HydroGlen

Supporting Environmental Information Report

Appendix G: Transport Statement and Construction Traffic Management Plan

Pell Frischmann

HydroGlen: Renewable Hydrogen Powered Farm

Transport Statement and Construction Traffic Management Plan

November 2023

107358

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1 Introduction

1.1 Purpose of the Report

Pell Frischmann Consultants Ltd (PF) have been commissioned by ITP Energised, on behalf of the James Hutton Institute (the Applicant), to prepare a Transport Statement and outline Construction Traffic Management Plan (CTMP) for the proposed HydroGlen: Renewable Hydrogen Powered Farm (the Proposed Development), located at Glensaugh which is approximately 20 kilometres (km) south-west of Stonehaven, in Aberdeenshire Council (AC) administrative area.

The report identifies the key transport and access issues associated with the Proposed Development, including the route for abnormal loads. The report identifies where the Proposed Development may require mitigation works to accommodate the predicted traffic; however, the detailed design of these remedial works is beyond the agreed scope of this report. Any mitigations works will be agreed with AC and Transport Scotland prior to construction and deliveries taking place.

1.2 Report Structure

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

- Section Two describes the Proposed Development;
- Section Three reviews the relevant transport and planning policies;
- Section Four sets out the methodology used within this assessment;
- Section Five describes the baseline transport conditions;
- Section Six describes the trip generation and distribution of traffic in the Study Area;
- Section Seven summarises the traffic impact assessment;
- Section Eight describes parking and servicing access;
- Section Nine outlines the proposed construction traffic management measures to be used on the site; and
- Section Ten summarises the findings of the TA and outlines the key conclusions.

2 Proposed Development

2.1 Site Location

The Proposed Development Site is located at the existing James Hutton Institute's research farm and residential community at Glensaugh.

The location of the site in context of the wider area is shown in Figure 1.

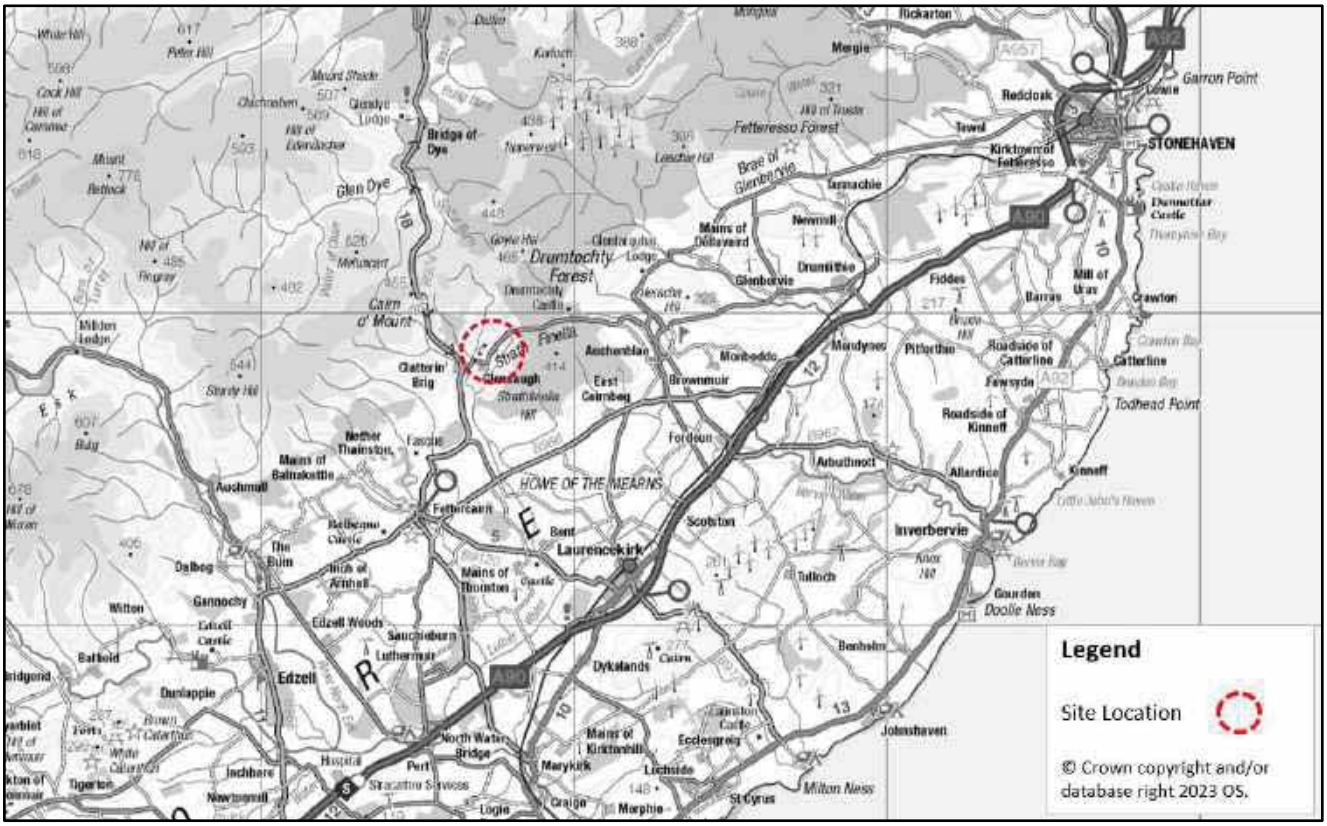


Figure 1 Site Location

2.2 Proposed Development

The Proposed Development will include the elements listed below.

Wind turbine and solar PVs

- One wind turbine (with a hub height between 40 and 59 m);
- A combination of overhead line and trenching, ducting and backfilling of cables to a switch room;
- Construction of access road to wind turbine site; and
- Works associated with placement of new solar panels.

Hydrogen processing plant

- Demolition / disassembly of the existing structures at the Proposed Development Site;
- Earthworks, arrangement of the ground - slopes, levelling and substrate preparation;
- Water disposal system construction;
- Construction of concrete foundation where equipment will be assembled;
- Concrete base for battery container, fuel cell and hydrogen storage, EV charging stations, including trenching, ducting or bunding;
- Construction of asphalted / concrete slab driveway zone (to fuelling station area and for general access);

- Electrical construction needs, including trenching, ducting and backfilling for cabling; upgrades as required to the on-site switch room;
- Assembling a shelter to protect the equipment; and
- Installation of fence and access gates.

The solar PVs and the hydrogen processing plant will be located at the existing Glensaugh farm and will be accessed from the unclassified road, Glensaugh, via the existing farm access junction.

The wind turbine will be located approximately 1.8 km to the north / north-east of Glensaugh farm and will be accessed through a newly provided access track from an upgraded junction from the unclassified road, Glensaugh.

The layout of the proposed solar PVs and hydrogen processing plant are shown in Figure 2 and the access track alignment and the location of the wind turbine hardstanding is shown in Figure 3.

Figure 2 Site Layout Plan – Solar PV and Hydrogen Processing Plant (courtesy of ITP Energised)

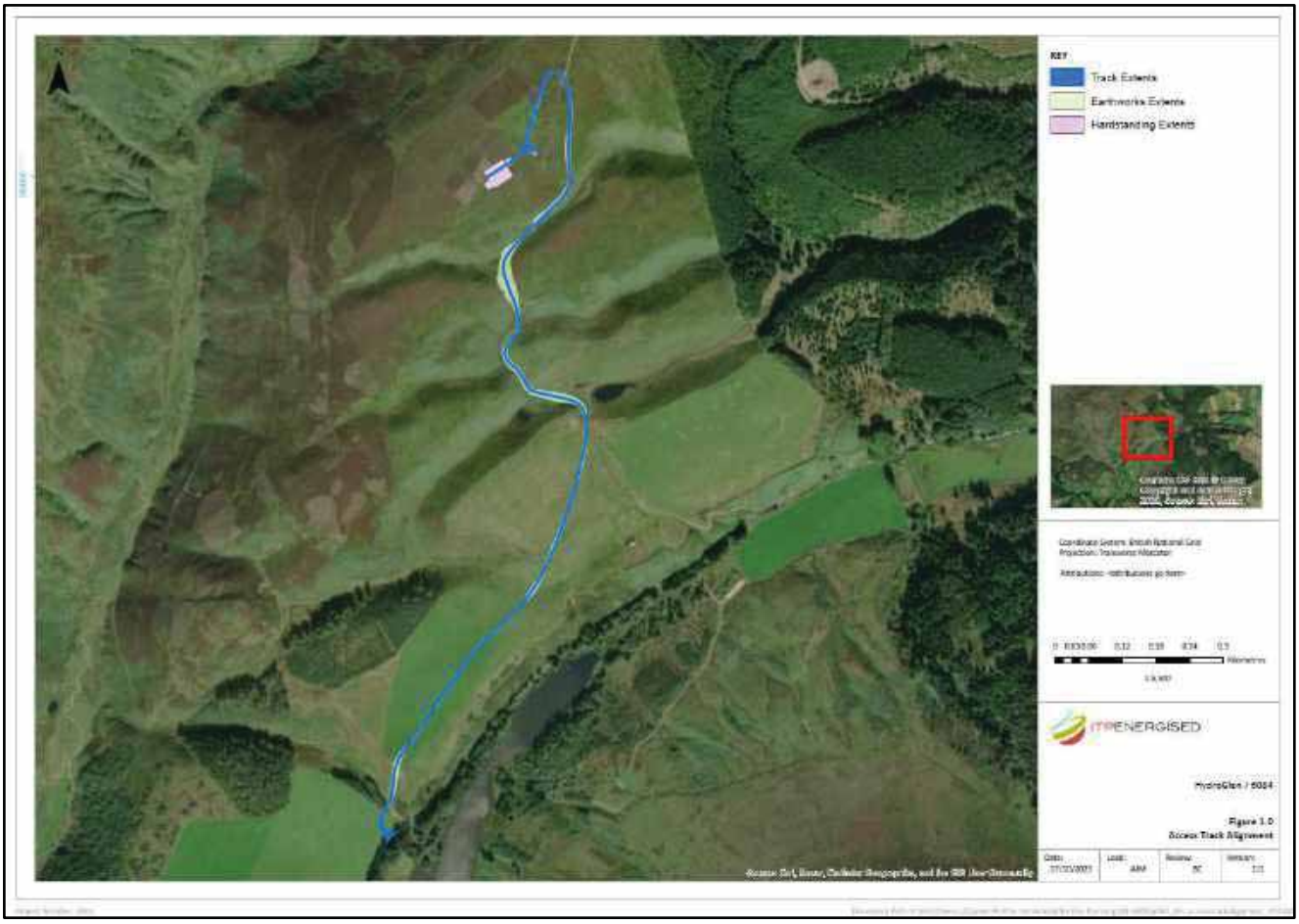


Figure 3 Access Track Alignment to the Wind Turbine and Hardstanding Location (courtesy of ITP Energised)

2.3 Candidate Turbines

It is proposed that one 500kW - 1MW output wind turbine will be provided at the site with a hub height between 40 and 59m. An EWT DW61 has been considered on a 50m hub height tower (as a worst case design scenario for transport). The details of the components have been provided by EWT and are detailed in Table 1.

Table 1 Turbine Component Size Summary

Component	Length (m)	Width (m)	Height / Min Diameter (m)	Weight (t)
Blade Pack (3 blades)	29.800	2.600	2.800	9.000
Generator Ring	5.700	5.700	2.850	32.000
Nacelle	4.940	2.590	2.510	11.000
Hub	3.030	2.624	1.780	10.000
Top Tower	23.140	2.815	1.978	16.400
Base Tower	23.385	3.632	2.817	30.800

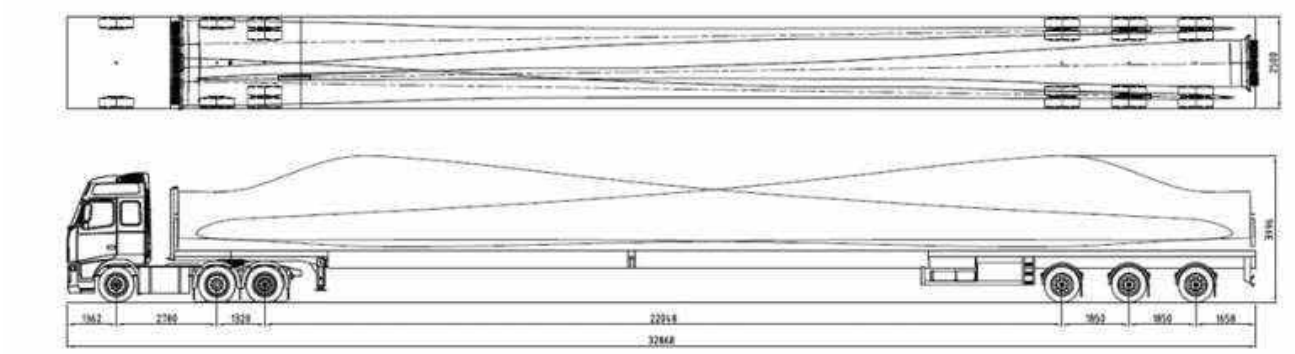
A detailed Route Survey Report (RSR) outlining the turbine components in detail and the proposed access route is attached in Appendix A.

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 from those assumed as part of this assessment and within the appended RSR.

The most appropriate Port of Entry (POE) for the site is the Port of Dundee. The port has been previously used by renewables deliveries in the past for Mid Hill Wind Farm and the access route has been designed to accommodate AIL deliveries unlike other nearby ports such as Aberdeen and Montrose.

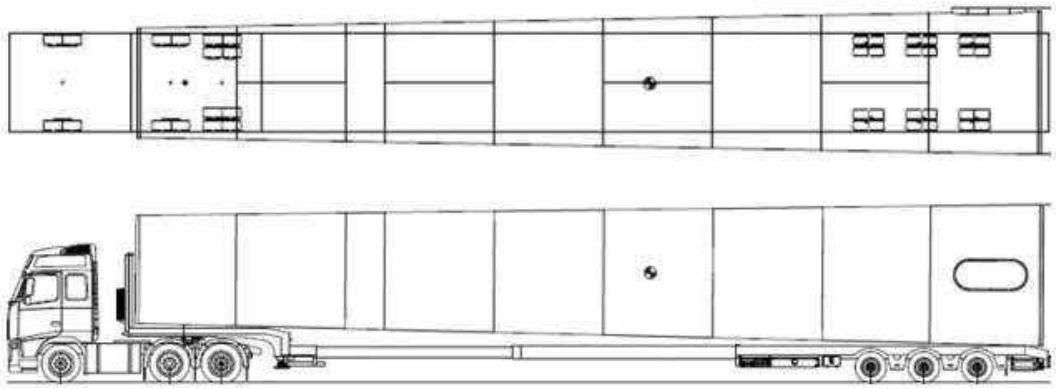
To provide a robust assessment scenario based upon the known issues along the access route, it has been assumed that all blades would be carried on an extendable trailer with rear wheel steering to reduce the need for mitigation in constrained sections of the route.

Towers would be carried in a step frame trailer along with all other loads. Examples of the transporters are provided in the following figures.



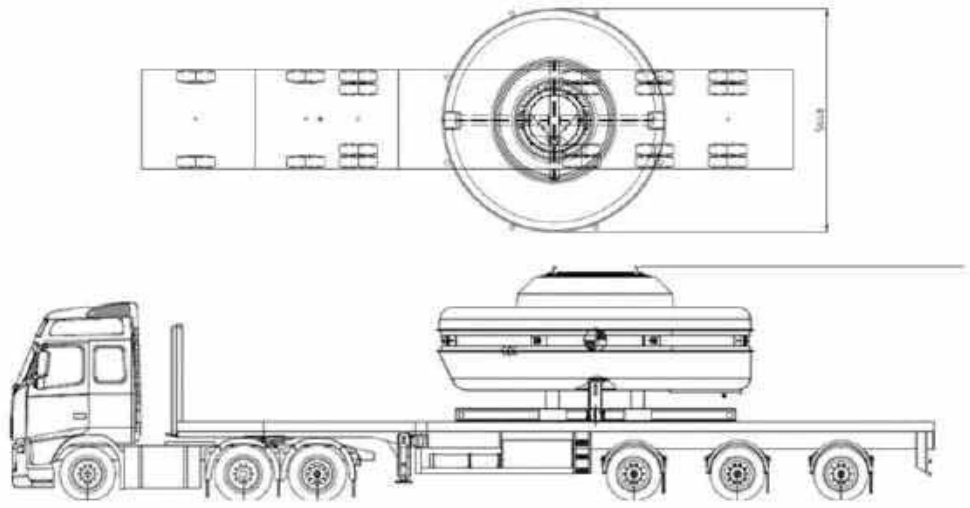
BLADES HGV/TRAIN	LENGTH: 31.42m / 32.87m			WIDTH:2.55m	HEIGHT: 4.00m	
No OF AXLES: 6	LOAD: 3x BLADES		TOTAL TRAIN WEIGHT: 35.60 Tonnes			
NO. WHEELS	2	4	4	4	4	4
AXLE WEIGHT	6t	4t	6t	3.2t	3.2t	3.2t
AXLE SPACING	2.78m	1.32m	22.1m	1.85m	1.85m	
COMMENTS:	Other small blade fittings will be co loaded with the blades					

Figure 4 Blade Trailer



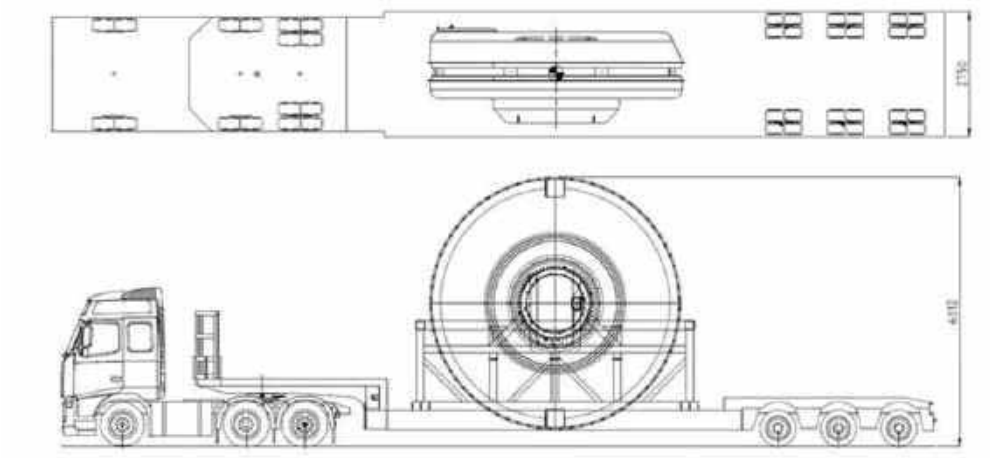
50M HH BOTTOM TOWER HGV		LENGTH:26.69m		WIDTH:3.91m		HEIGHT: 4.55m	
No OF AXLES: 6		LOADS: 1		TOTAL TRAIN WEIGHT: 54.40 Tonnes			
NO. WHEELS	2	4	4	4	4	4	
AXLE WEIGHT	6.2t	6.7t	11.5t	10t	10t	10t	
AXLE SPACING	2.78m	1.32m	16.61m	1.36m	1.36m	-	
COMMENTS:	Fasteners for the tower section can be co loaded inside the tower during transport.						

Figure 5 Tower Trailer



GENERATOR HGV/TRAIN (H)		LENGTH:17.00m		WIDTH:5.65m		HEIGHT: 4.40m	
No OF AXLES: 6		LOADS: 1		TOTAL TRAIN WEIGHT: 55 Tonnes			
NO. WHEELS	2	4	4	4	4	4	
AXLE WEIGHT	7t	7.5t	10.5t	10t	10t	10t	
AXLE SPACING	3.20m	1.40m	8.50m	1.36m	1.36m	-	
COMMENTS:	Ground clearance overhang of the generator is approx. 1.60m Access must be available up to a height of 4.4m in the air. Access from the centre of the carriage way must be available at 2.85m width at either side to accommodate the generator width.						

Figure 6 Generator Ring Trailer (Flat)



GENERATOR HGV/TRAIN (V)	LENGTH:19.66m	WIDTH:2.75m	HEIGHT: 6.02m
No OF AXLES: 6	LOADS: 1	TOTAL TRAIN WEIGHT: 66.70 Tonnes	

NO. WHEELS	2	4	4	4	4	4	
AXLE WEIGHT	7.8t	12t	16t	10.3t	10.3t	10.3t	
AXLE SPACING	2.78m	1.32m	10.65m	1.36m	1.36m	-	
COMMENTS:	Vertical generator transport can only be completed when agreed and special arrangements are made with EWT. A transhipment area is required near the delivery site with a crane hard stand to lift the generator in the vertical frame before transport to the turbine location.						

