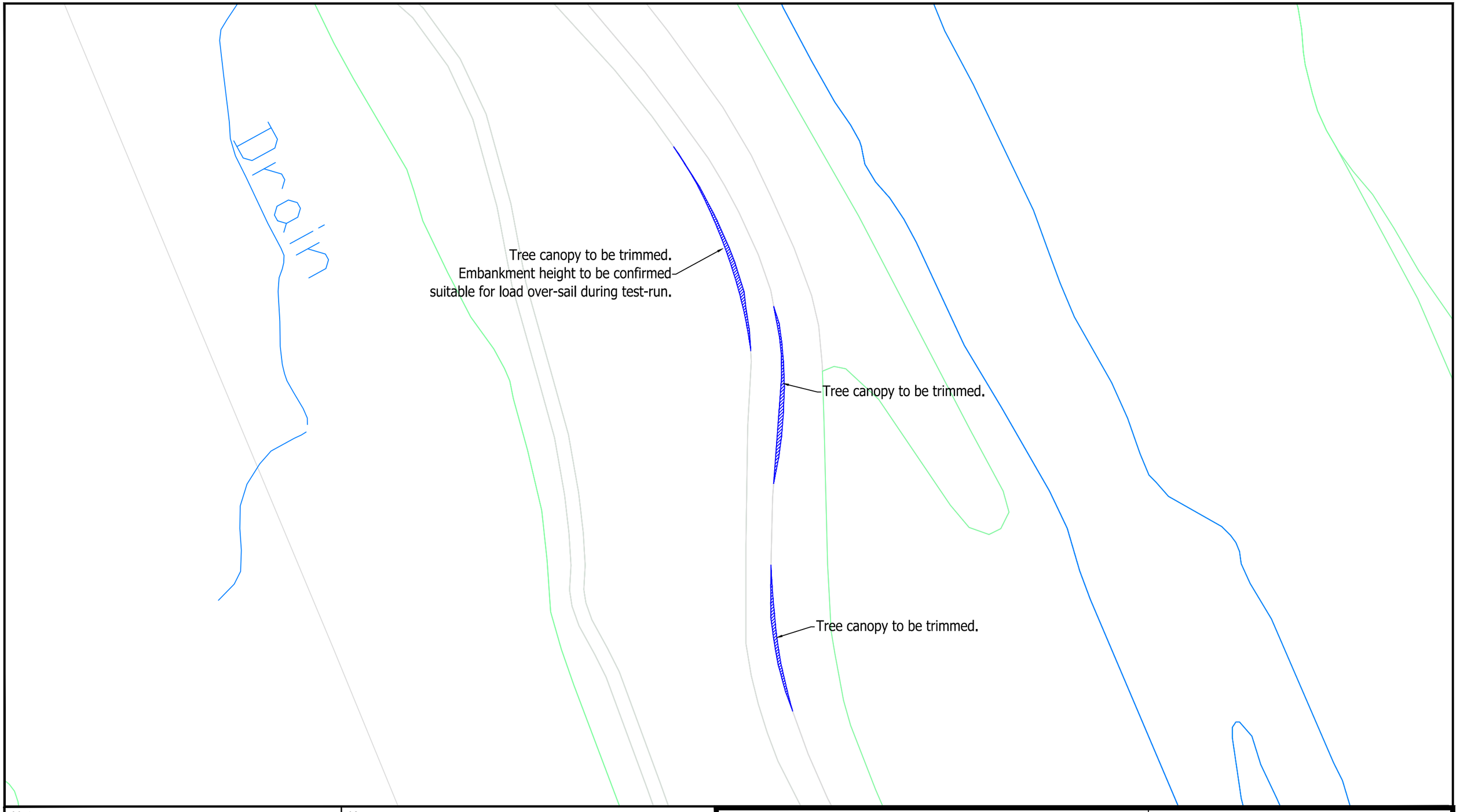
DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

ScottishPower Renewables

WYG Transport Planning
part of the WYG group

The Cube 45 Leith Street Edinburgh EH1 3AT
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA023	-



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A714 Double Bend River Cree

POI: 29

COMPONENTS: Vestas V150 Blade and Mid Tower

Required Remedial Works

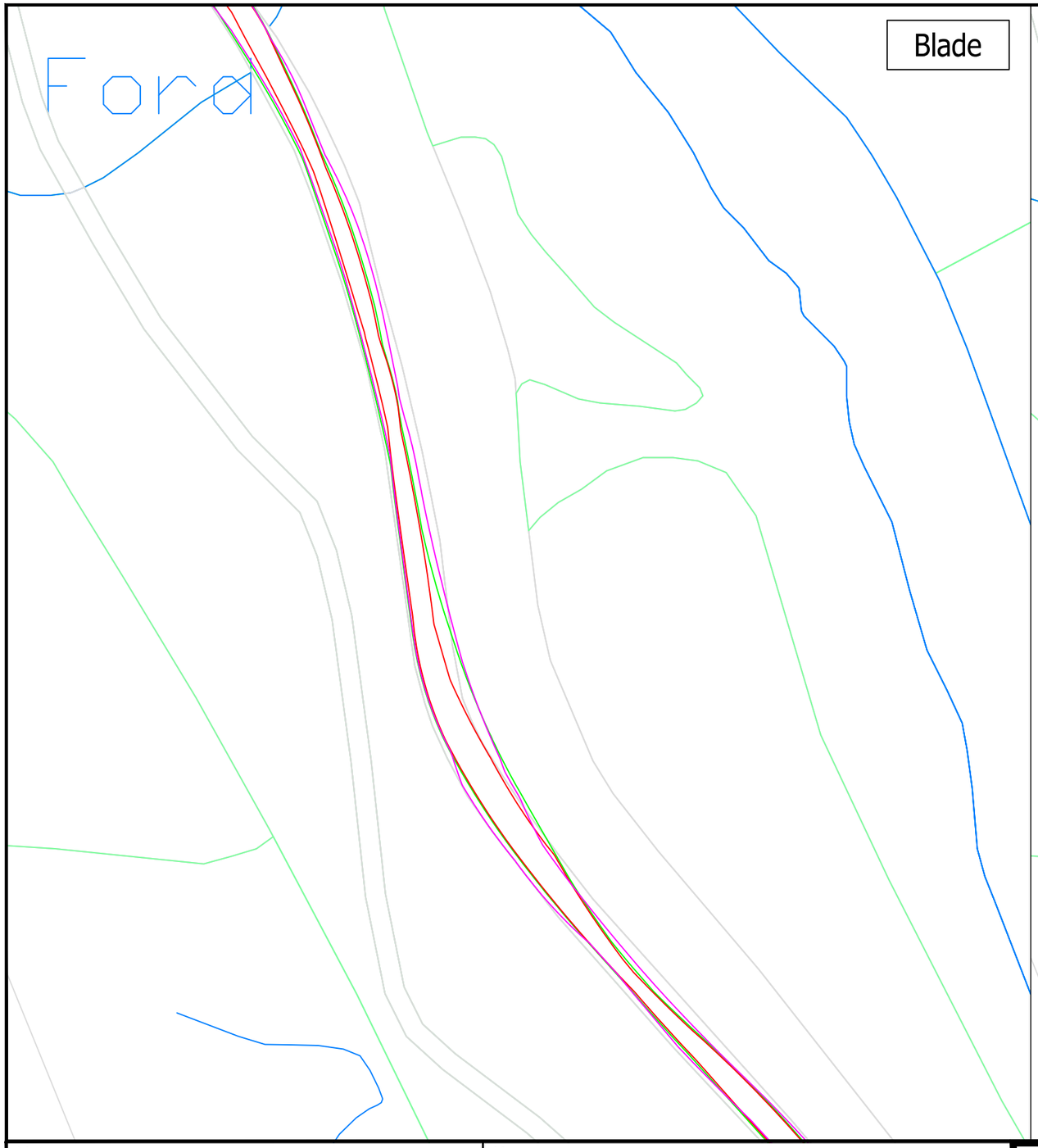
DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