Figure 7 Generator Ring Trailer (Raised)

3 Policy Context

3.1 Introduction

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

3.2 National Policy and Guidance

3.2.1 National Planning Framework (NPF4)

The National Planning Framework (NPF) is a long-term plan for Scotland that sets out where development and infrastructure is needed in the country. NPF4 sets out the Government's plan looking forward to 2045 that will guide spatial development, set out national planning policies, designate national developments and highlight regional spatial priorities. It is part of the development plan, and so influences planning decisions across Scotland.

NPF4 puts the climate and nature crises at the heart of the Scottish planning system and was adopted in February 2023.

Policy 11: Energy within the NPF4 notes that:

"Development proposals for all forms of renewable, low-carbon and zero emissions technologies will be supported. These include:

- *wind farms including repowering, extending, expanding and extending the life of existing wind farms; and*
- *energy storage, such as battery storage and pumped storage hydro.*

In addition, project design and mitigation will demonstrate how the following impacts are addressed:

- *impacts on communities and individual dwellings, including, residential amenity, visual impact, noise and shadow flicker;*
- *public access, including impact on long distance walking and cycling routes and scenic routes;*
- *impacts on road traffic and on adjacent trunk roads, including during construction; and*
- *cumulative impacts."*

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 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 and Guidance

3.3.1 Aberdeenshire Local Development Plan (2023)

The Aberdeenshire Local Development Plan (ADLP) was formally adopted on 13 January 2023. Policy C2 Renewable Energy notes that:

"We will support renewable energy developments, including solar, wind, biomass (energy from biological material derived from living, or recently living organisms) and hydroelectricity projects, as well as energy storage projects, which are in appropriate sites and of the appropriate design. Assessment of the acceptability of such developments will take account of any effects on: socio-economic aspects; renewable energy targets; greenhouse gas emissions; communities; landscape and visual aspects; natural heritage; carbon rich soils; the historic environment; tourism and recreation; aviation, defence, telecommunications and broadcasting interests; road traffic; hydrology; and opportunities for energy storage. We treat biomass schemes as industrial processes suitable for business land."

In relation to Wind Energy, the ALDP notes that:

"All windfarms must be appropriately sited and designed and avoid unacceptable environmental effects taking into account the cumulative effects of existing and approved wind turbines… Unacceptable significant adverse effects on the amenity of dwellinghouses, such as from noise, or on tourism and recreation interests including core paths and other established routes used for public walking, riding or cycling, or to protected species should also be avoided."

In relation to Solar Panels, the ALDP notes that:

"We will approve applications for solar panel arrays greater than 4kW if:

- *their cumulative impact with other arrays, including siting and design, has been assessed and can be dismissed;*
- *account has been taken of glint and glare issues;*
- *it has been demonstrated that any significant impacts will have a duration of less than five minutes on any receptor in any one day,*
- *there are no objections from the Ministry of Defence, the National Air Traffic Services or civil airport operators;*
- *boundary treatments limit vehicular access to the site through means designed to make any security fencing unobtrusive and screen the development.*

The ADLP outlines the following in relation to Renewable Energy Technologies:

- *"other renewable energy developments are required to relate well to the source of the renewable energy required for operation and satisfactory steps must be taken to mitigate any negative impacts on occupiers of affected properties."*

3.3.2 Use of Wind Energy in Aberdeenshire: Guidance for Developers – Supplementary Planning Guidance (2005)

In relation to transportation, the supplementary guidance document states that:

"consideration should be given to potential cumulative impact on … traffic and transport…"

3.4 Policy and Guidance Summary

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

4 Study Methodology

4.1 Introduction

There are three phases of the Proposed Development, which have been considered in this assessment and are as follows:

- the Construction Phase;
- the Operational Phase; and
- the Decommissioning Phase.

4.2 Project Phases – Transport Overview

Of the three phases, the construction phase is considered to have the greatest impact in terms of transport and potential impacts on the road network and any sensitive receptors. Construction plant, bulk materials, wind turbine components as well as solar and hydrogen plant components will be transported to site, potentially resulting in a significant increase in traffic on the Study Area.

The operational phase is restricted to occasional maintenance operations which are assumed to comprise, as a worst-case estimation, approximately two LGV movements per week as well as two Hydrogen Tube Trailer movements every one-two weeks to collect hydrogen which will be distributed off-site. These movements are considerably below typical daily traffic variation levels on the road network. It is not anticipated that there will be additional staff required at the farm as the daily operation of the Proposed Development will be overseen by existing staff members.

The decommissioning phase involves fewer trips on the road network than the construction phase, as minor elements of infrastructure are likely to be left in place, adding to local infrastructure that can potentially be used for further agricultural or leisure uses in the future. As such, no further detailed assessment of this phase has been undertaken.

5 Baseline Conditions

5.1 Access Arrangement

There will be two separate access points to the Proposed Development, both of which are to be located along the C7K, Glensaugh. The existing farm access will be used during the construction and operational phase to access the solar PV and hydrogen processing plant elements of the Proposed Development and the wind turbine will be accessed from a separate upgraded access junction which is approximately 700 m along the road from the farm access, to the north / north-east.

The access junction to the wind turbine will provide access for all abnormal loads associated with the turbine component deliveries, as well as access for Heavy Goods Vehicles (HGVs) delivering construction materials and general site traffic. The junction will be subject to detailed design discussion with AC post planning determination and once the final model of turbine has been selected.

Construction traffic associated with the delivery of materials to the Proposed Development will approach the site from the east which links to the wider local road network and local quarries via the A90 trunk road (T). All Abnormal Indivisible Load (AIL) traffic access will also access the Proposed Development via the A90 (T) from the Port of Entry (POE) at the Port of Dundee, utilising proven abnormal load routes.

5.2 Study Determination

The study area has been based on those roads that are expected to experience increased traffic flows associated with the construction and operation of the Proposed Development. The geographic scope was determined through a review of the other developments in the area, Ordnance Survey (OS) plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials.

It is assumed that the majority of construction personnel will come from local settlements including Stonehaven to the north-east, Laurencekirk, to the south-east and Brechin to the south-west. It is anticipated that those personnel will access the site from the east. For the purpose of the assessment, it is assumed that 50% of staff will travel from the north along the A90 (T) and 50% will travel from the south along the A90 (T). It is possible that some construction personnel may reside in local accommodation during the working week, in which case the traffic effect on the road network will be reduced.

Wherever practical, construction materials will be sourced from local suppliers. It is considered that HGVs delivering aggregate materials will be from the south-west via the A90 (T) and subsequently through the local road network route which the AIL vehicles will use.

As detailed above, the likely POE used for the discharging of turbine components will be the Port of Dundee, with AIL routing to the site via the A90 corridor. Full details of the AIL route are provided later in the report.

Based on the above and taking cognisance of the scale of the Proposed Development and types of roads used to access the site, the study area for the assessment has therefore been assumed to be as follows:

- the C7K, running from Glensaugh and Glen Road;
- B974, between Old Military Road Parking area to the north of Clattering Bridge and the priority junction with a road signed for Arnbarrow and Huntershill, south of Clattering Bridge;
- between Glen Road and the B966, via Inverurie Street, High Street, Kintore Street and the unclassified road leading to B966;
- B966, between priority junction with the Auchenblae Road (unclassified road, leading to the Golf Course access (between Kintore Street and B966)) and Old Aberdeen Road;
- Old Aberdeen Road / Springbank Terrace, between B966 and A90 (T);
- the unclassified road, signed for Castleton Shop and Café; and
- the A90 (T), between Landends and Fiddes Substation.

The above can be seen in Figure 8.

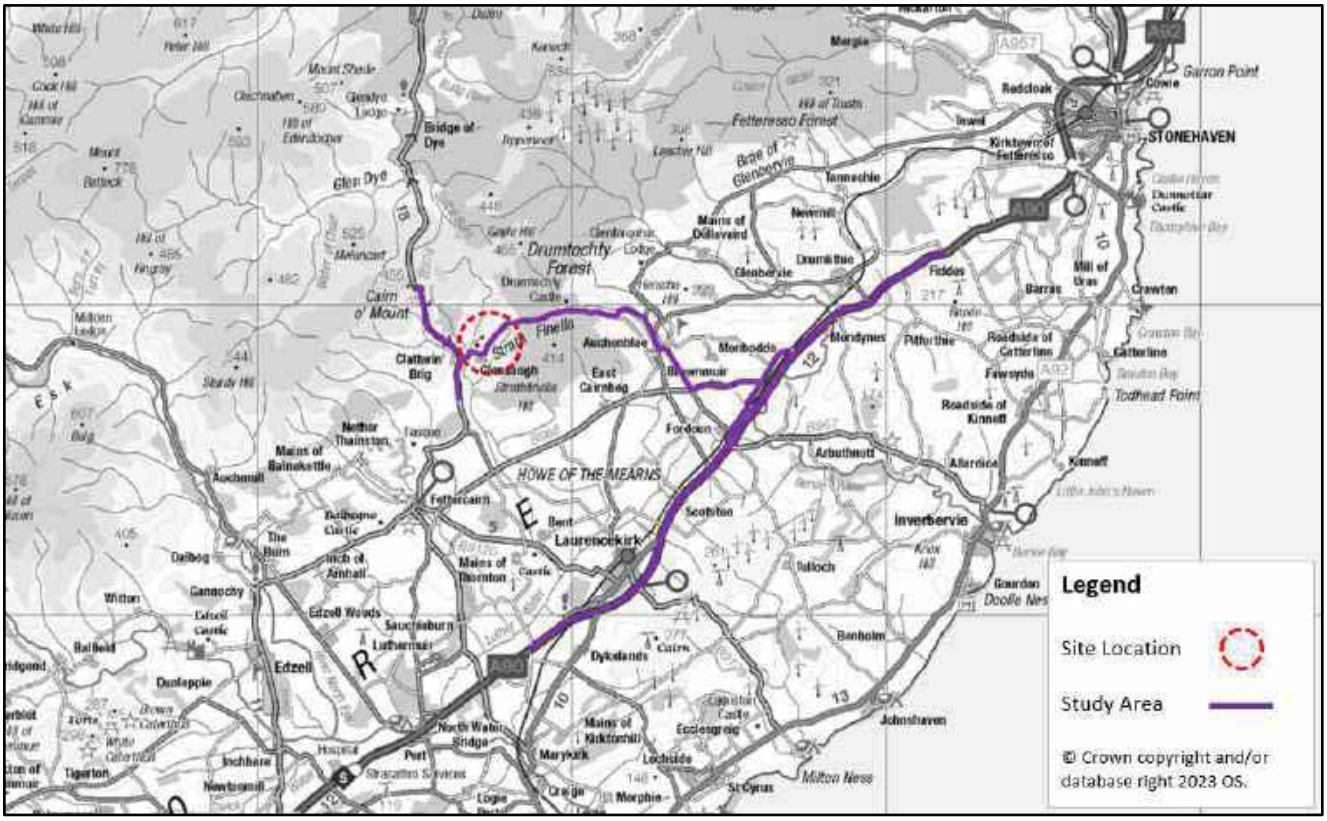


Figure 8 Transport Assessment Study Area

Effects associated with construction traffic generated by the Proposed Development will be most pronounced in close proximity to the site access junction and on the final approaches to the site. As vehicles travel away from the Proposed Development, they will disperse across the wider road network, thus diluting any potential effects. It is therefore expected that the effects relating to construction traffic are unlikely to be significant beyond the study area identified above.

5.3 Pedestrian, Cyclist and Public Transport Networks

There are no pedestrian facilities in the immediate vicinity of the Proposed Development Site, reflecting the rural nature of the site.

Further away from the Proposed Development in the wider study area, there are pedestrian facilities in the form of footways within the local settlements, Fettercairn and Auchenblae. It is considered that the level of pedestrian infrastructure is commensurate with the scale of the local settlements and their rural setting.

A review of AC's Core Path network[1] indicates that there are no Core Paths in the immediate vicinity of the Proposed Development Site, as can be seen in Figure 9 (the location of the proposed site access junctions can be seen by the red marker).

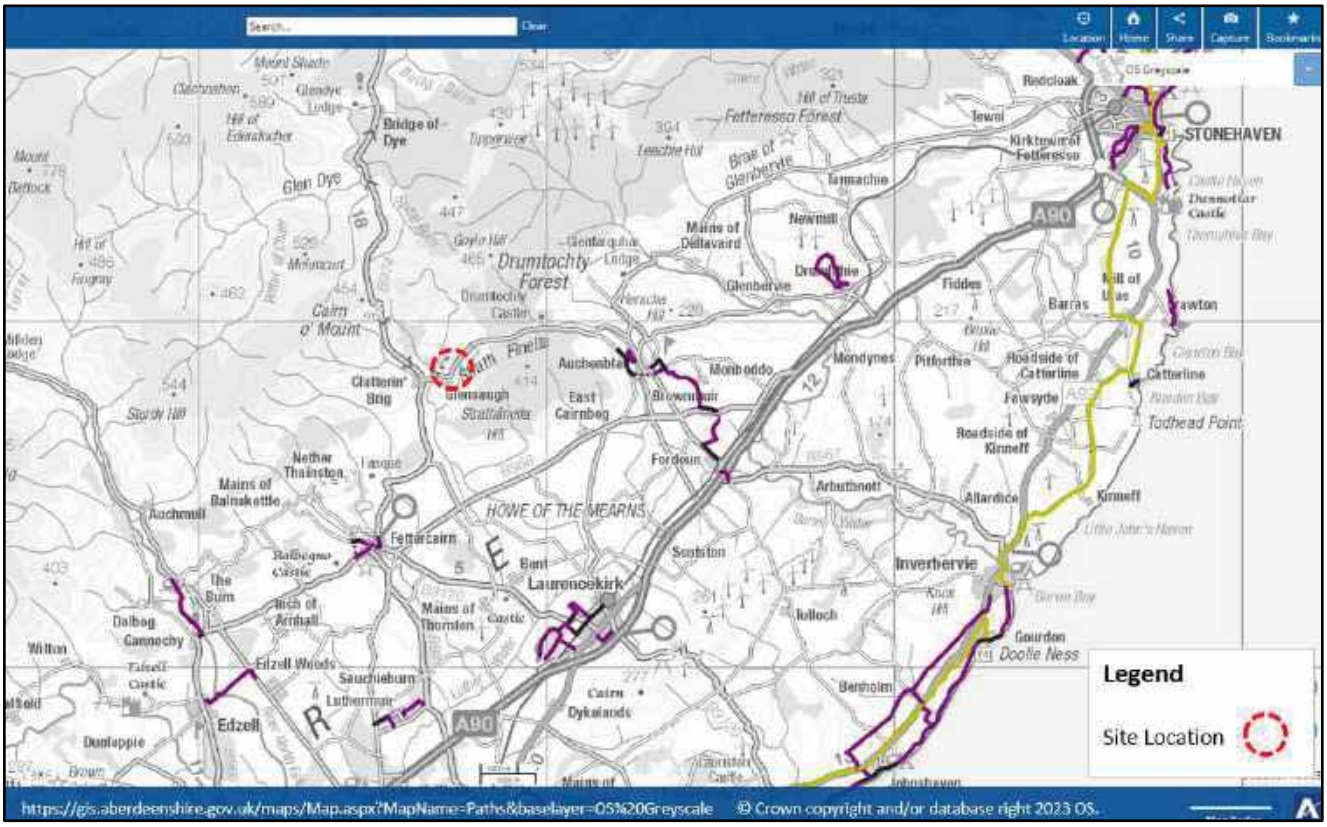


Figure 9 Core Path Plan (Aberdeenshire Council)

Adopted Core Paths located in the vicinity of the Study Area are as follows:

- Core Path 501.03, is 1.37 Kilometres (km) long and located to the east of the unclassified road approximately 200 m to the south of priority junction with the access to the Golf Course. Proposed Core Path 501.03P is located to the west of Core Path 501.03 and will link the Core Path to Auchenblae and would be 0.47 km in length.
- Core Path 508.02, is 1.82 km long and commences to the north of the B966, and connects to Core Path 501.03 to the north.
- a section of the B966, 1.11 km in length, is recorded on the Adopted Core Paths Plan as Path Type – Road with Path ID Reference 508.02R and links Core Path 508.02 and Proposed Core Path 508.02P to the south of B966 and is 0.31 km and connects to the wider Core Path network.

It should be noted that Drumtochty Forest is accessed from the C7k Glenhaugh which includes an 8.4 km trail which is used by hikers and cyclists.

[1] Aberdeenshire Council, Core Paths Map: https://gis.aberdeenshire.gov.uk/maps/Map.aspx?MapName=Paths&baselayer=OS%20Greyscale

A review of Aberdeenshire Council's cycle routes[2] shows that the closest cycle route is Kincardine and Mearns route 3: Laurence – Fettercairn Circular which shown in Figure 10 in relation to the Study Area. The cycle route is an on-road route and is approximately 19 km in length.

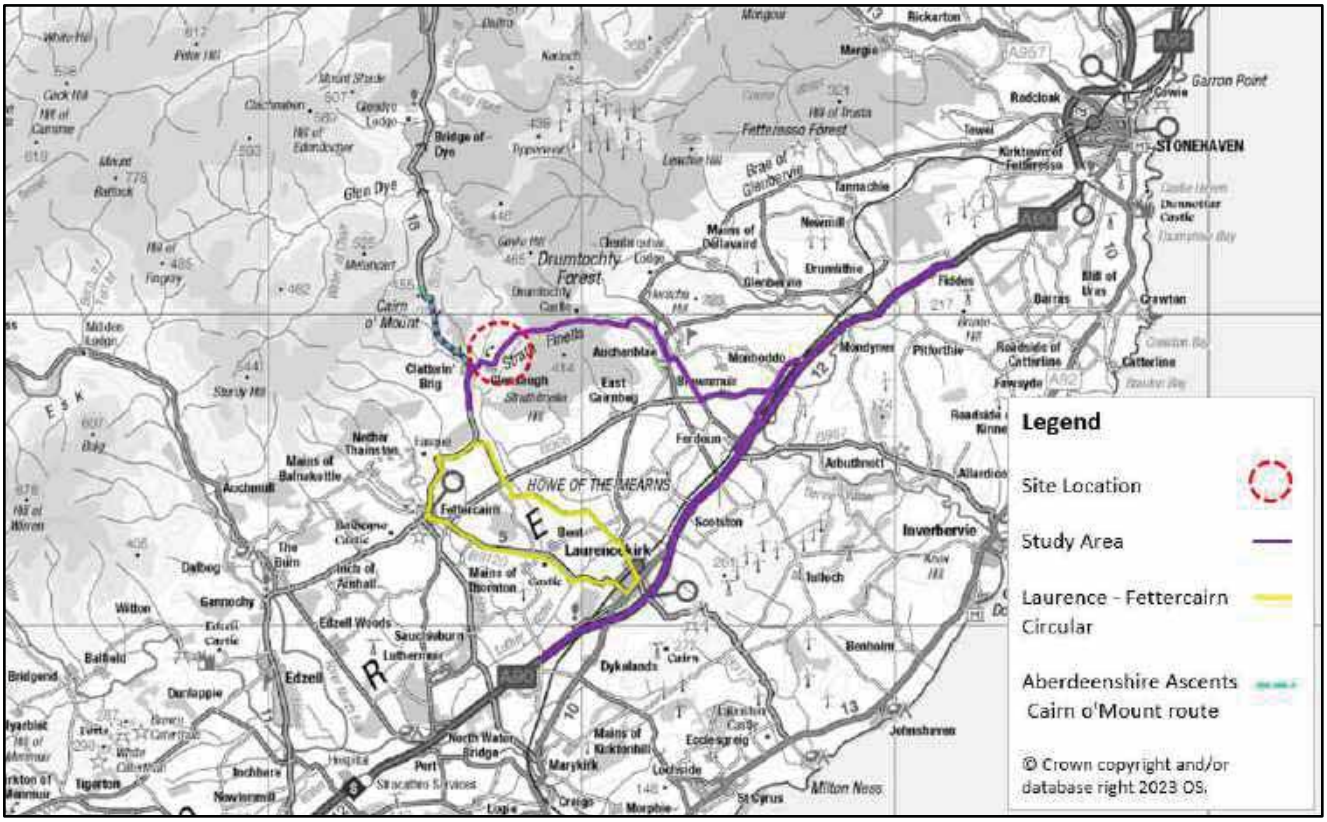


Figure 10 Local Cycle Routes

At Clattering Bridge on the B974 there is signage reading "ABERDEENSHIRE ASCENTS Cairn o'Mount". Aberdeenshire Ascents is a partnership project which also involves VisitAberdeenshire, Aberdeenshire Council, the Nort East Adventure Tourism project which is supported by Opportunity North East and Scottish Cycling as well as local cycling groups. A total of ten road ascents have been selected as part of the scheme, one of which is Cairn o'Mount. Signage has been installed at the beginning and end of each ascent.