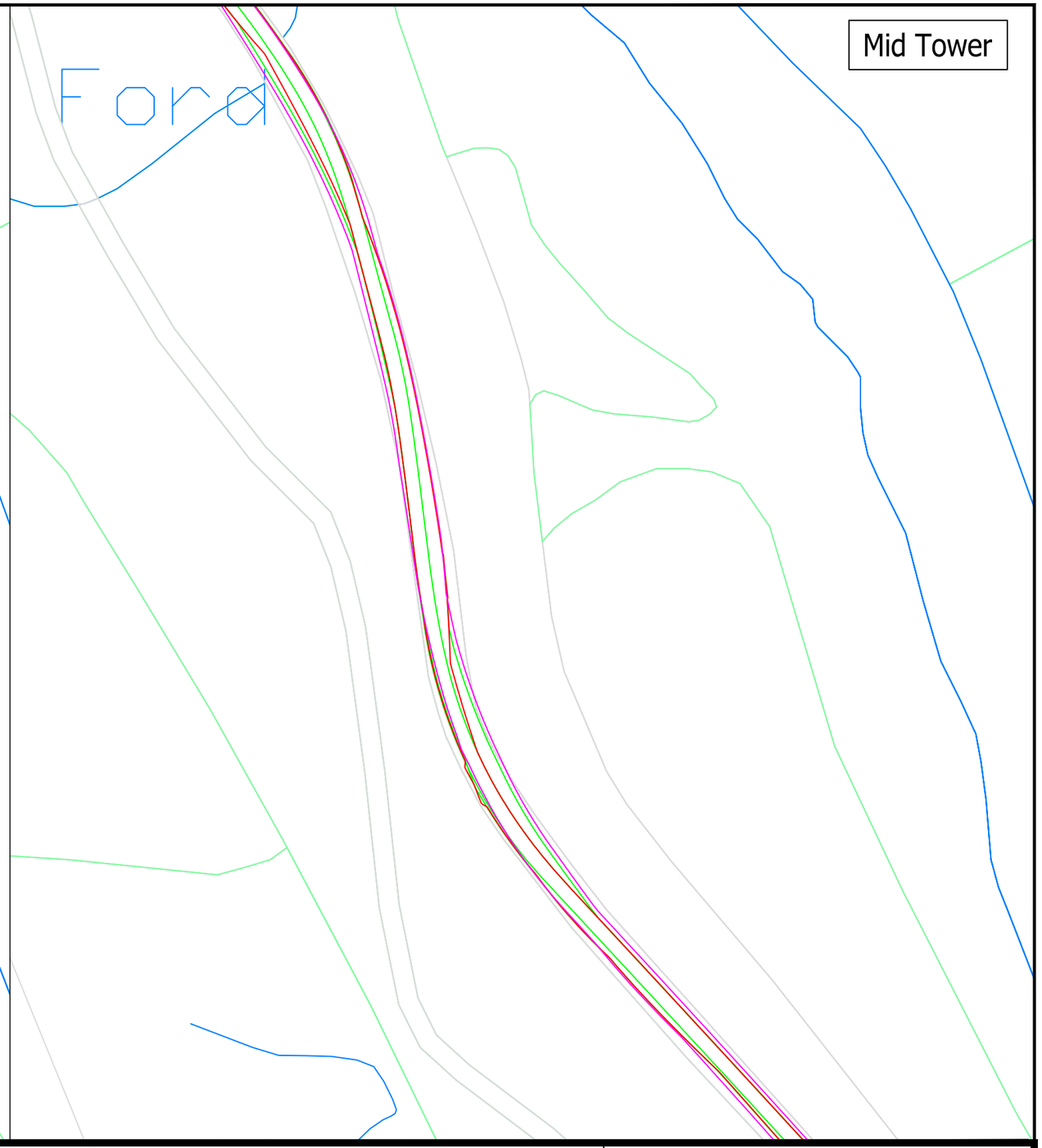
ScottishPower Renewables

WYG Transport Planning
part of the WYG group

The Cube 45 Leith Street Edinburgh EH1 3AT
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA023-2	-





Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A714 Series of Bends River Cree