A review of Sustrans' National Cycle Route (NCR) map[3] does not show any national cycle routes in the immediate vicinity of the Proposed Development Site or on the proposed construction access routes.

The nearest bus stops to the site are located in Fettercairn and Auchenblae, and are served by bus services 29 and 26, respectively. Bus service 29 provides a daily service to Laurencekirk Mearns Academy. Bus service 26 runs from Stonehaven to Laurencekirk or Luthermuir and serves the Auchenblae bus stop approximately every two hours in both directions. The level of public transport provision is commensurate with the rural surroundings.

5.4 Road Access

B974

The B974 comprises a two-way single carriageway road and runs from Banchory in the north to Fettercairn in the south. To the north of Clattering Bridge, the topography of the B974 appears to be quite steep while south

[2] Aberdeenshire Council, Cycle Routes
[3] https://www.sustrans.org.uk/national-cycle-network

of Clattering Bridge the topography flattens out. Outwith villages, the B974 is subject to the national speed limit, and this reduces to 30 mph and 40 mph while travelling through villages.

The B974 is maintained by Aberdeenshire Council, as are the subsequent roads in the below sections which form part of the local road network.

C7K, Glensaugh

The C7K, Glensaugh, runs from its junction with the B974, to the west of the Site, to its connection with Glen Road, to the east. The road comprises mainly of single track road. There are a number of passing places to the east of the site.

Approximately 20 metres (m) to the east of its junction with the B974, there is a bridge which appears to be in poor condition. Another alternative bridge is located adjacent to the main bridge, and includes a warning sign which states: “WARNING Unsafe bridge do not use”. To the east of the bridges, the C7K Glensaugh has a steep topography with road signage indicating a 12% inclining slope. There is also signage present which highlights that there are consecutive bends along the road.

Glen Road / Inverurie Street / High Street / Market Street / Kintore Street

Glen Road is a narrow road which connects to the C7K Glensaugh to the north and connects to Inverurie Street to the south. Outwith Auchenblae, Glen Road is subject to the national speed limit however the speed limit reduces to 30 miles per hour (mph) when entering Auchenblae village.

Within Auchenblae village, Glen Road connects to Mondboddo Street / unclassified road leading to the Golf Course access via Inverurie Street, High Street, Market Square and Kintore Street, which are subject to a speed limit of 30 mph.

There are no parking restrictions along the route and there is evidence of parking on both sides of the street, which narrows the carriageway width and reduces the ability of two cars to pass each other along Inverurie Street.

Auchenblae Road (unclassified road, leading to the Golf Course access (between Kintore Street and B966))

Auchenblae Road is a two way single carriageway road which is subject to the national speed limit which reduces to 30 mph when entering Auchenblae village. Sections of the road appear to be in poor condition.

B966

The B966 is a two way single carriageway which is subject to the national speed limit. The B966 appears to be mainly in good condition however there are some locations which show signs of deterioration along the road.

Unclassified Road (northeast of B966 / Old Aberdeen Road priority junction)

The unclassified road is a two-way single carriageway road which is subject to the national speed limit. The road is currently signed as no through road, having previously connected to the A90 (T) via a priority junction.

Old Aberdeen Road / Springbank Terrace

Old Aberdeen Road / Springbank Terrace comprises a two-way single carriageway road which is subject to the national speed limit, however this reduces to 30 mph when travelling through Fordoun. The road appears to be mainly in good condition however there are some locations which show signs of deterioration along the road.

The bridge of the East Coast Mainline railway at Abbeyton has been removed and a replacement structure is due to be delivered in 2024.

A90 (T)

The A90 (T) forms part of the trunk road network and is maintained by Amey, on behalf of Transport Scotland. Within the study area, the A90 (T) comprises a dual carriageway road which is subject to the national speed limit.

Warning signage on the A90 (T) within the study area highlights that there may be pedestrians crossing and farm traffic along the road. Average speed cameras are located in the vicinity of the underpass, near Borland Farming.

5.5 Existing Traffic Conditions

In order to assess the impact of construction traffic within the study area, a series of Automatic Traffic Count (ATC) sites were established between 8 and 14 November 2023. The ATC sites were as follows:

1. G7K, Glensaugh (approximately 65 m east of G7K, Glensaugh / B974 priority junction, however, for the purpose of this assessment it is assumed that the traffic flows at the site accesses equate to flows observed at this location);
2. Kintore Street; and
3. Old Aberdeen Road / Springbank Terrace (approximately 160 m from A90 (T) / Old Aberdeen Road priority junction).

Annual Average Daily Traffic (AADT) flows were obtained from the Transport Scotland traffic database[4] and the UK Department for Transport (DfT) traffic database[5]. Available 2019 flow information was obtained from the Transport Scotland traffic database as there is no recent information available. Available 2019 flows were obtained from the DfT database was obtained as these flows would be unaffected by Covid-related travel restrictions. The Transport Scotland and DfT traffic counts sites used were as follows:

4. A90 (T), between Fordoun and Dunnottar (DfT Count Point 80050); and
5. A90 (T), between the A90 (T) / A937 junction and A90 (T) / B9120 (TS Count Point JTC00057).

Figure 11 shows the location of the surveys in the context of the site location.

[4] https://ts.drakewell.com/c2.asp
[5] https://roadtraffic.dft.gov.uk/#6/55.254/-6.053/basemap-regions-countpoints

Figure 11 Traffic Count Location

DfT traffic data allow the traffic flows to be split in vehicle classes. The data was summarised into Cars / Light Goods Vehicles (LGVs) and HGVs (all goods vehicles >3.5tonnes gross maximum weight, as well as buses).

A National Road Traffic Forecast (NRTF) low growth factor was applied to the Transport Scotland and DfT traffic flow data, to bring the traffic data up to the base year of 2023. The NRTF low growth factor for 2019 to 2023 is 1.027.

Table 2 summarises the AADT traffic data collected and used in this assessment.

Table 2 24-hour Average Traffic Data (2023)

Ref. No.	Survey Location	Cars / LGV	HGV	Total	% HGVs
1	C7K, Glensaugh	53	25	78	32.0%
2	Kintore Street	781	194	976	19.9%
3	Old Aberdeen Road / Springbank Terrace (approximately 160 m from A90 (T) / Old Aberdeen Road priority junction	1,446	317	1,763	18.0%
4	A90 (T), between Fordoun and Dunnottar	14,215	2,104	16,319	12.9%
5	A90 (T), between the A90 (T) / A937 junction and A90 (T) / B9120	16,572	4,674	21,246	22.0%

Please note minor variances due to rounding may occur.

The ATC surveys were also used to obtain speed statistics. The two-way seven-day average and 85th percentile speeds observed at the count sites are summarised in Table 3.

Table 3 Speed Summary (2023)

Ref. No.	Survey Location	Mean Speed (mph)	85%ile Speed (mph)	Speed Limit (mph)
1	C7K, Glensaugh	19.2	23.9	60.0
2	Kintore Street	22.0	26.7	30.0

Ref. No.	Survey Location	Mean Speed (mph)	85%ile Speed (mph)	Speed Limit (mph)
3	Old Aberdeen Road / Springbank Terrace (approximately 160 m from A90 (T) / Old Aberdeen Road priority junction	27.5	32.4	30.0
4	A90 (T), between Fordoun and Dunnottar*	No Data Available		70.0
5	A90 (T), between the A90 (T) / A937 junction and A90 (T) / B9120			70.0

** No 2023 speed data available from DfT database or Transport Scotland database*

Speed information from the Table 3, suggests that there is not compliance along Old Aberdeen Road / Springbank Terrace, therefore Police Scotland may wish to consider enforcement spot checks in these areas.

5.6 Accident Review

Personal Injury Accident (PIA) data for the five-year period covering 2018 to 2022, was obtained from the online resource CrashMap[6] which uses data collected by the police about road traffic crashes occurring on British roads, where someone is injured.

TA Guidance[7] requires an analysis of the PIA on the road network in the vicinity of any development to be undertaken for at least the most recent 3-year period, or preferably a 5-year period, particularly if the site has been identified as being within a high accident area.

The statistics are categorised into three categories, namely “Slight”, “Serious” and “Fatal”, for those accidents that result in a death. The locations and severity of the recorded accidents are shown in Figure 12.

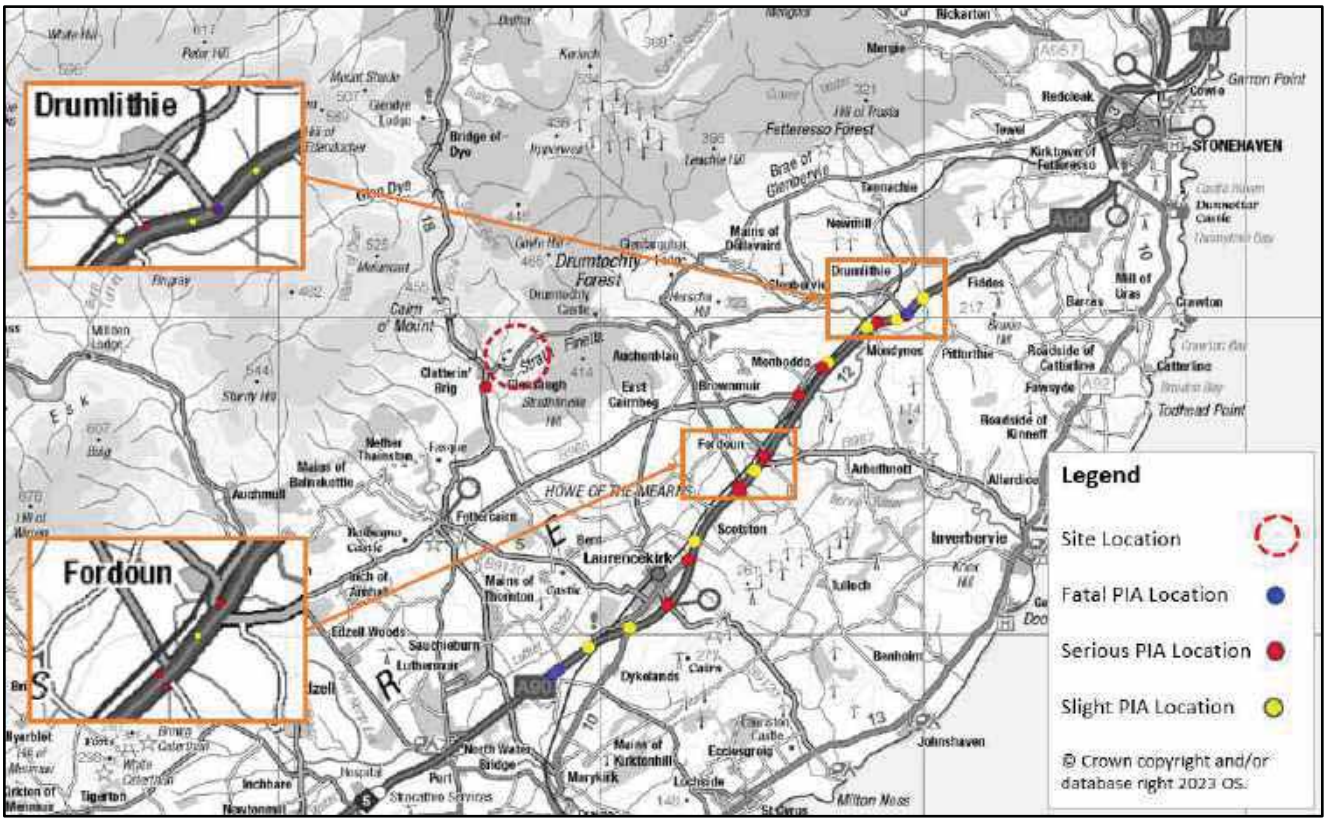


Figure 12 PIA Locations

A summary analysis of the incidents indicates that:

[6] https://www.crashmap.co.uk/
[7] https://www.transport.gov.scot/media/4589/planning_reform_-_dpmtag_-_development_management__dpmtag_ref__17__-_transport_assessment_guidance_final_-_june_2012.pdf

- a total of 22 PIAs were recorded within the assessed area, within the last five-year period;
- of those 22 PIAs, 8 were classified as “Slight” (36.4%), four were classified as “Serious” (50.0%) and there was three “Fatal” (13.6%) recorded;
- the three accidents which resulted in fatalities occurred on the A90 (T). Two fatal accidents occurred within 250 m of each other to the southwest of Landends and one fatal accident occurred near the A90 (T) / Station Road junction;
- one of the fatal accidents occurred between the Landlends and access road to Marykirk at the staggered junction The accident involved a single car collision;
- one fatal accident occurred to the southwest of the Landlends and access road to Marykirk at the staggered junction and right turning lane to a private dwelling and involved two vehicles which were a car and an HGV;
- one fatal accident occurred at the A90 (T) / Station Road junction and involved three vehicles including cars and buses;
- two accidents were recorded at the right-turning lane showing Johnshaven 7 miles, both of which were classified as serious,
- two accidents occurred at the A90 (T) / Springbank Terrace junction, both of which were classified as serious;
- two accidents were recorded at the A90 (T) / Station Road of which one accident was classified a s serious and one involved a fatality;
- a total of four accidents involved motorcycles, three of which were classified as serious and one which was classified as slight;
- eight accidents involved HGVs, of which two were classified as slight, five as serious and one as fatal;
- two accidents involved a bus which results in one slight accident and one fatal accident;
- none of the recorded accidents involved a cyclist or a pedestrian; and
- no accident occurred on the C7K, Glensaugh where the access junction is to be located.

In general, there are no clusters of PIAs at any location in the assessed area or high numbers of accidents involving HGVs for example. The majority of PIAs recorded occurred at or on approach to junctions / access to properties, where there is an increased interaction between vehicles.

Based on the information available, it has been established that there are no specific road safety issues within the immediate vicinity of the Proposed Development that currently require to be addressed or will be exacerbated by construction activities.

5.7 Future Baseline Traffic Conditions

5.7.1 2025 Traffic Flows

Construction of the Proposed Development could commence during 2025 (a worst case scenario) if consent is granted and is anticipated to take approximately eight months depending on weather conditions and ecological considerations.

To assess the likely effects during the construction, base year traffic flows were determined by applying a National Road Traffic Forecast (NRTF) low growth factor to the 2023 Baseline flows. The NRTF low growth factor for 2023 to 2025 is 1.011. These factors were applied to the survey data to estimate the 2025 Base traffic flows, as shown in Table 4.

Table 4 24-hour Average Traffic Data (2025)

Ref. No.	Survey Location	Cars / LGV	HGV	Total	% HGVs
1	C7K, Glensaugh	53	25	78	32.0%
2	Kintore Street	790	196	986	19.9%
3	Old Aberdeen Road / Springbank Terrace (approximately 160 m from A90 (T) / Old Aberdeen Road priority junction	1,462	320	1,783	18.0%
4	A90 (T), between Fordoun and Dunnottar	14,371	2,127	16,499	12.9%

Ref. No.	Survey Location	Cars / LGV	HGV	Total	% HGVs
5	A90 (T), between the A90 (T) / A937 junction and A90 (T) / B9120	16,754	4,725	21,479	22.0%

Please note that variances may occur due to rounding.

Should the year of construction be brought forward to 2024, the change in baseline traffic flows on the roads located close to the site would be minimal and would not have a significant bearing on the conclusions of this assessment.

5.8 Committed Developments

A review of AC's online planning portal[8], in addition to the Scottish Government's Energy Consents Unit portal[9] was undertaken to identify any consented developments within the vicinity of the Proposed Development which will generate significant traffic. Details of the consented developments which are anticipated to impact on the Proposed Development's study area were identified in the review and are outlined below.

- **East Coast 400 kV Overhead Line Upgrade –** The East Coast 400 kV Overhead Line (OHL) Upgrade was granted planning consent in September 2022. Within the planning application documents it is noted that *"OHL reinforcement works would commence in January 2023 (subject to approvals being granted), which would allow completion by October 2026."*[10] It is stated within the planning application documents that anticipated traffic movements associated with the peak construction period are as follows:
  OHL Upgrade Works – six cars / LGVs and 2 HGVs
  OHL Commissioning – four cars / LGVs and 2 HGVs
  In relation to the operational phase, the planning document note that:
  "In general, an OHL requires very little maintenance. Regular inspections are undertaken to identify any unacceptable deterioration of components so that they can be replaced.
  From time to time, inclement weather, storms or lightning can cause damage to either the insulators or the conductors. If conductors are damaged, short sections may have to be replaced. Insulators and conductors are normally replaced after about 40 years, and towers painted every 15 to 20 years."
  The planning documents do not specify daily traffic movements associated with the operational phase, due to the anticipated low number of trips. Therefore, as a worst-case assessment, construction traffic movements associated with the OHL Upgrade Works will be added as committed development flows.
- **Glendye Wind Farm –** Glendye Wind Farm was granted planning consent in October 2023, and is to comprise 26 wind turbines and associated infrastructure. It is anticipated that traffic associated with wind farm will impact on the A90 (T) within the Proposed Development's study area. It is anticipated that during the peak construction month that there will be 63 HGV two-way movements and 100 Car / LGV two-way movements. During operation, it is anticipated that: *"in the worst-case scenario, operational vehicles equate to no more than 10 utility vehicles a month and two HGVs per month."*[11] As such, the construction phase traffic will be added as committed development flows as a worst-case scenario.

It should be noted that any crossover of traffic with the Proposed Development flows would be addressed via a wide area Construction Traffic Management Plan (CTMP), secured by planning condition on the Proposed Development's consent.

Projects in scoping or not yet determined cannot be included in cumulative assessments as they have yet to be determined. As traffic impacts are short lived for construction projects, the potential traffic impact is highly speculative and as such, cannot be included in the assessment.

[8] View planning applications, Aberdeenshire Council, Source: https://upa.aberdeenshire.gov.uk/online-applications/spatialDisplay.do?action=display&searchType=Application (Date Sourced: 14/11/2023)
9 https://www.energyconsents.scot/ApplicationSearch.aspx?T=1
10 Scottish & Southern Electricity Networks (2021) East Coast 400 kV Overhead Line Upgrade Environmental Impact Assessment Report Volume 2 Main Text
11 Systra (2018) Glendye Wind Farm EIA Report Chapter 12 Access, Traffic and Transport

A review of the AC's online planning portal was also undertaken for other any other developments with planning consent, which should be considered within this assessment. The review examined consented developments whose trips are considered significant in scale (i.e., has associated traffic impact of over 10%).

The review did not identify any other significant traffic generating developments in the study area that may occur during the construction period associated with the Proposed Development.

It should be noted that the use of Low NRTF growth assumptions has provided a basis for general local development growth within the study area.

The committed development trips have been added to the 2025 Baseline flows, previously shown in Table 4, and the combined flows are presented below in Table 5. This will be used in the Construction Peak Traffic Impact Assessment.

Table 5 2025 Baseline + Committed Development Flows

Ref. No.	Survey Location	Cars / LGV	HGV	Total	% HGVs
1	C7K, Glensaugh	65	29	94	30.9%
2	Kintore Street	802	200	1,002	20.0%
3	Old Aberdeen Road / Springbank Terrace (approximately 160 m from A90 (T) / Old Aberdeen Road priority junction	1,474	324	1,799	18.0%
4	A90 (T), between Fordoun and Dunnottar	14,483	2,194	16,678	13.2%
5	A90 (T), between the A90 (T) / A937 junction and A90 (T) / B9120	16,866	4,792	21,658	22.1%

Please note that variances may occur due to rounding.

6 Trip Generation and Distribution

6.1 Construction Phase

6.1.1 Trip Derivation

During the eight month construction period, the following traffic will require access to the site:

- staff transport, in either cars or staff minibuses;
- construction equipment and materials, deliveries of machinery and supplies such as ready-mix concrete and crushed rock / aggregate materials;
- components relating to the solar PVs, hydrogen plant and associated infrastructure; and
- abnormal loads consisting of the wind turbine sections and a heavy lift crane.

Average monthly traffic flow data was used to establish the construction trips associated with the Proposed Development, based on the assumptions detailed in the following sections.

6.1.2 Construction Staff

Staff will arrive in non-HGV vehicles and where possible will be encouraged to car share. The workforce on site will depend on the activities undertaken but based on previous wind farm construction site experience for a project of this scale, it is considered that up to 15 staff will be on-site at each element of the Proposed Development during the short peak period of their respective construction.

For the purposes of estimating traffic movements, it was assumed that 40% of staff will be transported by minibus and 60% will 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 will account for a maximum of 40 vehicle movements (20 inbound trips and 20 outbound trips) per day during the peak period of construction.

6.2 Wind Turbine Deliveries

6.2.1 Abnormal Indivisible Load and Turbine Component Deliveries

The turbines are broken down into components for transport to the site. The nacelle, drive train, blade and tower sections are classified as 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 6.

Table 6 Turbine Components

Components	Number of Components per turbine
Rotor Blades	3
Tower Sections	2
Nacelle	1
Hub	1
Drive Train / Generator	1
Nose Cone	1
Transformer	1
Ancillary	1
Site Parts	0.2

In addition to the turbine deliveries, a high-capacity erection crane will be needed to offload a number of components and erect the turbine. The crane is likely to be a mobile crane with a capacity up to 500 tonnes, escorted by boom and ballast trucks to allow full mobilisation on site. AILs associated with the cranes will be escorted to site by civilian escort vehicles.

Escort vehicles will accompany the AIL convoys associated with the turbine components, to support the traffic management measures. Up to three vehicles will be deployed and it is assumed that three AIL turbine

component loads will be delivered per convoy. This will result in up to three convoys on the network, with a total of approximately 18 escort vehicle movements (nine inbound trips and nine outbound trips).

Turbine components that do not classify as AILs, will be delivered in addition to these, resulting in a further six movements (three inbound trips and three outbound trips). All of these deliveries are expected to occur over a period of approximately one week.

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

6.2.2 General Deliveries

Throughout the construction phase, general deliveries will be made to site via HGV. These will include fuel, site office supplies and staff welfare etc. At the height of construction, it is assumed that up to 40 journeys to site are made (20 inbound trips and 20 outbound trips) per month.

6.2.3 Material Deliveries

Various materials will need to be delivered to site to construct the site-based infrastructure. At the outset of the construction works, HGV deliveries will deliver plant and initial material deliveries to the site to enable the formation of the site compound and to deliver construction machinery.

Given the scale of the Proposed Development, it is not proposed to utilise on-site batching of concrete. As such, it has been assumed that all turbine and substation foundation concrete will be brought ready mixed to the site from one of the local suppliers to the south-west. There are a number of potential suppliers as illustrated in Table 7.

Table 7 Local Quarries

Company Name	Address	Distance	Route
Breedon Edzell Quarry	Arnhall Farm, Edzell DD9 7UZ	34 km	via Lang Stract, A90 (T), Old Aberdeen Road , B966, Glen Road and Glensaugh.
Geddes Group Struan Quarry	Edzell, Brechin DD9 7TY	40 km	via B966, A90 (T), Old Aberdeen Road , B966, Glen Road and Glensaugh.
Breedon Capo Quarry	Edzell, Laurencekirk AB30 1RQ	31 km	via Lang Stract, A90 (T), Old Aberdeen Road , B966, Glen Road and Glensaugh.

The estimated total volume of concrete required on site is 2,410m³, based upon expected turbine foundation, footpaths and miscellaneous uses across the Proposed Development Site. The individual deliveries associated with the ready mixed concrete have been estimated and result in 804 vehicle movements (402 inbound trips and 402 outbound trips).

Foundation calculations for the turbine bases and the substations are detailed in Table 8 below.

Table 8 Steel Reinforcement Deliveries

Element	Weight / Installation (t)	Total Weight (t)	Lorry Capacity (t)	Inbound Trips	Total Movements
Turbine Foundation	125	125	30	5	10
Footpaths, yard and miscellaneous uses	176	176	30	6	12

The on-site access track and crane hardstand will be constructed from crushed rock, with 100% of the material obtained to be delivered from one of the local suppliers to the south-west. The access track to the wind turbine will generally be 5 m in width and will be designed to accommodate 13 tonne axle loads. In addition to the roads, a crane pad will be constructed to enable the turbine erection process.

An additional area will be added to the existing yard area to the north and east of the proposed hydrogen processing plant to allow access to the building.

The estimate of imported material is detailed in Table 9.

Table 9 Track Material Deliveries

Element	Volume / Installation (m^3)	Total Weight (t)	Lorry Capacity (t)	Inbound Trips	Total Movements
Turbine Track and Hardstanding	6,769	14,891	20	745	1,490
Hydrogen processing plant building, yard access and footpath	854	1,879	20	94	188

The track and crane pad will require geotextile in the foundations. Geotextile will be delivered to site in rolls. A total of 44 large rolls may be required at site and will be delivered by HGV which will result in 6 HGV movements (three inbound trips and three outbound trips).

Cables will connect the turbine to the substation at the solar PV / hydrogen processing plant site, as well as to . Trip estimates for the cable materials are provided below in Table 10 and 11. Three cables are to be provided within each cable trench and will be backfilled with cable sand. Ducting will be used to protect the cable when it runs under roadways. It is estimated that the delivery of ducting materials will result in eight HGV movements (four inbound trips and four outbound trips).

Table 10 Cable Trip Estimate

Element	Length per Drum (m)	Number of Drums	Inbound Trips	Total Movements
Cables	500	29	2	8

Table 11 Cable Sand Trip Estimate

Element	Volume (m^3)	Total Weight (t)	Lorry Capacity (t)	Inbound Trips	Total Movements
Cable Sand	1,622	2,596	20	131	262

The hydrogen processing plant building will be constructed on the site and will require deliveries of building materials and structural elements which will result in 60 vehicle movements (30 inbound trips and 30 outbound trips). The existing building is to be demolished to make way for the hydrogen processing plant building and it is anticipated that the removal of debris from the site would result in 40 vehicles movements (20 inbound trips and 20 outbound trips).

Battery storage deliveries and EV chargers are estimated to result in a further 10 HGV vehicle movements for battery, invertor and cabin / building deliveries etc.

Solar panels, mounting frames, switch gears and invertors for the solar farm element are anticipated to result in 24 HGV movements (12 inbound trips and 12 outbound).

The delivery of hydrogen processing equipment is anticipated to require 48 HGV movements and electrical equipment is anticipated to result in eight HGV movements which is a total of 56 movements (28 inbound and 28 outbound).

The resulting traffic generation estimates have been plotted onto the indicative construction programme to illustrate the peak journeys on the network. Table 12 illustrates the trip generation throughout the construction programme for each month, showing construction vehicle movements, i.e. an inbound and outbound trip.

Table 12 Indicative Construction Traffic Profile

Activity	Class	Month							
		1	2	3	4	5	6	7	8
Site Establishment	HGV	50			50				
General Site Deliveries	HGV	40	40	40	40	40	40	40	40
Bulk Material Deliveries	HGV	373	373	373	373	94	94		
Ready-mix Concrete Deliveries	HGV					569	235		
Reinforcement	HGV					16	6		
Cable & Ducting Deliveries	HGV		3		3		3	7	
Cabling Sand	HGV		81	81	81	20			
Geotextile Deliveries	HGV						2	4	
AIL Cranage	HGV					2			
AIL Deliveries	HGV					22			
Solar Array & Equipment	HGV							34	
Hydrogen Plant	HGV					20	40		
Hydrogen Processing Equipment	HGV						48		
Electrical Equipment	HGV						8		
Demolition / Removal	HGV				40				
Fencing & Landscaping	HGV							10	
Reinstatement	HGV					50			50
AIL Escorts	Car & LGV					18			
Commissioning	Car & LGV							80	80
Staff	Car & LGV	220	220	440	880	660	440	440	220
Total HGV	HGV	463	496	493	586	833	476	95	90
Total Cars / LGV	Car & LGV	220	220	440	880	678	440	520	300
Total Movements		**683**	**716**	**933**	**1466**	**1511**	**916**	**615**	**390**
Total HGV per Day		21	23	22	27	38	22	4	4
Total Cars / LGV per Day		10	10	20	40	31	20	24	14
Total per Day		**31**	**33**	**42**	**67**	**69**	**42**	**28**	**18**

Please note variances due to rounding may occur.
Assumes that 100% of total estimated stone aggregate requirements will be imported to site.

The peak of construction occurs in month five with a total of 69 daily vehicle movements, comprising 31 car / LGV movements and 38 HGV movements.

6.2.4 Distribution of Construction Trips

The distribution of Proposed Development construction traffic on the network will vary depending on the types of loads being transported. The assumptions for the distribution of construction traffic during the peak months are as follows:

- all construction traffic enters the site via the proposed accesses from the east along the unclassified road, Glensaugh;
- deliveries associated with aggregate materials and concrete materials, will be sourced from local quarries to the southeast, via the A90, Springbank Terrace / Old Aberdeen Road, B966, Auchenblae Road, Kintore Street, High Street, Inverurie Street, Glen Road and C7K, Glensaugh. The Balance of Plant (BoP) contractor will confirm final quarry and material sourcing with AC in the final CTMP, however for the purposes of this assessment the following has been assumed:
    - Breedon, Edzell Quarry,
    - Geddes Group, Struan Quarry; and
    - Breedon, Capo Quarry.
- HGV deliveries associated with the High Voltage (HV) electrical installation, control buildings, batteries, etc. will arrive via the A9(T) to the north;
- solar arrays and equipment and hydrogen processing equipment will arrive via the A9(T) to the north;
- staff working at the site are likely to be based locally. It is assumed that 50% will arrive from the A90 (T) from the north and 50% will arrive via the A90 (T) to the south; and
- general site deliveries will be via the A90 (T) from the north. These are generally smaller rigid HGV vehicles.

It has been assumed that all abnormal load traffic will access from the Proposed Development Site via the following route:

- components exit the port and will cross the roundabout onto Strips of Craigie Road;
- loads will then join the A972 Kingsway and will proceed to the west;
- to avoid significant roadworks at the A90 (T) Forfar Road Junction, loads will continue west before undertaking a U-Turn at the Macalpine Road Roundabout. Loads will then proceed eastbound on the A90 (T);
- at the Forfar Road Junction, loads will turn left and will continue northbound on the A90 (T);
- loads will depart at the A90 (T) at the Auchenblae Junction and will join the B966 southbound (should the Abbeyton Bridge be replaced, loads would use this junction);
- loads will then turn right onto the Auchenblae Road and will continue northbound, passing through the village;
- loads will turn left onto the Glen Road. Loads will follow the C7K, Glensaugh through to the Drumtochty Castle junction;
- loads will continue south-west until reaching the site access junction and turn right at the junction. From there they will proceed to the wind turbine location using upgraded and new private access tracks.

Should the Abbeyton Bridge replacement not be available at the time of deliveries, AIL traffic will depart the A90 at the Fordoun Junction and will proceed to the B966 from the south via the Old Aberdeen Road.

The above route has been considered in full, within the AIL RSR, provided in Appendix A.

6.2.5 Peak Construction Traffic

Following the distribution and assignment of traffic flows to the Study Area, the resultant daily traffic during the peak of construction is summarised in Table 13.

Ref. No.	Survey Location	Cars / LGV	HGV	Total
1	C7K, Glensaugh	31	38	69
2	Kintore Street	31	38	69
3	Old Aberdeen Road / Springbank Terrace (approximately 160 m from A90 (T) / Old Aberdeen Road priority junction	31	38	69
4	A90 (T), between Fordoun and Dunnottar	15	6	21
5	A90 (T), between the A90 (T) / A937 junction and A90 (T) / B9120	16	32	48

Please note that variances may occur due to rounding.

6.3 Operational Phase

The traffic associated with the operational phase of the Proposed Development is minimal with occasional maintenance trips and hydrogen collection trips which if assessed as to occur on the same day, as a worst-case scenario, would equate to two car / LGV movements and two HGV movements per day.

6.4 Decommissioning Phase

Prior to decommissioning of the Proposed Development, a traffic assessment will be undertaken, and appropriate traffic management procedures followed.

The decommissioning phase will result in fewer trips on the road network than the construction or operational phases as it is considered likely that elements of infrastructure such as access tracks will be left in place and structures may be broken up on site to allow transport by a reduced number of HGVs.

7 Traffic Impact Assessment

7.1 Construction Impact

The peak month traffic data was combined with the future year (2025) 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 14.

Table 13 Peak Construction Traffic Network Impact

Ref. No.	Survey Location	Cars / LGV	HGV	Total	Cars / LGV % Increase	HGV % Increase	Total % Increase
1	C7K, Glensaugh	96	67	163	47.2%	130.0%	72.8%
2	Kintore Street	833	238	1,071	3.8%	18.9%	6.9%
3	Old Aberdeen Road / Springbank Terrace (approximately 160 m from A90 (T) / Old Aberdeen Road priority junction	1,505	362	1,867	2.1%	11.7%	3.8%
4	A90 (T), between Fordoun and Dunnottar	14,498	2,200	16,698	0.1%	0.3%	0.1%
5	A90 (T), between the A90 (T) / A937 junction and A90 (T) / B9120	16,882	4,825	21,706	0.1%	0.7%	0.2%

The total traffic movements are predicted to increase by 72.8% on the C7K, Glensaugh, which will be used by HGV vehicles transporting construction materials to the site, the removal of demolition debris and by staff travelling to and from the Proposed Development Site. All other roads identified above have increases below 7%.

The highest total HGV traffic movements will increase by 130.0% again on the C7K, Glensaugh. Whilst this increase could be considered high, it is generally caused by the relatively low HGV flows on the road at this location. The increase will see an additional 38 HGV movements per day (19 inbound trips and 19 outbound trips), over the course of a typical 12-hour day on site, this will equate to approximately 3 HGV movements per hour.

It should be noted the construction phase is transitory in nature and the peak of construction activities is short lived, occurring over a relatively short timeframe when taking account of the whole construction programme.

A review of existing theoretical 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 for a 12-hour period that makes up the Study Area. The results are summarised in Table 15.

Table 14 Theoretical Road Capacity

Ref. No.	Survey Location	2025 Baseline + Committed Development Flows (total traffic)	2025 Base + Development Flows (total traffic)	Theoretical Road Capacity (12hr)	Spare Road Capacity %
1	C7K, Glensaugh	94	163	3,360	95.1%
2	Kintore Street	1,002	1,071	3,360	68.1%
3	Old Aberdeen Road / Springbank Terrace (approximately 160 m from A90 (T) / Old Aberdeen Road priority junction	1,799	1,867	28,800	93.5%
4	A90 (T), between Fordoun and Dunnottar	16,678	16,698	81,600	79.5%
5	A90 (T), between the A90 (T) / A937 junction and A90 (T) / B9120	21,658	21,706	81,600	73.4%

The results indicate there are no road capacity issues with the addition of construction traffic associated with the Proposed Development and significant spare capacity exists within the trunk and local road network to accommodate all construction phase traffic.

7.2 Traffic Impact During Operation

The additional trips associated with the operation of the Proposed Development which are anticipated to equate to two car / LGV trips and two HGV trips, as a worst-case scenario, are not considered significant and are not considered to be above the daily levels of traffic fluctuation. The impact of the operation of the Proposed Development is therefore considered negligible.

8 Parking & Servicing Access

8.1 Parking Provision

It is not proposed to provide additional parking spaces within the solar PV and hydrogen processing plant site as part of the Proposed Development as the operation phase is not expected to require additional staff members. There is an existing parking area for staff which can accommodate approximately 12 cars and is considered sufficient for this type of development. In exceptional circumstances where the car parking capacity may be exceeded, parking may be found within the site boundary without causing a detrimental effect to the local road network or the operation of the site.

It is proposed that a total of seven electric vehicle charging points are installed within the existing car park area and there will be one Hydrogen Fuel Cell Electric Vehicle (FCEV) dispenser which is located to the west of the hydrogen plant. Refuelling of a FCEV takes approximately 3-5 minutes and there is sufficient space for approximately two / three vehicles to stay while waiting to refuel, without impeding on the operations within the site.

There will be adequate space provided along the track to the wind turbine to allow for parking and turning of the light goods vehicle which will access the wind turbine site for maintenance purposes.

8.2 Service & HGV Access

Access to the hydrogen processing plant element of the site for HGV access would be via the existing access junction at the site.

9 Construction Traffic Management Plan Proposals

9.1 CTMP Introduction

The traffic management proposals in this report will be provided to the Principal Contractor and they will be required to abide by these regulations as part of their commercial contracts with the Applicant. Failure to follow the traffic management measures proposed would be a contractual matter and could result in contractors being dismissed from the site.

Pages with information about the construction of the Proposed Development can be made available on a project website, if required by the Council. These will be updated throughout the construction period. If visitors to the site are unable to find the answer to their question in the webpages, an email address will be provided on the project website to contact the Applicant. In addition, details will also be circulated via a newsletter advising about ongoing activities. A telephone number for the Principal Contractor would be published during operational hours to resolve any traffic management problems that occur, and these calls would be logged and reported to the Applicant on a weekly basis to monitor the situation.

All contractors will be monitored through regular spot-checks to ensure they follow the approved access route(s). Access routes identified will be clearly defined in all sub-contracts and signposted.

The site access junctions to the wind turbine site and the solar PVs / hydrogen plant site will be kept clear at all times during construction and will be monitored by on-site staff to ensure vehicles do not attempt to use the area for parking.

If deemed necessary by AC, the use of a visible vehicle identification system can be employed to ensure compliance with the agreed route and driver behaviour standards. This will allow the public to identify any rogue vehicles to the site office for easy recognition and review.

The following measures would be provided to assist in managing traffic across the study area road network.

9.2 CTMP General Measures

Wherever reasonably possible, local suppliers such as quarries, and concrete works are proposed to help minimise traffic levels of the network.

The following measures would be implemented through this CTMP during the construction phase:

- contractual requirement in the BoP contract that contractors will only use the agreed access route;
- direction signage signposting traffic on the agreed access route;
- identification numbers of HGVs and vans to allow easy recognition;
- providing the public with details of how to report use of unapproved routes or driving issues of concern;
- using GPS trackers to allow the monitoring of bulk delivery vehicle movements;
- setting out site staff disciplinary measures for those who ignore the agreed access route and enforcing these throughout the construction period;
- all site vehicles will feature “white noise” reversing warning devices to reduce noise disruption when on-site;
- all materials delivery lorries (dry materials) will be sheeted to reduce dust and stop spillage on public roads;
- specific training and disciplinary measures will be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- wheel cleaning facilities will be established at the site entrance. A road sweeper would also be provided at site to ensure that the G7K, Glensaugh is kept clean at the site access junctions during the development platform works; and

- site induction for all staff instructing them on what route to site they can use to enter and exit the site and obtaining their acknowledgement that there is only one approved access route. The induction would include:
    - a tool box talk safety briefing;
    - the need for appropriate care and speed control;
    - a briefing on driver speed reduction agreements (to slow site traffic at sensitive locations through towns and villages on the route); and
    - identification of the required access routes and access junction operation and the controls to ensure no departure from these routes.

9.3 Temporary Traffic Regulation Order

A Temporary Traffic Regulation Order (TTRO) will be sought through a separate application which will seek to restrict parking along one side of Inverurie Street during abnormal load deliver periods to allow more efficient and safer deliveries of components to the site.

9.4 Road Signage

A junction signage strategy will be prepared and agreed with the AC prior to works commencing. The strategy will include the following:

- site access signage to advise other road users of increased movements at the junctions; and
- Chapter 8[12] (Traffic Signs Manual) “Slow Down” and “Heavy Plant Crossing” signage within 100 m of the two separate access junctions on the unclassified C7K, Glensaugh.

Regular maintenance will be undertaken at the sign locations to keep the plates clean and to ensure that verge vegetation does not obscure them.

9.5 Wear & Tear Agreement

An agreement is suggested to cover the cost of any abnormal wear and tear on the C7K, Glensaugh. This would be agreed with AC subject to the granting of planning approval.

The wear and tear agreement will address concerns about possible damage to the public road, verges and structures. It will be based upon condition surveys of the road to ensure that the condition of the road does not deteriorate as a result of the construction works.

Video footage of the pre-construction phase condition of the agreed area covered by the condition survey would be recorded to provide a baseline of the state of the road prior to any construction work commencing. This High Definition (HD) baseline review would inform any change in the road condition during the construction stage of the Proposed Development as it notes the existing condition of the road surface and features and details current condition.