POI: 30

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

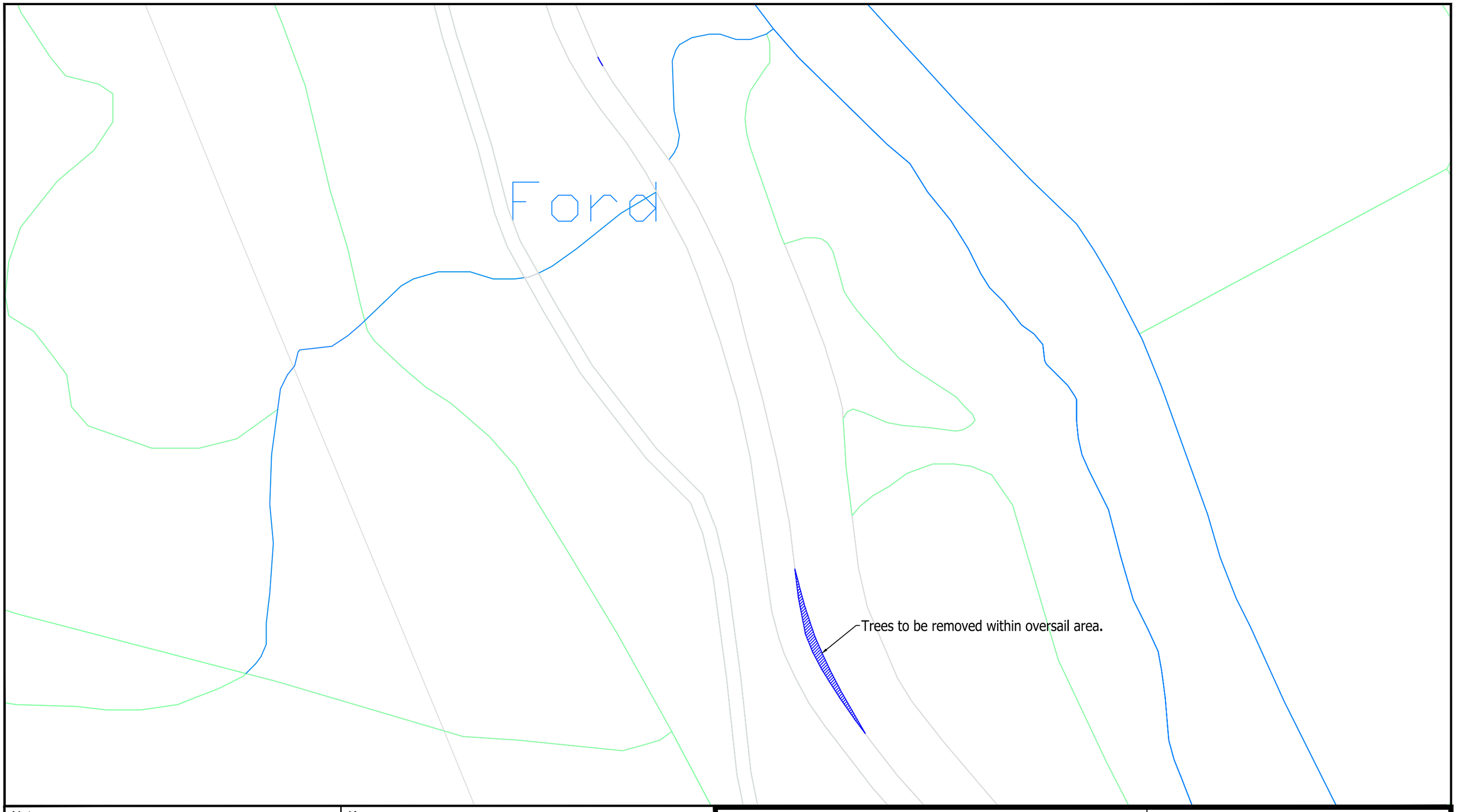
DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

ScottishPower Renewables

WYG Transport Planning
part of the WYG group

The Cube 45 Leith Street Edinburgh EH1 3AT
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA024	-