The condition survey would feature still images for the survey and would measures specific defects to monitor their progression. Locations of points would be accurately logged using a GPS tracker.

To agree the current state of the road, the report would be agreed with AC prior to construction works commencing.

[12] Department for Transport/Highways Agency, Department for Regional Development (Northern Ireland), Transport Scotland & Welsh Assembly Government (2009): Traffic Signs Manual, Chapter 8 – Traffic Safety Measures and Signs for Road Works and Temporary Situations

Any immediate necessary repairs would be coordinated with AC. Any damage caused by traffic associated with the Proposed Development, during the construction period that would be hazardous to public traffic, would be repaired immediately.

During construction activities, a general road wear and tear review would be undertaken with AC every three months during construction. Interim reviews will be undertaken by the principal contractor on a regular basis and the progress reports issued to the Applicant.

Any damage to road infrastructure caused directly by construction traffic would be made good, and street furniture that is removed on a temporary basis would be fully reinstated.

There would be a regular road edge review and any debris and mud would be removed from the public carriageway to keep the road clean and safe during the initial months of construction activity, until the construction junction and immediate access track works are complete.

Where defects occur, the principal contactor will ensure that they maintain a stockpile of road repair material on site to undertake repair works quickly and efficiently, when authorised by AC to undertake interventions.

Upon completion of construction activities, a follow on condition review will be undertaken and a defects list prepared. Works required to reinstate the road back to its original condition would be undertaken at the Applicant's expense follow a review by AC.

There are cases where defects will need to be undertaken quickly and the contractor will have arrangements in place to respond to serious and significant defects within agreed hours.

9.6 Turning Facilities & Banksmen

For safety reasons both on-site and for other road users, the site has been designed so all vehicles can enter and exit the site in a forward gear. No vehicle shall reverse onto public roads and shall only enter / exit the site using forward gear only.

A banksman can be provided at the site access to help guide traffic within the site and to ensure health and safety access for the site. The banksman would be in radio contact with the wider site compound to advise of movements to and from the site.

Upon completion of construction works, a gate will be provided on the access track at its junction into the Proposed Development. The gate will be set back from the public road to ensure that any future HGV vehicles can stop at the gate without blocking back onto the public road.

9.7 Non-Motorised Road Users

The Principal Contractor will ensure that speed limits are always adhered to by their drivers and associated subcontractors. Advisory speed limits of 20 mph will be installed on the C7K, Glensaugh, in advance of the two separate site accesses to help reduce speeds and make drivers aware of other road users. Drivers would be made aware of the location of Drumtochy Forest which is accessed from the C7K, Glensaugh, and is used for hiking and mountain biking.

Signage will be installed on the site exit that makes drivers aware of local speed limits and reminding drivers of the potential presence of pedestrians and cyclists on the local road network. This will also be emphasised in the weekly tool box talks.

With regards to horses, it would be proposed to implement specific measures to mitigate against any potential impact on horse riding in the area, in particular along the C7K, Glensaugh. These measures are predominantly focused around the interactions between HGV traffic and horses. Horses are normally nervous of large vehicles, particularly when they do not often meet them. Horses are flight animals and will run away in panic if

really frightened. Riders will do all they can to prevent this but, should it happen, it could cause a serious accident for other road users, as well as for the horse and rider.

The main factors causing fear in horses in this situation are:

- something approaching them, which is unfamiliar and intimidating;
- a large moving object, especially if it is noisy;
- lack of space between the horse and the vehicle;
- the sound of air brakes; and
- anxiety on the part of the rider.

The British Horse Society has previously recommended the following actions that will be included in the site training for all HGV staff:

- on seeing riders approaching, drivers must slow down and stop, minimising the sound of air brakes, if possible;
- if the horse still shows signs of nervousness while approaching the vehicle, the engine should be shut down (if it is safe to do so);
- the vehicle should not move off until the riders are well clear of the back of the HGV;
- if drivers are wishing to overtake riders, please approach slowly or even stop in order to give riders time to find a gateway or lay by where they can take refuge and create sufficient space between the horse and the vehicle. Because of the position of their eyes, horses are very aware of things coming up behind them; and
- all drivers delivering to the site must be patient. Riders will be doing their best to reassure their horses while often feeling a high degree of anxiety themselves.

9.8 Abnormal Load Transport Management Plan

Before the AILs traverse the routes from the Port of Dundee, the following tasks will be undertaken to ensure load and road user safety:

- ensure any vegetation which may foul the loads is trimmed back to allow passage;
- undertake a weight review of the proposed loads with all relevant stakeholders once the turbine selection has been made;
- 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; and
- confirm the police are satisfied with the proposed movement strategy.

There are a number of traffic management measures that could help reduce the effect of abnormal load convoys.

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

The majority of potential conflicts between construction traffic and other road users will occur with abnormal load 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 abnormal loads and other road users can occur at a variety of locations and circumstances. The main potential conflicts are likely to occur:

- within Auchenblae, where the loads are required to negotiate through the town;
- along the B966, Auchenblae Road, Glen Road and C7K, Glensaugh where the roads are narrow single carriageway roads and the loads requiring the full carriageway width;
- where traffic turns at a road junctions, requiring other traffic to be restrained on other approach arms; and

- in locations where high speeds of general traffic are predicted.

Advance warning signs will be installed on the approaches to the affected road network. Information signage could be installed to help assist drivers and an example is illustrated in Figure 13. Flip up panels (shown in grey) will be used to mask over days where convoys will not be operating. When no convoys are moving, the sign will be bagged over by the Traffic Management contractor.

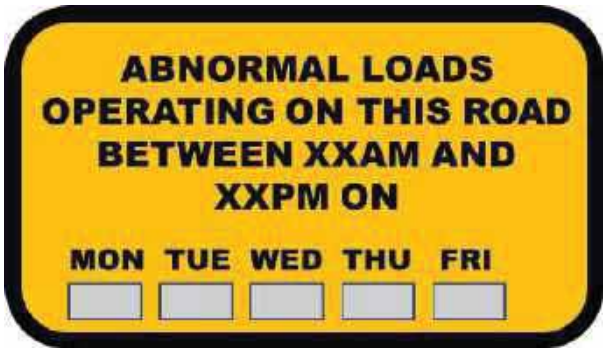


Figure 13 Example Information Sign

This signage will 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 will be agreed post consent and will form part of the Traffic Management Proposal for the project.

The Abnormal Load Transport Management Plan will 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;
- a diary of proposed delivery movements to liaise with the communities to avoid key dates such as local events such as Drumtochty Highland Games;
- a protocol for working with local businesses to ensure the construction traffic does not interfere with deliveries or normal business traffic; and
- proposals to establish a construction liaison group to ensure the smooth management of the project / public interface with the applicant, the construction contractors, the local community, and if appropriate, the police forming the committee. This committee will form a means of communicating and updating on forthcoming activities and dealing with any potential issues arising.

9.9 Public Information

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

Information will relate to expected vehicle movements from the POE through to the Proposed Development Site access junctions. This will assist residents becoming aware of the convoy movements and may help reduce any potential conflicts.

The Applicant will also ensure information was distributed through its communication team via the project website, local newsletters and social media.

9.10 Convoy System

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

The abnormal loads convoys will 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 will travel will need to be agreed with Police Scotland who have sole discretion on when loads can be moved.

9.11 Operational Phase Mitigation

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

10 Summary & Conclusions

Pell Frischmann Consultants Ltd have been commissioned by ITP Energised on behalf of James Hutton Institute (the Applicant), to prepare a Transport Statement and outline Construction Traffic Management Plan for the proposed HydroGlen: Renewable Hydrogen Powered Farm (the Proposed Development), located at Glensaugh which is approximately 20 kilometres south-west of Stonehaven, in Aberdeenshire Council administrative area.

There will be two separate access points to the Proposed Development, both of which are to be located along the C7K, Glensaugh. The existing farm access will be used during the construction and operational phase to access the solar PV and hydrogen processing plant elements of the Proposed Development and the wind turbine will be accessed from an upgraded access junction which is approximately 700 m along the road from the farm access, to the north / north-east.

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 will result in a temporary increase in traffic flows on the road network surrounding the Proposed Development. The maximum traffic effect associated with construction of the Proposed Development is predicted to occur in month five of the indicative construction programme. During this month, an average of 38 HGV movements is predicted per day and it is estimated that there will be a further 31 car / LGV movements per day to transport construction workers to and from the Proposed Development Site.

In addition, a review of the theoretical road capacity was undertaken for the study area, which showed that with the addition of construction traffic associated with the Proposed Development, there was significant spare capacity within the road network.

The traffic associated with the operational phase of the Proposed Development is minimal with occasional maintenance trips and hydrogen collection trips, which if to occur on the same day as a worst-case scenario would equate to an additional two car / LGV movements and two HGV movements.

Traffic management procedures and physical improvement works have been proposed within this report which would facilitate safer operation of the approach route to the site during construction. Determination of the final details of these traffic management measures will occur once the BoP contractor has been appointed and can be secured through an appropriately worded planning condition.

The Proposed Development will lead to a temporary increase in traffic volumes within the study area during the construction phase, while the increase in traffic volumes during the operation phase is considered negligible and is not outwith daily fluctuations in traffic flows. It is therefore concluded that there are no transport related matters which would preclude the construction and operation of the Proposed Development Site.

Appendix A Route Survey Report

Pell Frischmann

Hydroglen Wind Turbine

Route Survey Report

September 2023

107358

Report Ref.	**230519 Hydroglen Rsr**
File Path	**https://pellf.sharepoint.com/sites/EdinburghOfficeTeam/Shared Documents/General/Projects/107358 ITPEnergised HydroGlen - Glensaugh/01 - WIP/Reports/230519 Hydroglen RSR.docx**

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1 Introduction

1.1 Purpose of the Report

Pell Frischmann (PF) has been commissioned by ITP Energised to undertake a route access review of potential delivery routes for wind turbine Abnormal Indivisible Loads (AIL) associated with the construction of a wind turbine installation associated with the Hydroglen project being promoted by the James Hutton Institute at Glensugh Research Station, Aberdeenshire.

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

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

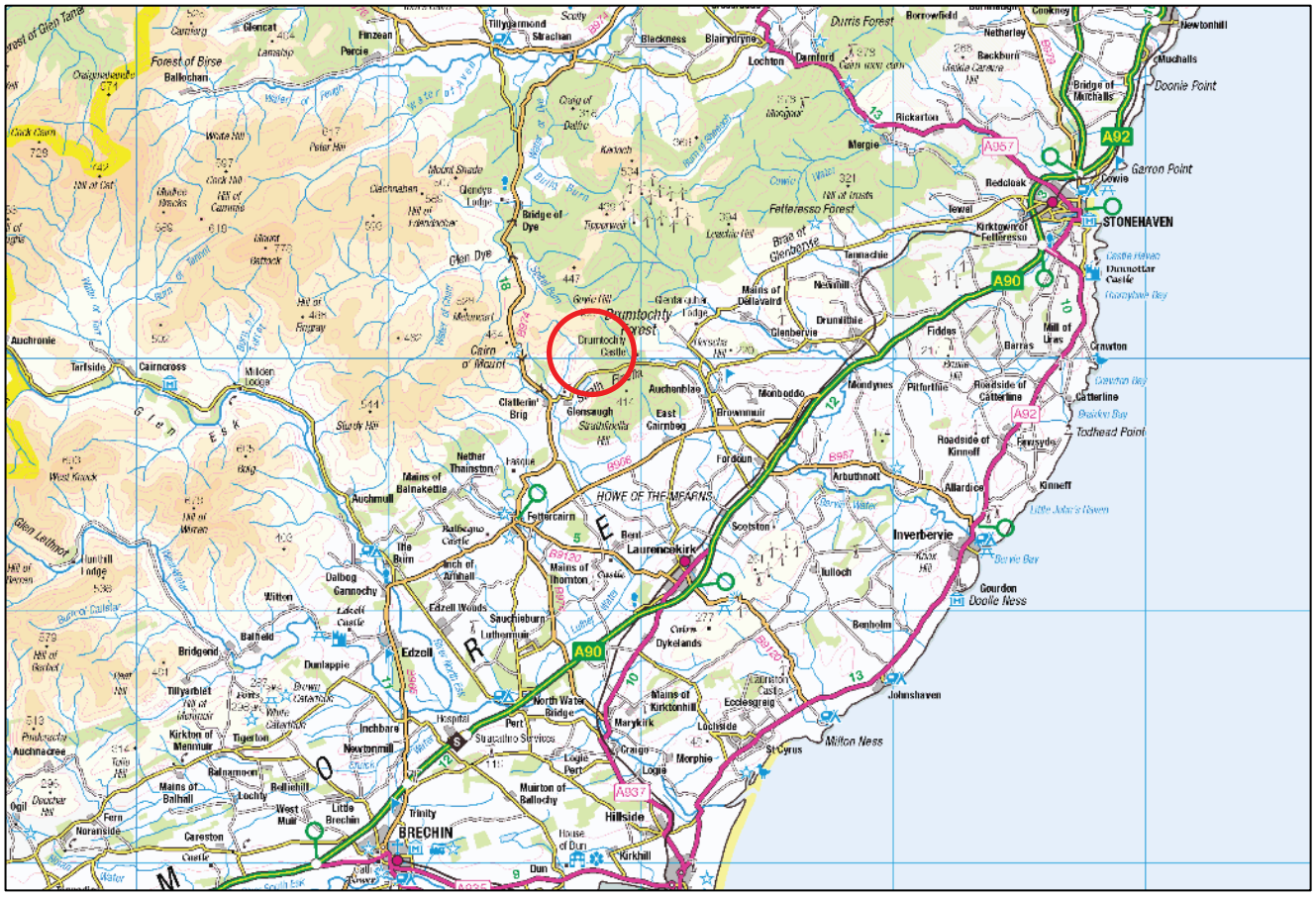
It is the responsibility of the wind turbine supplier to ensure that the entirety of the proposed access route is suitable and meets with their satisfaction. The turbine supplier will be responsible for ensuring that the finalised proposals meet with the appropriate levels of health and safety consideration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

2 Site Background

2.1 Site Location

The development site is northwest of Auchenblae, Aberdeenshire. Figure 1 illustrates the general site location.

Figure 1: Site Location Plan



2.2 Candidate Turbine

It is proposed that one 1MW (or less) wind turbine is provided at the site with a hub height between 40 and 59m. AN EWT DW61 has been considered on a 50m hub height tower (a 59m tower was also considered but was not feasible for transit to the site). The details of the components have been provided by EWT and are detailed in Table 2-1.

Table 2-1: Turbine Components Summary

Component	Length (m)	Width (m)	Height / Min Diameter (m)	Weight (t)
Blade Pack (3 blades)	29.800	2.600	2.800	9.000
Generator Ring	5.700	5.700	2.850	32.000
Nacelle	4.940	2.590	2.510	11.000
Hub	3.030	2.624	1.780	10.000
Top Tower	23.140	2.815	1.978	16.400
Base Tower	23.385	3.632	2.817	30.800

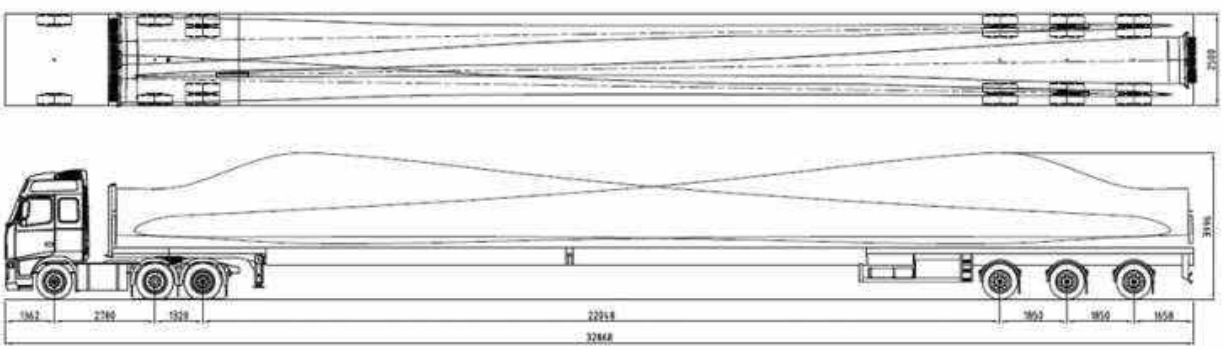
The swept path assessments have been based upon the blade pack and base tower section in its loaded configuration. The generator ring at 5.7m in diameter will need to be rotated 90 degrees at a location off the A90.

2.3 Proposed Delivery Equipment

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

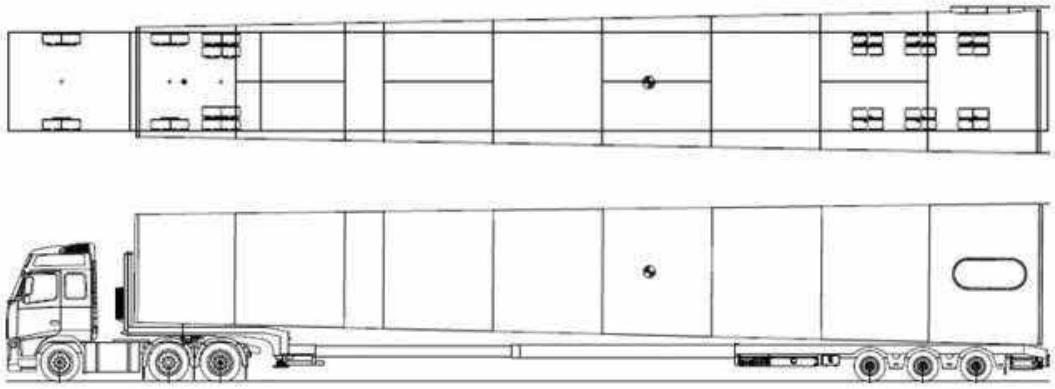
Towers would be carried in a step frame trailer along with all other loads. Examples of the transporters are provided in the following figures.

Figure 2: Blade Trailer



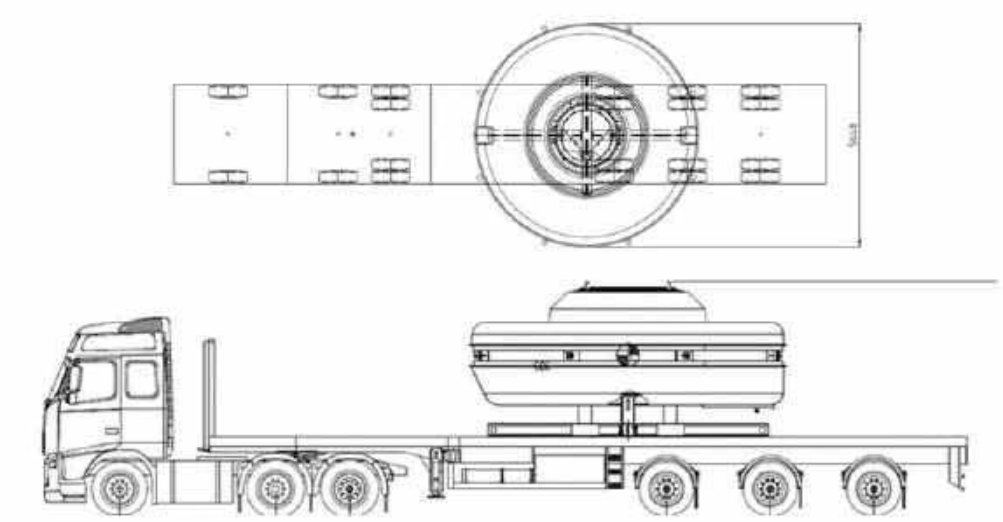
BLADES HGV/TRAIN	LENGTH: 31.42m / 32.87m			WIDTH:2.55m	HEIGHT: 4.00m	
No OF AXLES: 6	LOAD: 3x BLADES		TOTAL TRAIN WEIGHT: 35.60 Tonnes			
NO. WHEELS	2	4	4	4	4	4
AXLE WEIGHT	6t	4t	6t	3.2t	3.2t	3.2t
AXLE SPACING	2.78m	1.32m	22.1m	1.85m	1.85m	
COMMENTS:	Other small blade fittings will be co loaded with the blades					

Figure 3: Tower Trailer



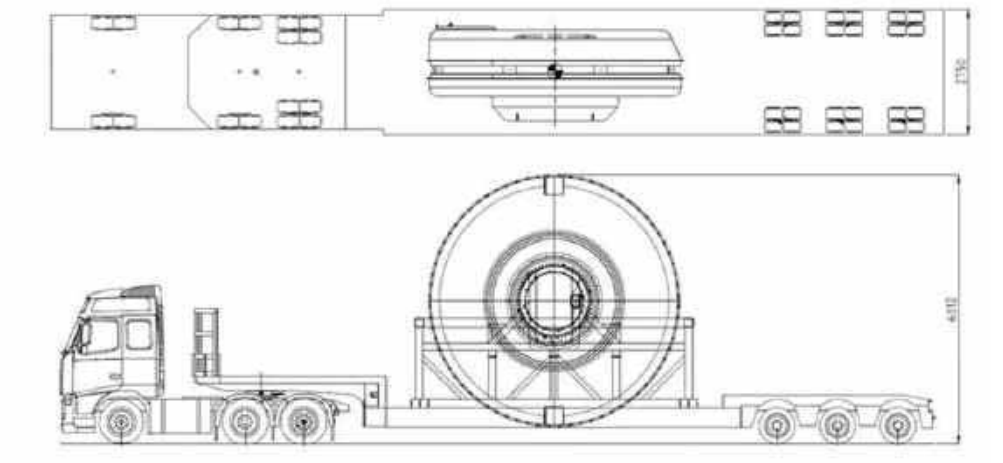
50M HH BOTTOM TOWER HGV	LENGTH:26.69m		WIDTH:3.91m		HEIGHT: 4.55m	
No OF AXLES: 6	LOADS: 1		TOTAL TRAIN WEIGHT: 54.40 Tonnes			
NO. WHEELS	2	4	4	4	4	4
AXLE WEIGHT	6.2t	6.7t	11.5t	10t	10t	10t
AXLE SPACING	2.78m	1.32m	16.61m	1.36m	1.36m	-
COMMENTS:	Fasteners for the tower section can be co loaded inside the tower during transport.					

Figure 4: Generator Ring Trailer (Flat)



GENERATOR HGV/TRAIN (H)		LENGTH:17.00m		WIDTH:5.65m		HEIGHT: 4.40m	
No OF AXLES: 6		LOADS: 1		TOTAL TRAIN WEIGHT: 55 Tonnes			
NO. WHEELS	2	4	4	4	4	4	
AXLE WEIGHT	7t	7.5t	10.5t	10t	10t	10t	
AXLE SPACING	3.20m	1.40m	8.50m	1.36m	1.36m	-	
COMMENTS:	Ground clearance overhang of the generator is approx. 1.60m Access must be available up to a height of 4.4m in the air. Access from the centre of the carriage way must be available at 2.85m width at either side to accommodate the generator width.						

Figure 5: Generator Ring Trailer (Raised)



GENERATOR HGV/TRAIN (V)		LENGTH:19.66m		WIDTH:2.75m		HEIGHT: 6.02m	
No OF AXLES: 6		LOADS: 1		TOTAL TRAIN WEIGHT: 66.70 Tonnes			
NO. WHEELS	2	4	4	4	4	4	
AXLE WEIGHT	7.8t	12t	16t	10.3t	10.3t	10.3t	
AXLE SPACING	2.78m	1.32m	10.65m	1.36m	1.36m	-	
COMMENTS:	Vertical generator transport can only be completed when agreed and special arrangements are made with EWT. A transhipment area is required near the delivery site with a crane hard stand to lift the generator in the vertical frame before transport to the turbine location.						

3 Access Route Review

3.1 Port of Entry

The proposed Port of Entry (POE) is the Port of Dundee. The port has been used by renewables deliveries once in the past for Mid Hill Wind Farm and the access route has been designed to accommodate AIL deliveries unlike other nearby ports such as Aberdeen and Montrose.

3.2 Proposed Access Route

The proposed access route to site is detailed below and illustrated in Figure 6:

- Components exit the port and will cross the roundabout onto Strips of Craigie Road;
- Loads will then join the A972 Kingsway and will proceed to the west;
- To avoid significant roadworks at the A90 Forfar Road Junction, loads will continue west before undertaking a U Turn at the Macalpine Road Roundabout. Loads will then proceed eastbound on the A90;
- At the Forfar Road Junction, loads will turn left and will continue northbound on the A90;
- Loads will depart at the A90 at the Auchenblae Junction and will join the B966 southbound;
- Loads will then turn right onto the Aucheblae Road and will continue northbound, passing through the village;
- Loads will turn left onto the C7K Glen Road. Loads will follow the C7K through to the Drumtochty Castle junction;
- Loads will continue southwest until reaching the site access junction at Loch Saugh and turn right at the junction. From there they will proceed to the wind turbine location using upgraded and new private access tracks.

Figure 6: Proposed Access Route

An alternative access option from the A90 via Fordoun has also been undertaken in case the Abbeyton rail bridge replacement project is delayed. In this instance, loads would depart at the Fordoun junction and will proceed to the B966 via Old Aberdeen Road.

3.3 Route Constraints

The constraints noted during the access route review are provided in the tables below. These cover all constraints from the port access gate through to the A77 / U90w junction. No consideration of the transport issues within the port or development site have been undertaken and this includes the design of the site access junction.

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

Table 3-1: Constraint Points and Details

POI	Key Constraint	Details
1	**Exit from Port of Dundee** 	Loads will exit the port gate using the AIL access onto Stannergate Road. No physical mitigation works are required. Loads will then proceed northbound onto Broughty Ferry Road under Police escort.
2	**Strips of Craigie Roundabout** 	Loads will proceed ahead onto Strips of Craigie Road at the junction. A swept path assessment has been undertaken and indicates that the existing AIL access track through the roundabout central island should be reused. All existing street furniture currently blocking the track should be removed from its sockets to allow loads to pass. Loads will continue northbound on Strips of Craigie Road.
3	**Scott Fyffe Roundabout** 	Loads will enter the Scott Fyffe Roundabot and will take the third exit using the AIL access track on the splitter islands. A swept path assessment has been undertaken and indicates that the existing AIL access track through the roundabout approach splitter islands should be reused. All existing street furniture currently blocking the track should be removed from its sockets to allow loads to pass. Loads will continue westbound the A972.
4	**Milton Retail Park Roundabout** 	Loads will proceed ahead at the junction, taking the second exit. A swept path assessment has been undertaken and indicates that no physical mitigation work is required. Loads will however require access to all entry, circulating and exit lanes at the junction.

POI	Key Constraint	Details
5	**A972 / Pitkerro Road Roundabout** 	Loads will proceed ahead at the junction, taking the third exit. A swept path assessment has been undertaken and indicates that no physical mitigation work is required. Loads will however require access to all entry, circulating and exit lanes at the junction. Loads will continue westbound, joining the A90 westbound. Due to constraints at the A90 Forfar Road Junction, loads will need to undertake a U Turn at POI 9. Loads will then approach POI 9 from the west.
6	**Old Glamis Roundabout** 	**Westbound:** Loads will proceed ahead at the junction, taking the second exit. A swept path assessment has been undertaken and indicates that no physical mitigation work is required. Loads will however require access to all entry, circulating and exit lanes at the junction. **Eastbound:** Loads will proceed ahead at the junction, taking the second exit. A swept path assessment has been undertaken and indicates that no physical mitigation work is required. Loads will however require access to all entry, circulating and exit lanes at the junction.
7	**Strathmartine Roundabout** 	**Westbound:** Loads will proceed ahead at the junction, taking the second exit. A swept path assessment has been undertaken and indicates that no physical mitigation work is required. Loads will however require access to all entry, circulating and exit lanes at the junction. **Eastbound:** Loads will proceed ahead at the junction, taking the second exit. A swept path assessment has been undertaken and indicates that no physical mitigation work is required. Loads will however require access to all entry, circulating and exit lanes at the junction.
8	**Macalpine Road Roundabout** 	Loads will use the roundabout to undertake a U turn. A swept path assessment has been undertaken and indicates that no physical mitigation work is required. Loads will however require access to all entry, circulating and exit lanes at the junction. Loads will then pass back along the A90 through to POI 9**.**
9	**A90 Forfar Road Junction** 	Loads will turn left at the junction, proceeding northbound on the A90. A swept path assessment has been undertaken and indicates that no physical mitigation work is required for the tower and blade loads. Loads will however require access to all entry, circulating and exit lanes at the junction. The EWT generator ring is 5.7m in diameter and will require the pedestrian guardrails on the northeast corner to be removed to allow passage. Loads will continue northbound on the A90.

POI	Key Constraint	Details
10	**A90 Fintry Drive Roundabout** 	Loads will proceed ahead at the junction, taking the second exit. A swept path assessment has been undertaken and indicates that no physical mitigation work is required. Loads will however require access to all entry, circulating and exit lanes at the junction.
11	**A90 Emmock Roundabout** 	Loads will proceed ahead at the junction, taking the second exit. A swept path assessment has been undertaken and indicates that no physical mitigation work is required. Loads will however require access to all entry, circulating and exit lanes at the junction. Loads will continue northbound on the A90
12	**A90 / B966 Junction** 	Loads will depart the A90 at its junction with the B966. A swept path assessment has been undertaken and indicates that no physical works are required. Loads will however require access to all A90 lanes to make the turn. The original Abbeyton Rail Bridge has been demolished, however its replacement has been funded and work on the new structure is expected to be complete in 2024. Should the bridge replacement not be available for AIL deliveries, the minor diversion noted in Table 3-2 will be used.
13	**B966 Junction** 	Loads will turn right at the junction. A swept path assessment has been undertaken and indicates that no physical works are required. Loads will however require access to all lanes at the junction to make the turn. Loads will continue westbound on the B966.

POI	Key Constraint	Details
14	**Potential Generator Ring Station** 	The EWT generator ring is very wide at 5.7m. To avoid significant levels of physical mitigation in Auchenblae and the wider unclassified road network, it is proposed that the generator ring is rotated 90 degrees (see Figure 5). An area of land at the former airbase runway is suggested as a suitable area in which to undertake this transfer. The agreement of the industrial operators at this location will be required, noting that the operator to the north already has an EWT turbine on their land. In the upright position, the generator ring is 6.1m in height. All overhead restrictions should be trimmed back in the case of vegetation. Overhead utilities may need temporary propping or diversion during this one delivery from this point onwards to site. Engagement with the operators should take place once the turbine model has been agreed, post determination. Blade and tower loads are unaffected and will continue through this point, straddling the centre line of the road where the lead escorts should hold back oncoming traffic.
15	**B966 Bend** 	Loads will proceed ahead at this bend on the B966. Loads will straddle the centre line of the road where the lead escorts should hold back oncoming traffic in advance of the bend.
16	**B966 / Auchenblae Road Junction** 	Loads will turn right on the unclassified road leading to Auchenblae. A swept path assessment has been undertaken and indicates that loads will oversail the southern and western verges of the junction. No physical mitigation works are required at these two locations. Loads will over-run the inside of the junction, where two road signs and a fence will need to be removed and load bearing surface provided. Low overhead utilities will need to be raised to allow the generator ring to pass. Early engagement with utility providers is recommended.
17	**Auchenblae Road Bend** 	Loads will continue ahead through the bend proceed to Auchenblae. A swept path assessment has been undertaken and indicates that loads will oversail the inside of the southwestern verge. Loads will require a load bearing surface on the splitter island and the northern verge.

POI	Key Constraint	Details
18	**Kintore Street Junction** 	Loads will turn right at the junction onto Kintore Street. A swept path assessment has been undertaken. Loads will oversail the inside of the bend where parking will need to be suspended. A wall and railing will need to be temporarily removed. Loads will over-run the western footway where a temporary load bearing surface should be laid and the kerbs protected. Parking should be suspended on the western edge of Kintore Street during the deliveries at this location. Low overhead utilities will need to be raised to allow the generator ring to pass. Early engagement with utility providers is recommended.
19	**High Street, Auchenblae** 	Loads will continue ahead on the High Street in Auchenblae. A temporary parking suspension on both sides of the road is required during the delivery of the towers and blades (potentially over just one short period on one day). A Temporary Traffic Regulation Order (TTRO) will be required and early engagement with Aberdeenshire Council is suggested. Low overhead utilities will need to be raised to allow the generator ring to pass. Early engagement with utility providers is recommended.
20	**Glen Road Junction** 	Loads will turn left at the junction and will enter Glen Road. A swept path assessment has been undertaken and indicates that parking will need to be suspended to allow loads access to both sides of the road. The clearances to a utility pole in the east footway of the High Street should be reviewed during the test run. Loads will require a load bearing surface in the northern verge. Existing underground services will need to be protected and one lighting column should be removed. Low overhead utilities will need to be raised to allow the generator ring to pass. Early engagement with utility providers is recommended.
21	**Glen Road Bend** 	Loads will proceed ahead on the Glen Road / C7K. A swept path assessment has been undertaken and indicates that no physical works are required. Loads will however require access to all lanes at the bend to make the turn. Low overhead utilities will need to be raised to allow the generator ring to pass. Early engagement with utility providers is recommended.
22	**Glen Road / C7K Bend** 	Loads will proceed ahead through the bend. The tree canopy should be trimmed to allow a 6.5m head height above the road through to the site access junction. Low overhead utilities will need to be raised to allow the generator ring to pass. Early engagement with utility providers is recommended.

POI	Key Constraint	Details
23	**C7K Junction** 	Loads will continue ahead on the C7K, turning to the right. A swept path assessment has been undertaken and indicates that loads will require a load bearing surface on the inside of the junction. One overhead utility pole should be relocated and underground services protects. Vegetation trimming will be necessary. Loads will over-run to the south where load bearing plates are suggested in the verge / field access. Low overhead utilities will need to be raised to allow the generator ring to pass. Early engagement with utility providers is recommended. Loads will continue westbound on the C7K through to the site access. It is suggested that oncoming traffic is held to the west of the access junction to allow loads full access to the road. Overhead tree canopy trimming is required as is engagement with utility providers.
24	**South of Drumtochty Castle** 	Loads will proceed west. The tree canopy should be trimmed at this location to ensure that there is a 6.5m clear head height. Trimming works can be subject to ecological and time constraints and early engagement with the relevant authorities is recommended.
25	**North of Garrold Wood** 	Loads will continue west through a left bend. A swept path assessment has been undertaken and indicates that no further mitigation is required at this location apart from tree canopy trimming to ensure a 6.5m clear head height.
26	**South of Colt Moss** 	Loads will continue west through a right bend. A swept path assessment has been undertaken and indicates that no further mitigation is required at this location apart from tree canopy trimming to ensure a 6.5m clear head height.

POI	Key Constraint	Details
27	**North of Holeglen Wood** 	Loads will continue west through a right bend. A swept path assessment has been undertaken and indicates that overgrown trees and vegetation should be trimmed from the northern verge of the road.
28	**South of Friar's Glen** 	Loads will continue west through a left bend. A swept path assessment has been undertaken and indicates that no further mitigation is required at this location apart from tree canopy trimming to ensure a 6.5m clear head height.
29	**North of Strathfinella Hill** 	Loads will continue west through a left bend. A swept path assessment has been undertaken and indicates that no further mitigation is required at this location apart from tree canopy trimming to ensure a 6.5m clear head height. The vertical profile of the road at this section should be assessed during a test run to ensure there are no vertical clearance issues.
30	**Proposed Site Access Junction** 	Loads will turn right into the existing access junction. Vehicles will oversail the southern verge of the road on approach. Loads will overrun and oversail the eastern verge as they navigate the junction. Land reprofiling is required to allow the vehicle to oversail. A load bearing surface should be laid. One gate, one wall section and a fence should be removed. Vegetation should be cleared. Loads will oversail the western verge of the junction where two gates and a section of fence should be removed. Tree canopy trimming in advance of the junction is required. Following the right turn loads will proceed east on a newly constructed track towards the turbine location.

3.4 Alternative A90 Access

An alternative access option from the A90 via Fordoun has been undertaken in case the Abbeyton rail bridge replacement project is delayed.

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

Table 3-2: Alternative A90 Access Constraint Points and Details

POI	Key Constraint	Details
31	**A90 Fordoun Junction** 	Loads will depart the A90 at the Fordoun junction. A swept path assessment has been undertaken and indicates that no physical works are required. Loads will however require access to all A90 lanes to make the turn. Parking suspensions on the Old Aberdeen Road will be required for the generator ring deliveries within Fordoun.
32	**Old Aberdeen Road Rail Bridge** 	Loads will proceed ahead on the Old Aberdeen Road and will pass under the railway bridge. A swept path assessment has been undertaken and indicates that no physical works are required. Loads will however require access to both lanes of the road.
13	**B966 Junction** 	Loads will turn left onto the B966. A swept path assessment has been undertaken and indicates that a load bearing surface will be required and one sign and the fencing will need to be removed. Underground services will need to be protected, where encountered. From this location, loads would proceed to site as per the previously described route.

3.5 Swept Path Assessment Results and Summary

The detailed swept path drawings for the locations assessed are provided in Appendix B for review. The drawings in Appendix B illustrate tracking undertaken for the worst-case loads at each location.

The colours illustrated on the swept paths are:

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

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

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

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

3.6 Weight Review

A weight review will need to be undertaken with the relevant ESDAL contacts are noted in Table 3-2 once the turbine selection has been made.

Table 3-3: ESDAL Contacts

Organisation	Email Address
Aberdeenshire Council	abnormal.loads@aberdeenshire.gov.uk
Amey North East Trunk Road Unit	abnormal-loadne@amey.co.uk
Police Scotland	OSDAbnormalLoadsScotland@scotland.pnn.police.uk
Network Rail	AbLoadsESDAL@networkrail.co.uk
Historic Rail Estate	rsgbrb@jacobs.com
Transport Scotland	AbnormalLoads@transport.gov.scot
Dundee City Council	mark.cobb@dundeecity.gov.uk

3.7 Land Ownership

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

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

The developer will need to secure all necessary land rights prior to deliveries commencing.

3.8 Summary Issues

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

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

4 Summary

4.1 Summary of Access Review

PF has been commissioned by ITPEnergised to prepare a Route Survey Report to examine the issues associated with the transport of AIL turbine components to a wind turbine installation near Glensaugh Research Station as part of the Hydroglen project.

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

This report has been based upon a worst case of an EWT DW61 turbine sections. A turbine with smaller components would potentially reduce the extents of mitigation works and the need for third party land requirements, however this would need to be balanced against the availability and commercial outputs of a possible alternative machine.

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

The developer will need to secure third party land rights to access the proposed site.