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping

Clauchrie Wind Farm

LOCATION: A714 Series of Bends River Cree

POI: 30

COMPONENTS: Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

ScottishPower Renewables

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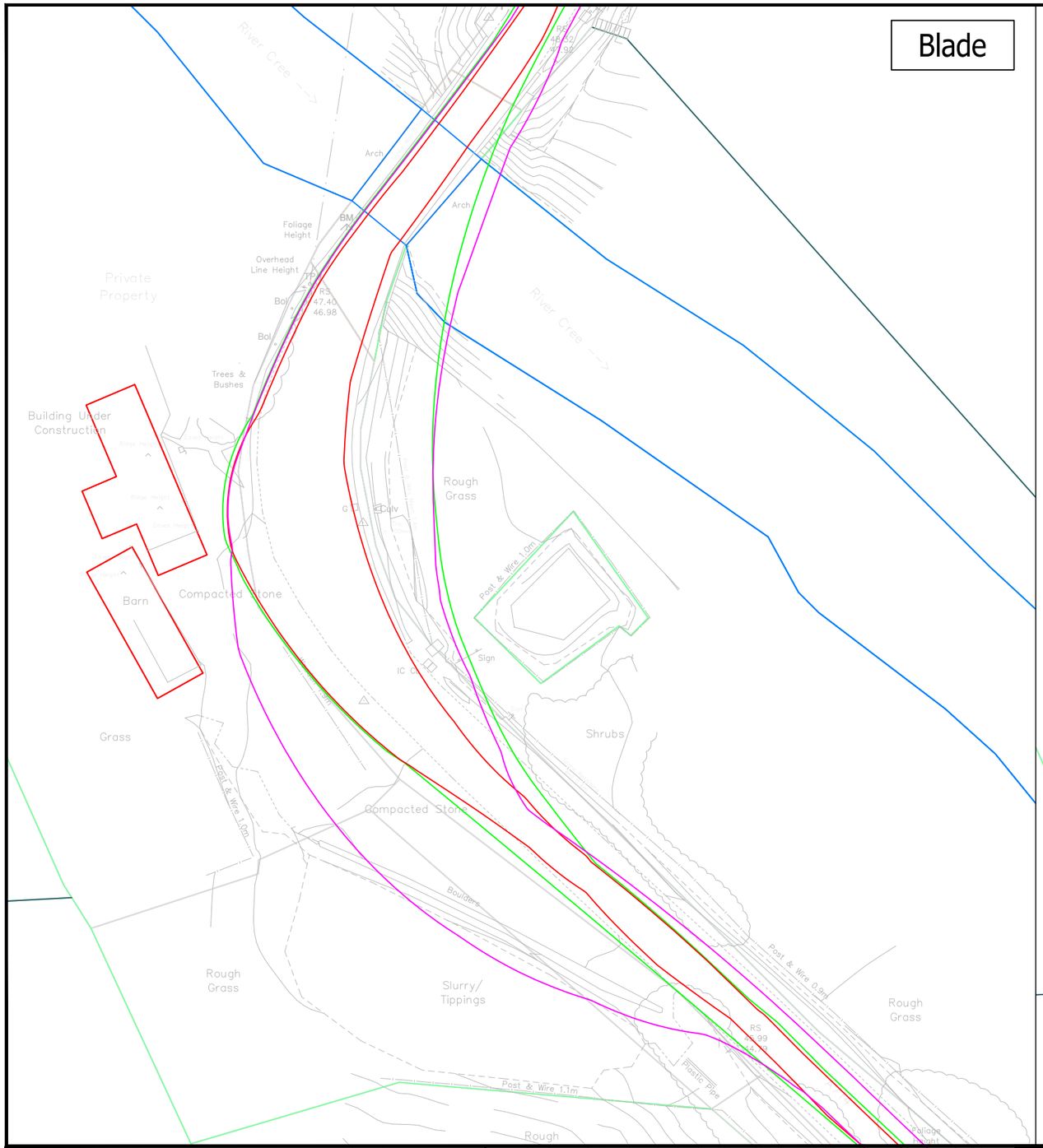
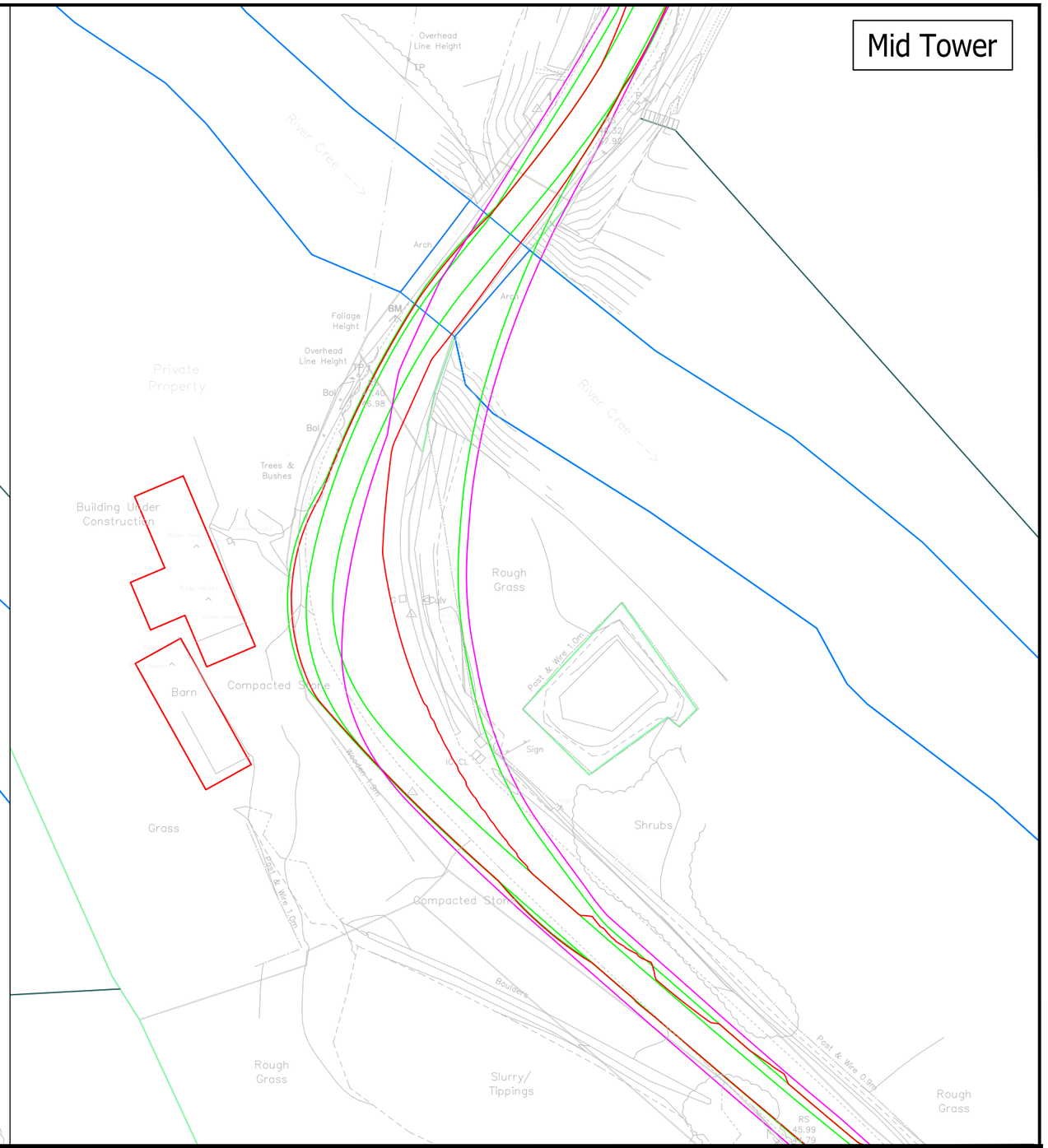
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA24-2	-

Blade



Mid Tower



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping
- Client Provided Topographical Survey Mapping

Clauchrie Wind Farm

LOCATION: A714 Bargrennan Bridge

POI: 32

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:500 @ A3

ScottishPower Renewables

WYG Transport Planning
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t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA025	-

One road sign to be removed.

Raise superwing carrier to full height to avoid parapet.
Parapet reductions may be required.

One road sign to be removed.
Fence and gate to be set-back.
Stone wall to be over-sailed.
SPR have land rights at this location.