4.2 Further Actions

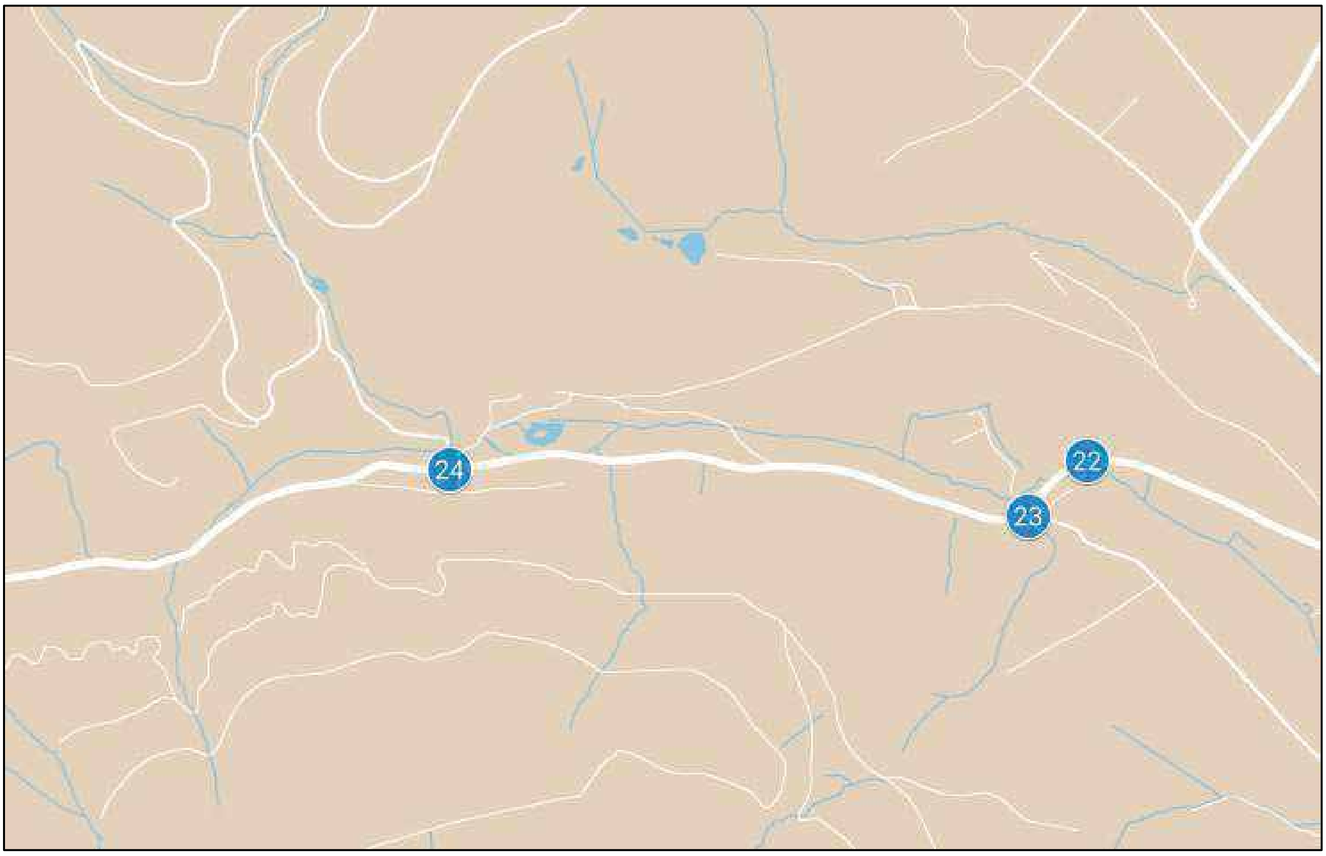
The following actions are recommended to pursue the transport and access issues further:

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

Appendix A Points of Interest

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

https://www.google.com/maps/d/edit?mid=1iTVzsh6D-uaZZs_W4fjK5UttS1XmZAg&usp=sharing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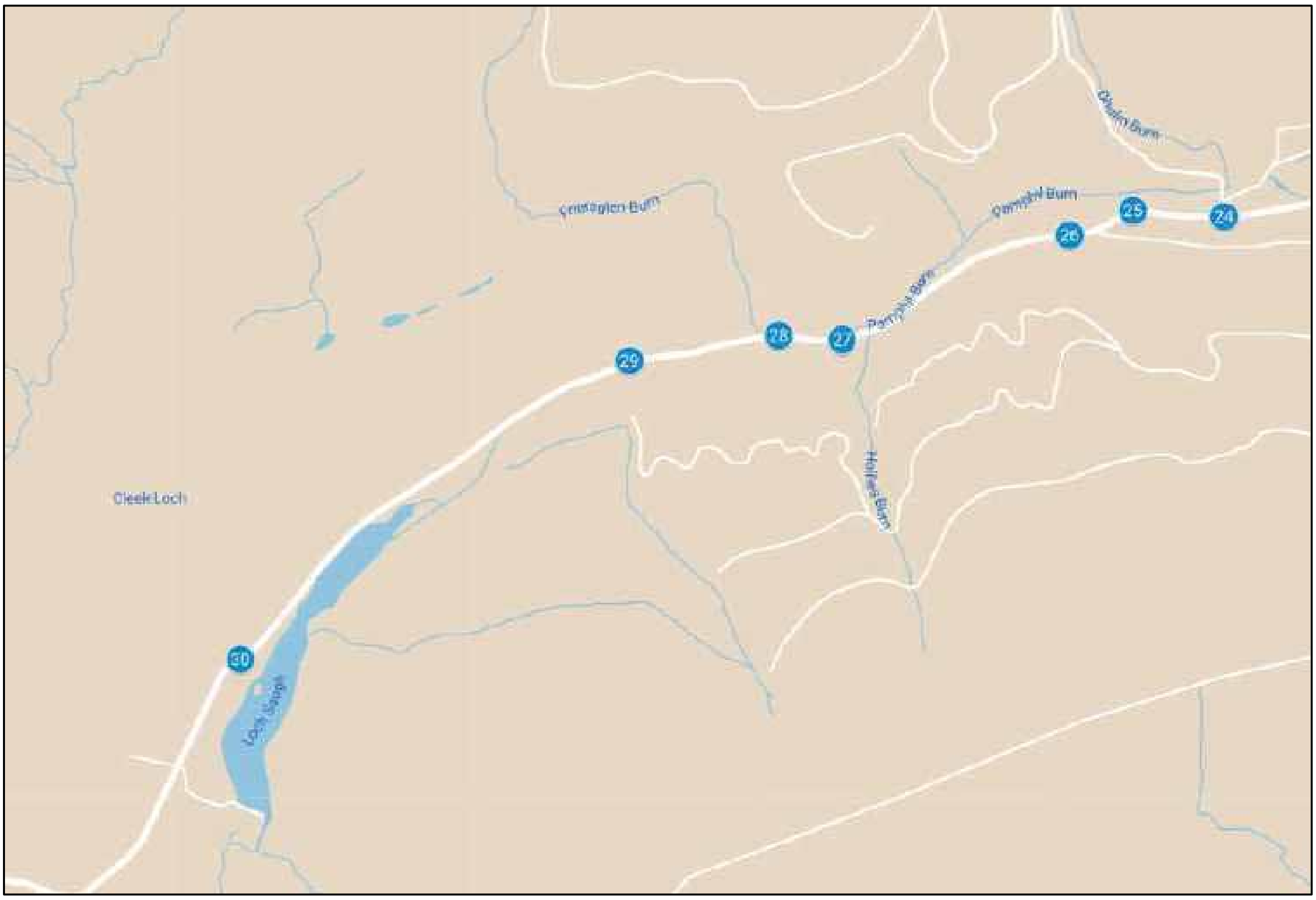
22
23


25
24
26
28
27
29
Cleek Loch
30


Fordoun
A90
26
25
B967
B967
A90

Appendix B Swept Path Assessment Drawings

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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Strips of Craigie Roundabout

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		2

Scale: Custom @ A3

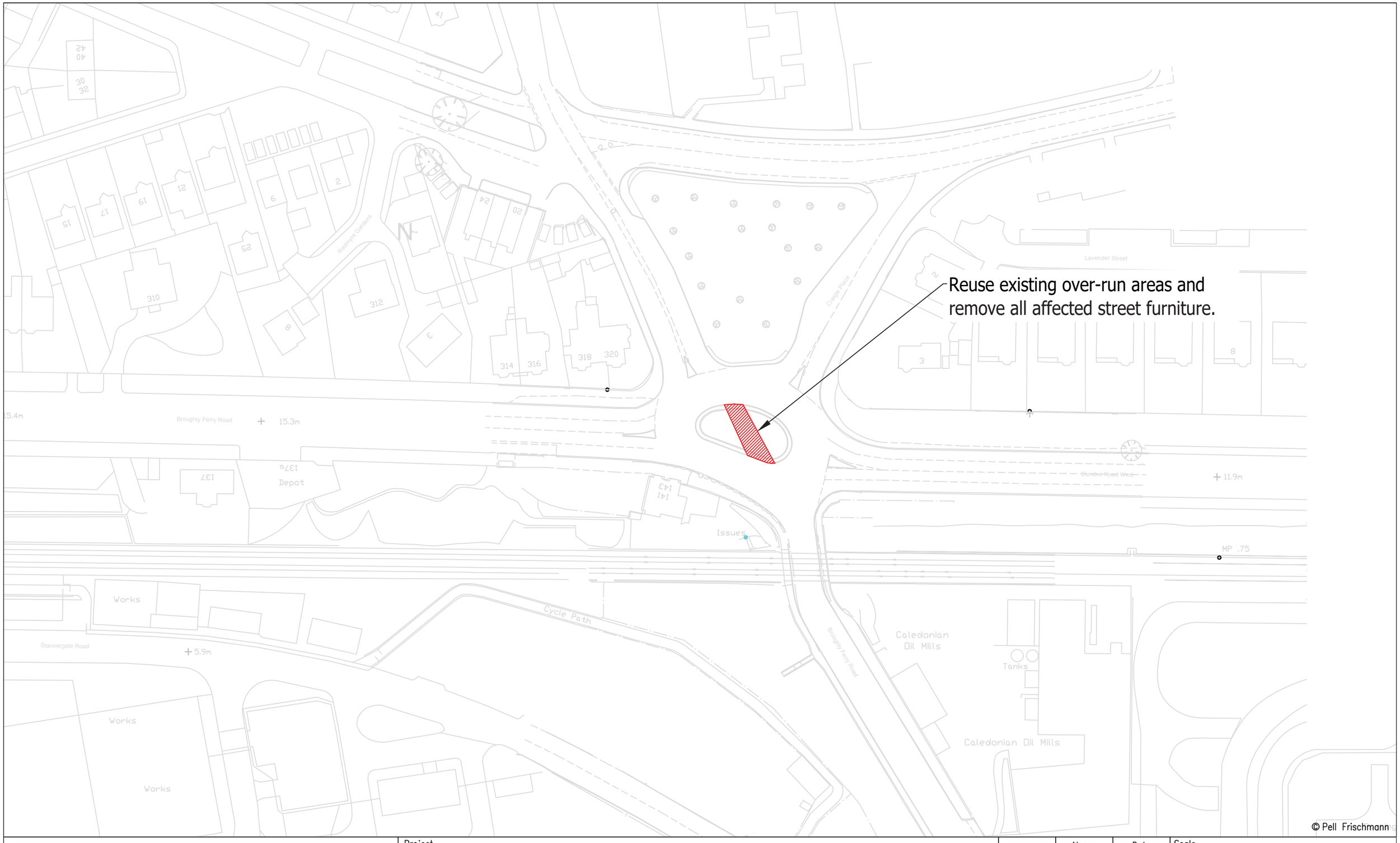
File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK01

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

Revision: 0



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Strips of Craigie Roundabout

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		2

Scale: 1:1000 @ A3

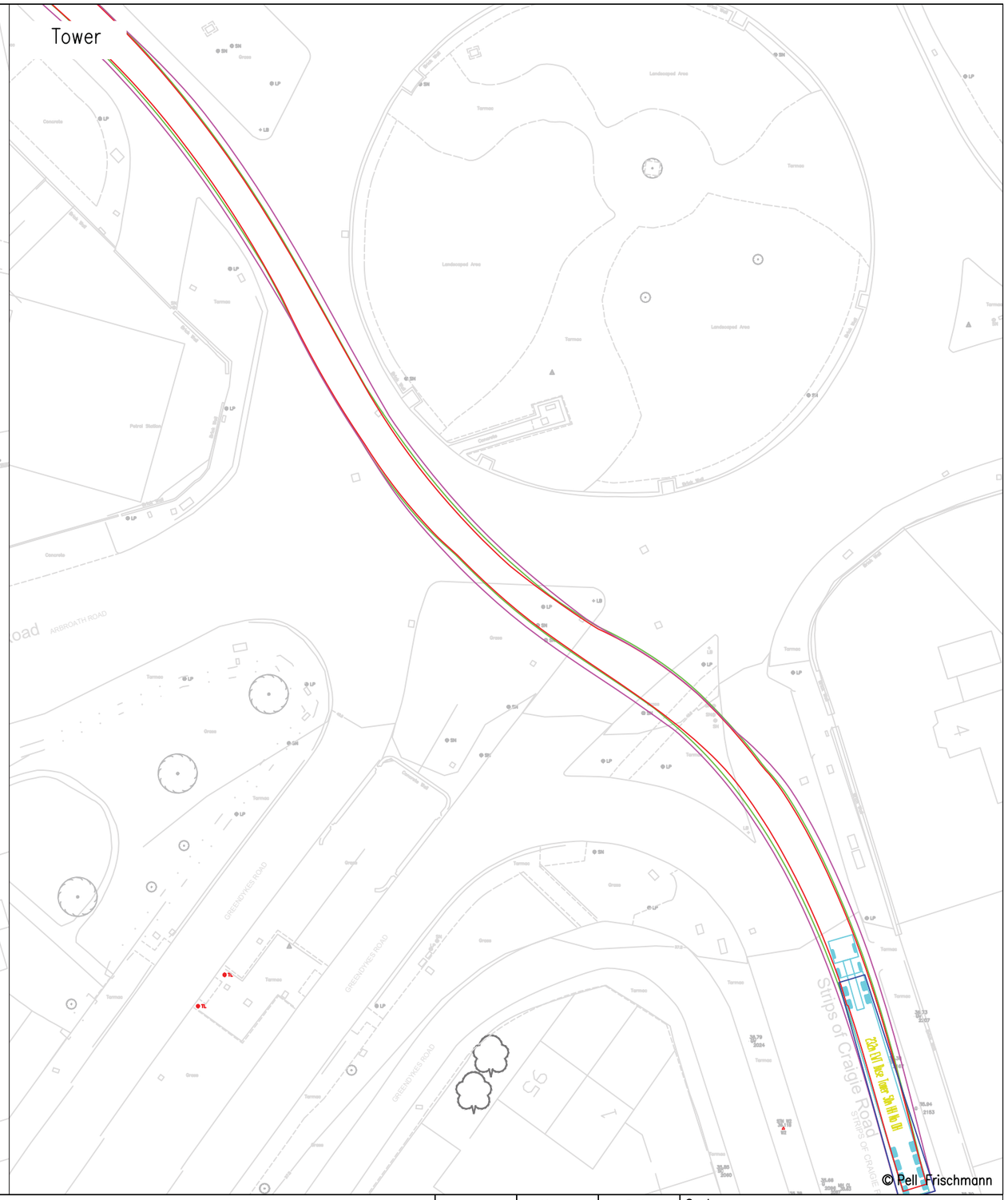
File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK01A

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

Revision: 0



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Scott Fyffe Roundabout

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		3

Scale: Custom @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK02

Notes:
1. All mitigation is subject to confirmation through a test run.
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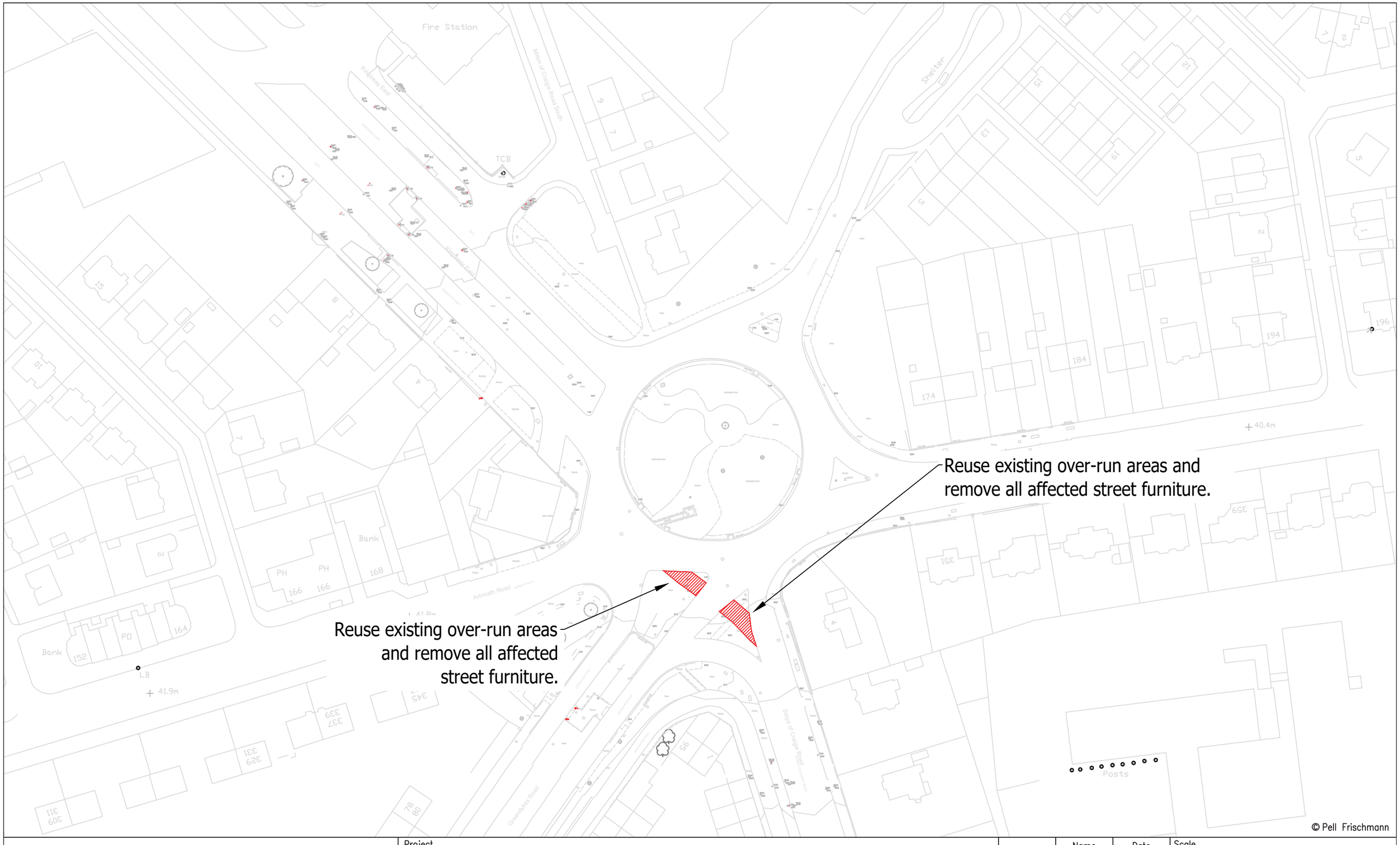
Revision: 0