Load bearing surface to be laid in over-run area.
Exisiting over-run and over-sail areas to be reused.
SPR to confirm extents of land under option from as-built drawings.
Existing fence to be removed.
Two road signs and one telegraph pole to be removed.
SPR have land rights at this location.

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping
- Client Provided Topographical Survey Mapping

Clauchrie Wind Farm

LOCATION: A714 Bargrennan Bridge

POI: 32

COMPONENTS:

Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

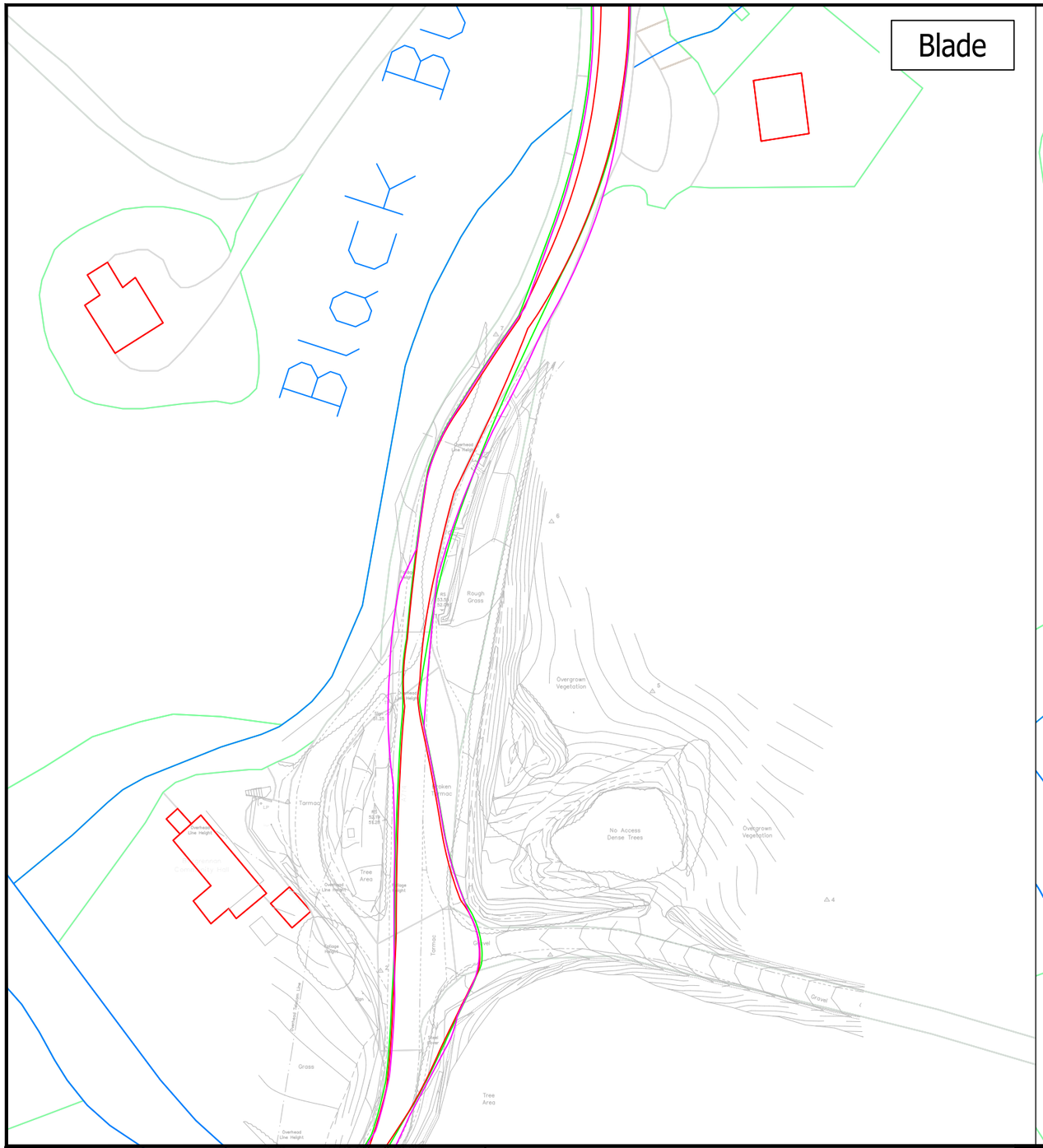
ScottishPower Renewables

WYG Transport Planning
part of the WYG group

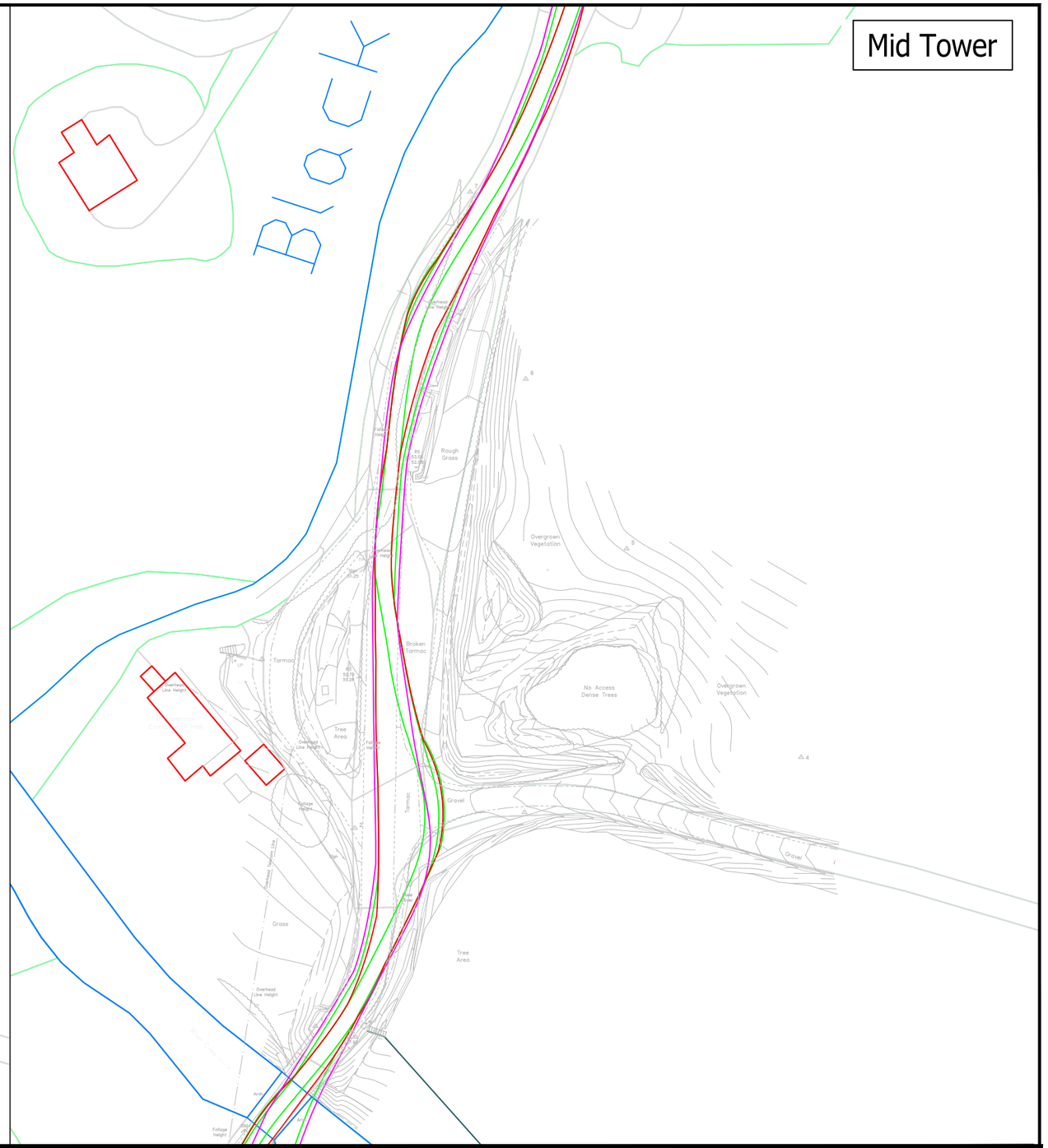
The Cube 45 Leith Street Edinburgh EH1 3AT
t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA025-2	-

Blade



Mid Tower



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Load Swept Path
- Vehicle Swept Path
- Wheel Swept Path
- Ordnance Survey Mapping
- Client Provided Topographical Survey Mapping

Clauchrie Wind Farm

LOCATION: A714 Bargrennan Series of Bends

POI: 33

COMPONENTS: Vestas V150 Blade and Mid Tower

Swept Path Assessment

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

ScottishPower Renewables

WYG Transport Planning
part of the WYG group

The Cube 45 Leith Street Edinburgh EH1 3AT
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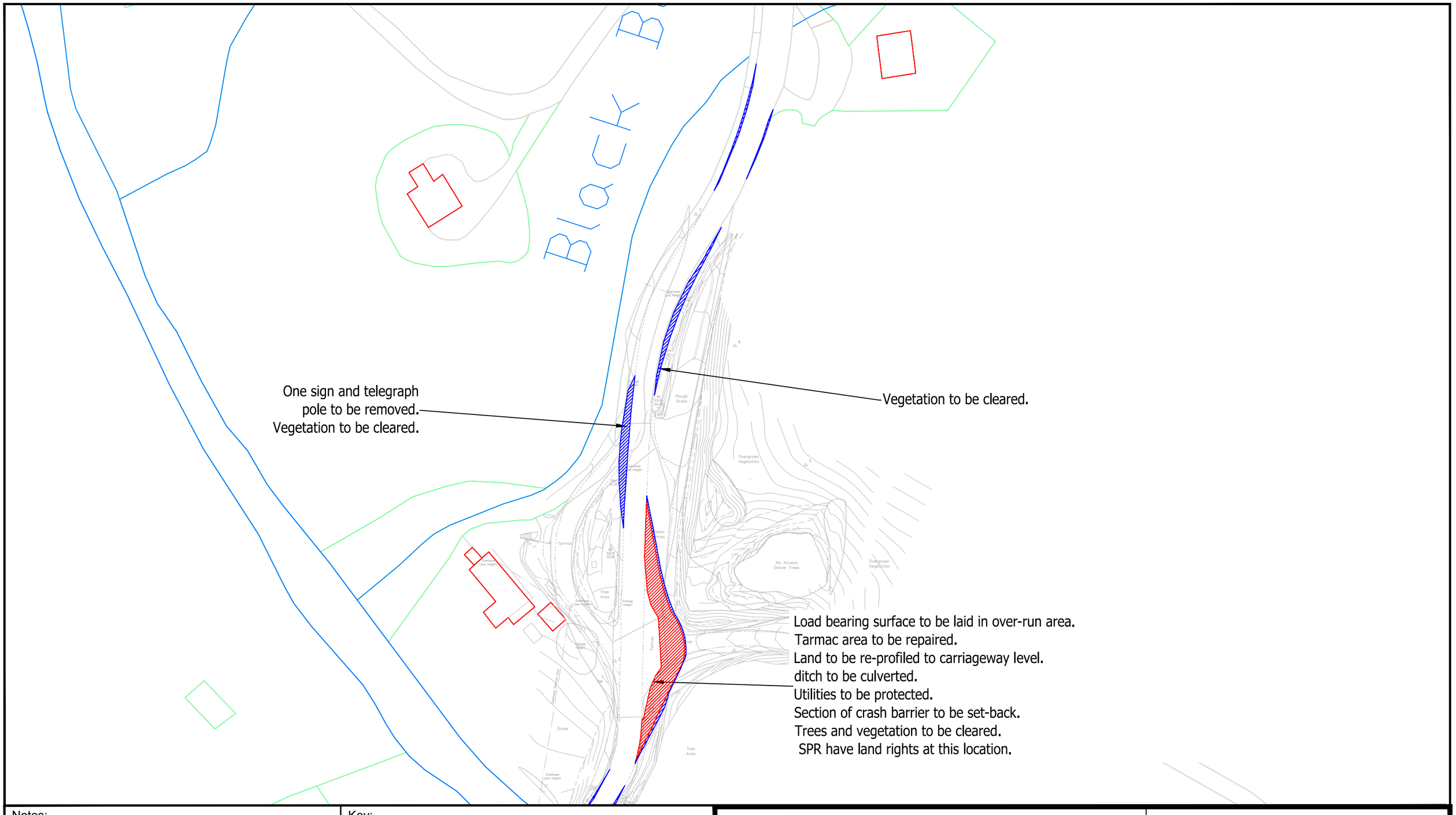
PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA026	-



Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.

Key:

- Over-run Required
- Over-sail Required
- Ordnance Survey Mapping
- Client Provided Topographical Survey Mapping

Clauchrie Wind Farm

LOCATION: A714 Bargrennan Series of Bends

POI: 33

COMPONENTS: Vestas V150 Blade and Mid Tower

Required Remedial Works

DRAWN:	CHECKED:	DATE:	SCALES:
JS	JD	June 2019	1:1000 @ A3

ScottishPower Renewables

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part of the WYG group

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t: +44 (0)131 247 5700 e: edinburgh@wyg.com

PROJECT NUMBER:	DRAWING NUMBER:	REVISION:
A113835	SPA026-2	-

Appendix B
Indicative Construction Programme

Clauchrie Windfarm Transport Assessment

		Month																	
Activity	**Class**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Site Establishment	HGV	50	50	50															
Access Junction	HGV		14	14															
Forestry	HGV	440	440	440	440	440													
Access Track Upgrades	HGV	10	10	10															
Turbine Foundations	HGV					703	703	703	703	703	703	703	10	10	0				
Substation Works	HGV				36	0	60	10	20	40	20	10	26	10	10				
Battery installation	HGV						8	8	18	8	8	8	8	8	8				
Cabling	HGV																		
Turbine Delivery	HGV							18	0	8	121	121	121	115	80	0	0	100	50
Turbine Escorts	Car / LGV							0											
Site Reinstatement	HGV																		
Staff	Car / LGV	440	440	1056	1056	1056	1056	1056	1056	1056	1056	1056	1056	1056	1056	1056	1056	528	528
General Site Deliveries	HGV	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Total HGV		*540*	*554*	*554*	*516*	*1183*	*811*	*779*	*789*	*811*	*895*	*901*	*199*	*183*	*78*	*50*	*50*	*140*	*90*
Total Cars / LGV		*440*	*440*	*1056*	*1056*	*1056*	*1056*	*1056*	*1056*	*1064*	*1177*	*1177*	*1177*	*1177*	*1136*	*1056*	*1056*	*528*	*528*
Total Movements		**980**	**994**	**1610**	**1572**	**2239**	**1867**	**1835**	**1845**	**1875**	**2073**	**2079**	**1376**	**1360**	**1214**	**1106**	**1106**	**668**	**618**
Total HGV per Day		25	25	25	23	54	37	35	36	37	41	41	9	8	4	2	2	6	4
Total Cars / LGV per Day		20	20	48	48	48	48	48	48	48	54	54	54	54	52	48	48	24	24
Total per Day		**45**	**45**	**73**	**71**	**102**	**85**	**83**	**84**	**85**	**94**	**94**	**63**	**62**	**55**	**50**	**50**	**30**	**28**

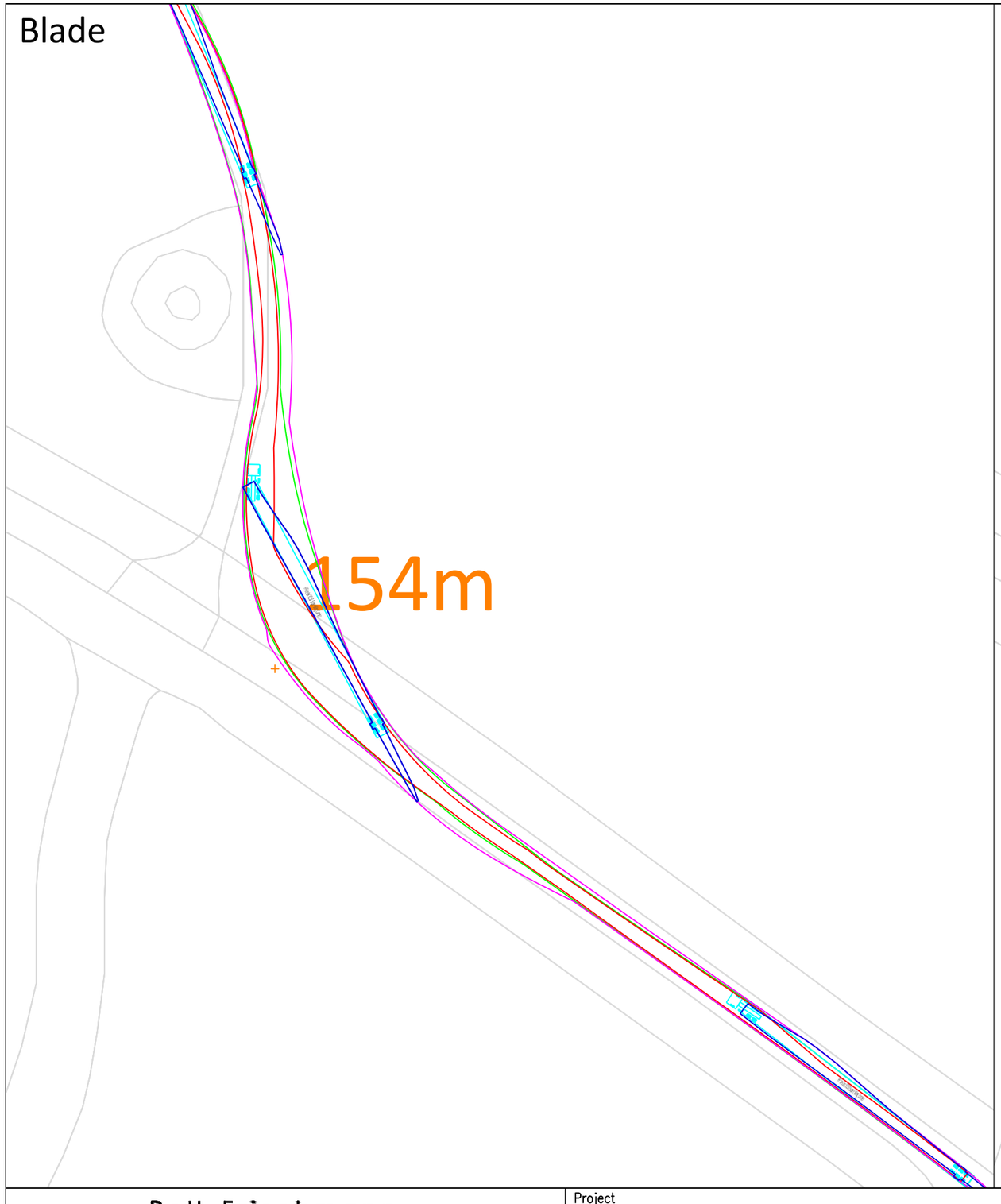
Pell Frischmann

Appendix C
Site Access Junction Indicative Layout

Clauchrie Windfarm Transport Assessment

Pell Frischmann

Blade



Tower

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

Client: ITPEnergised

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

Project: Clauchrie Wind Farm

Drawing Title: Vestas V150 Blade & 30m Tower

SPA Location: A714 Site Access Junction

	Name	Date
Drawn	CN	02/08/2019
Designed	CN	02/08/2019
Checked	TL	02/08/2019
Point of Interest		31

Scale: 1:1000 @ A3

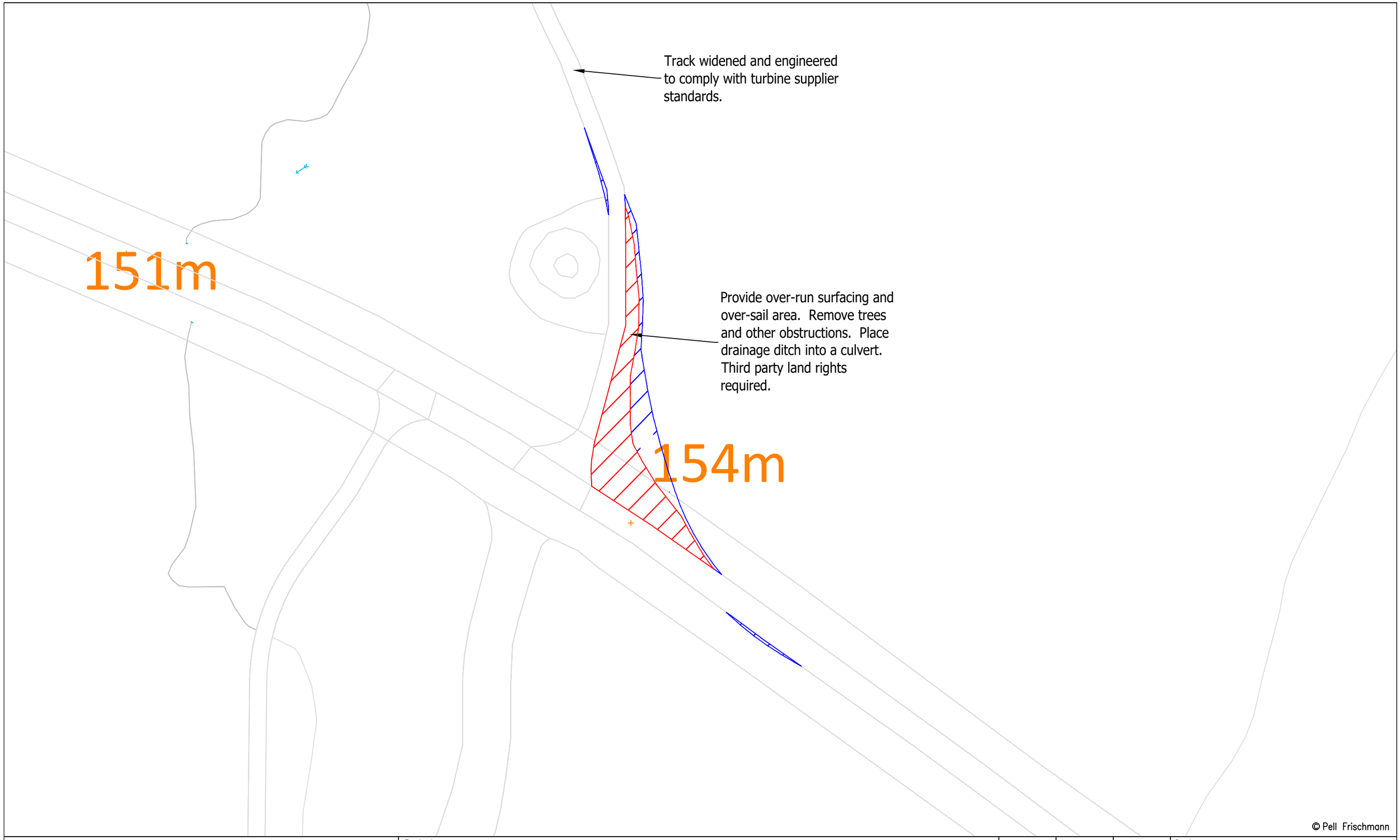
File No.: 102816 Clauchrie SPA.dwg

Drawing Status: Draft

Drawing No.: SK22

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



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

Client: ITPEnergised

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

Project: Clauchrie Wind Farm

Drawing Title: Vestas V150 Blade & 30m Tower

SPA Location: A714 Site Access Junction

	Name	Date
Drawn	CN	02/08/2019
Designed	CN	02/08/2019
Checked	TL	02/08/2019
Point of Interest		31

Scale: 1:1000 @ A3

File No.: 102816 Clauchrie SPA.dwg

Drawing Status: Draft

Drawing No.: SK22A

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:

Clauchrie Windfarm Project Team

ScottishPower Renewables
9th Floor Scottish Power Headquarters
320 St Vincent Street
Glasgow
G2 5AD

clauchriewindfarm@scottishpower.com

www.scottishpowerrenewables.com

SCOTTISHPOWER RENEWABLES