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Scott Fyfe Roundabout

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		3

Scale: 1:1000 @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK02A

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: 0

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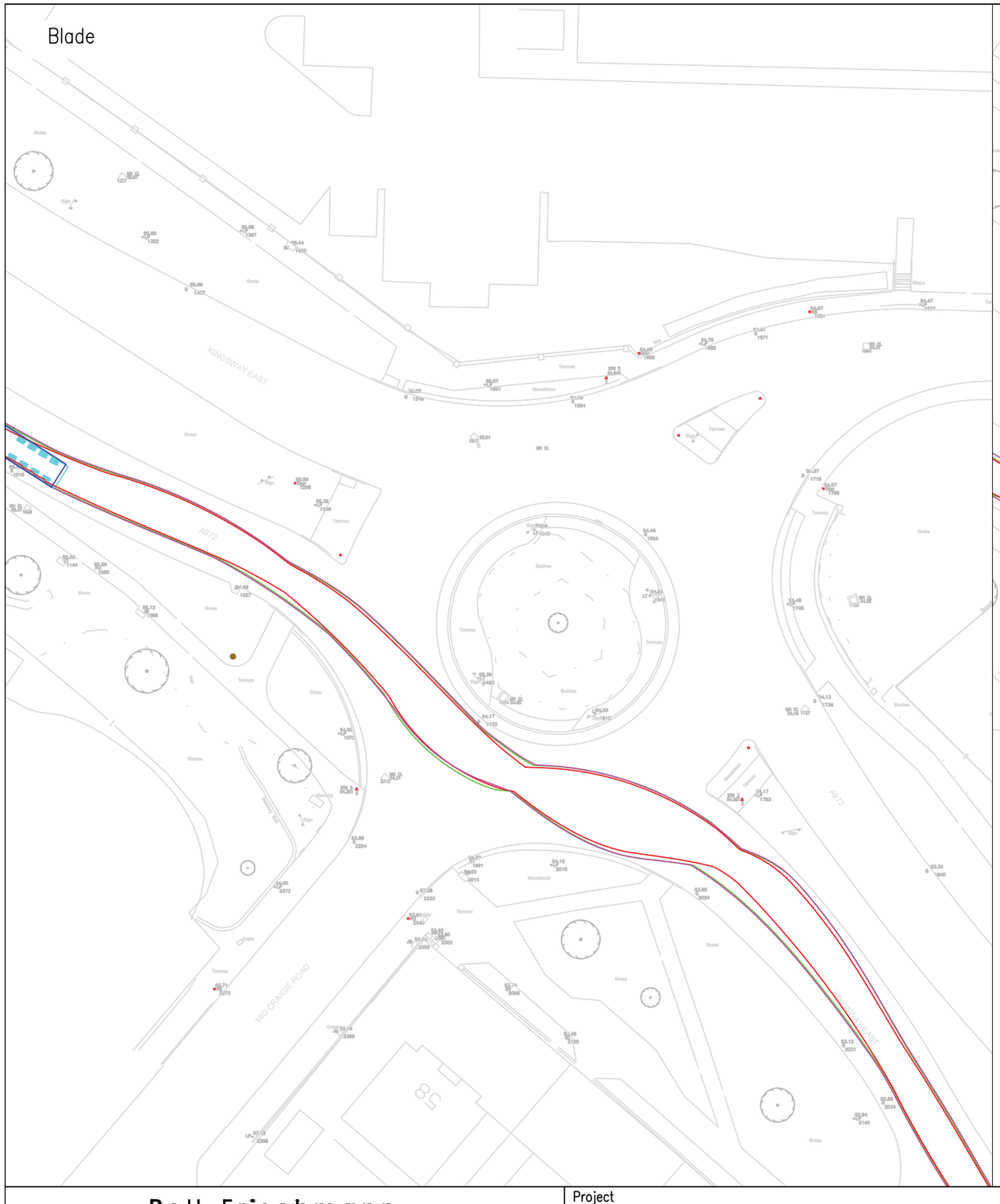
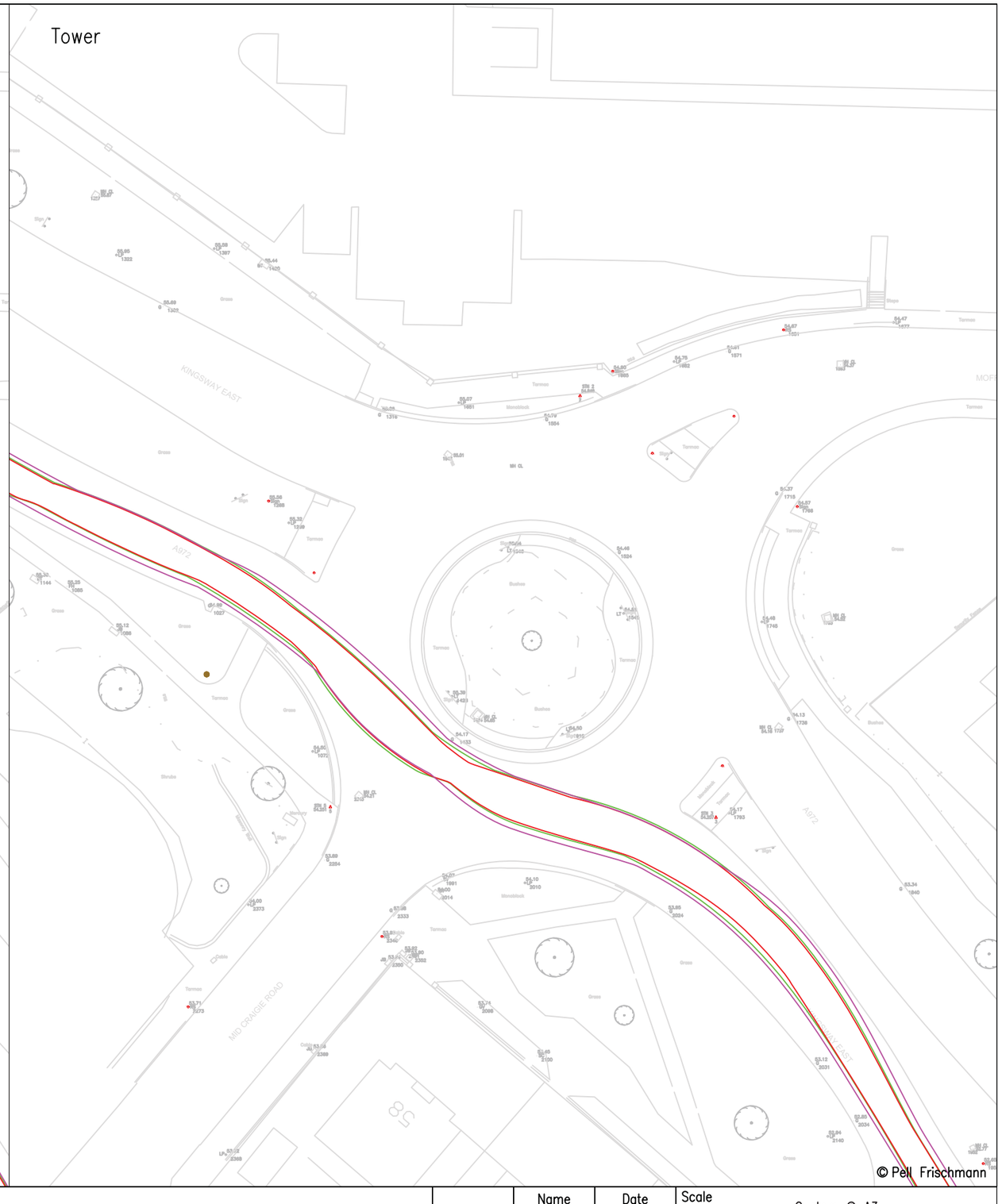


Tower



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Milton Retail Park Roundabout

NO MITIGATION REQUIRED

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		4

Scale: Custom @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK03

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: 0

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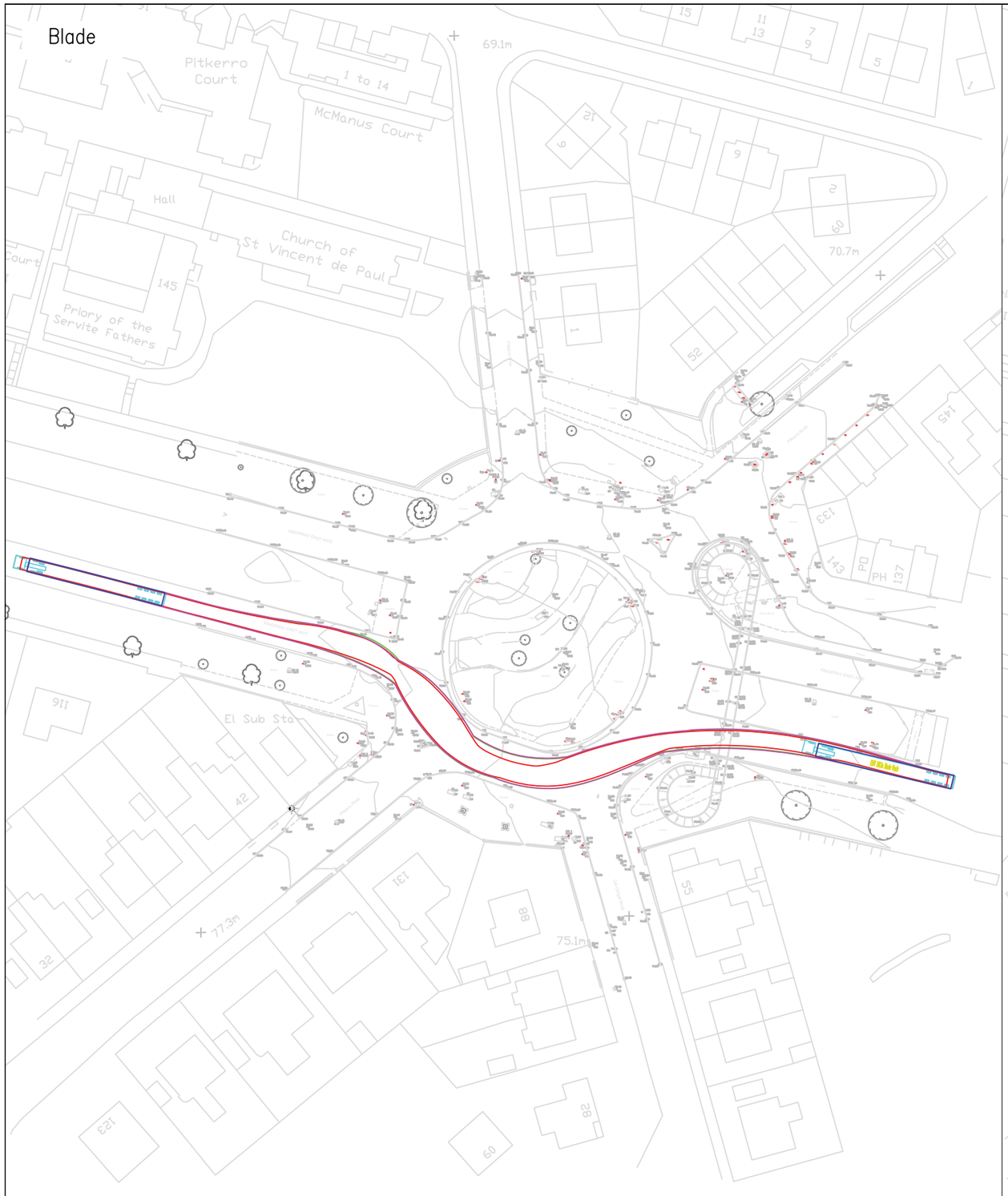

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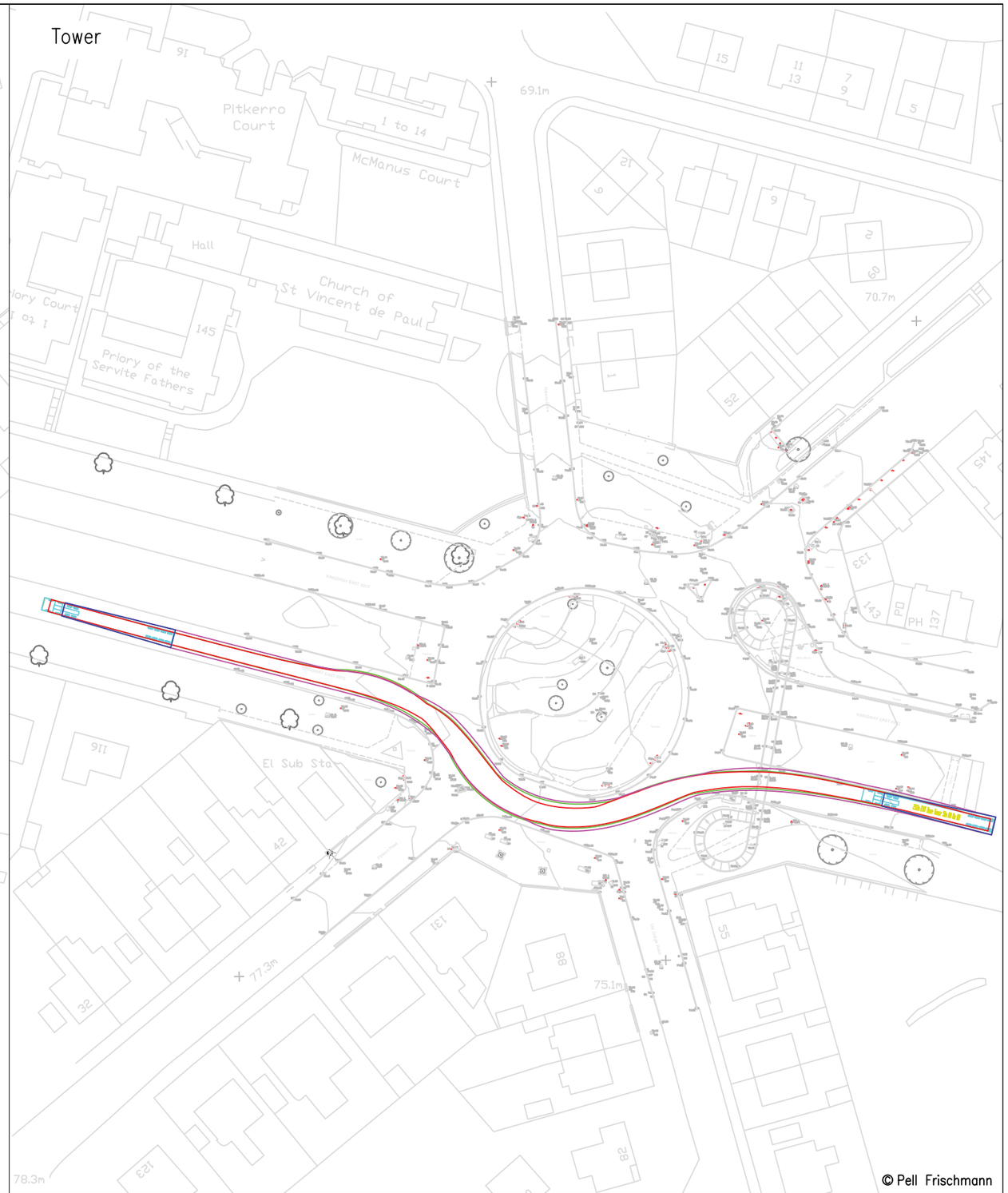

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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Pltkerro Road Roundabout

NO MITIGATION REQUIRED

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		5

Scale: 1:1000 @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK04

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: 0

Blade

Tower

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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Old Glamis Road Roundabout

NO MITIGATION REQUIRED

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		6

Scale: 1:1000 @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

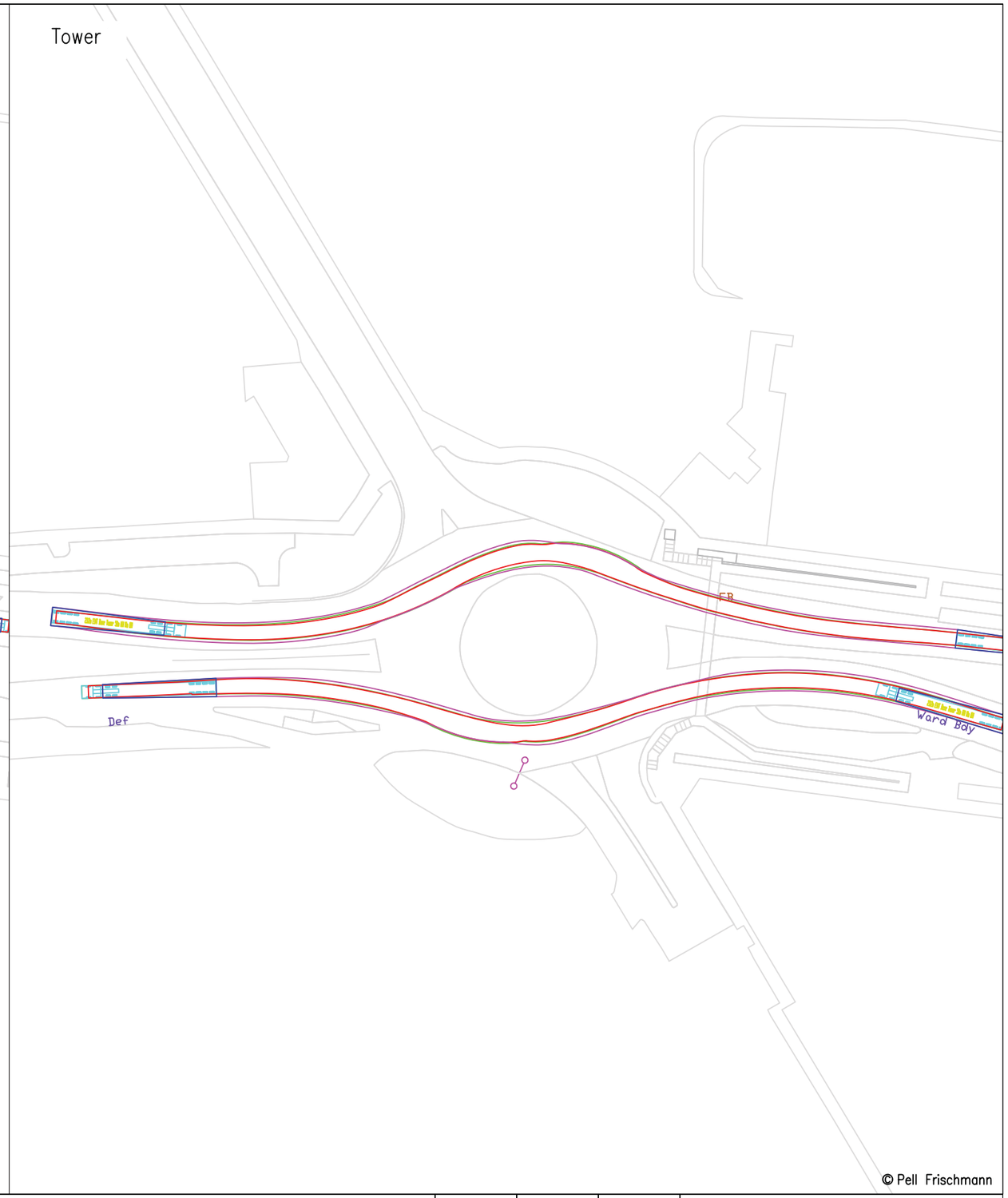
Drawing No.: SK05

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

Revision: 0

Blade

Tower



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Strathmartine Road Roundabout

NO MITIGATION REQUIRED

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		7

Scale: 1:1000 @ A3

File No.: 230910 tracking – public.dwg

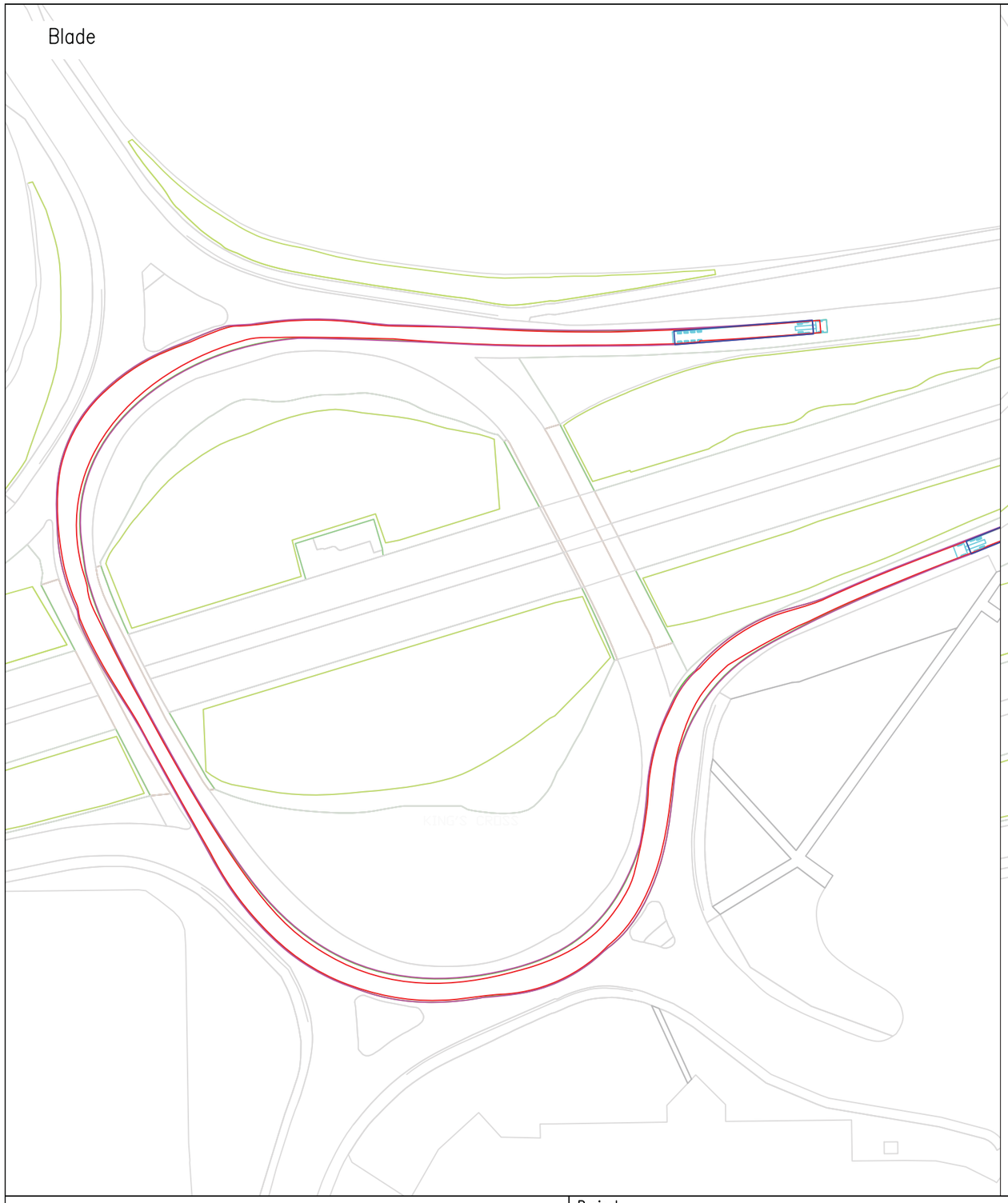
Drawing Status: Draft

Drawing No.: SK06

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

Revision: 0

Blade



Tower

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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Macalpine Road Roundabout

NO MITIGATION REQUIRED

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		8

Scale: 1:1000 @ A3

File No.: 230910 tracking – public.dwg

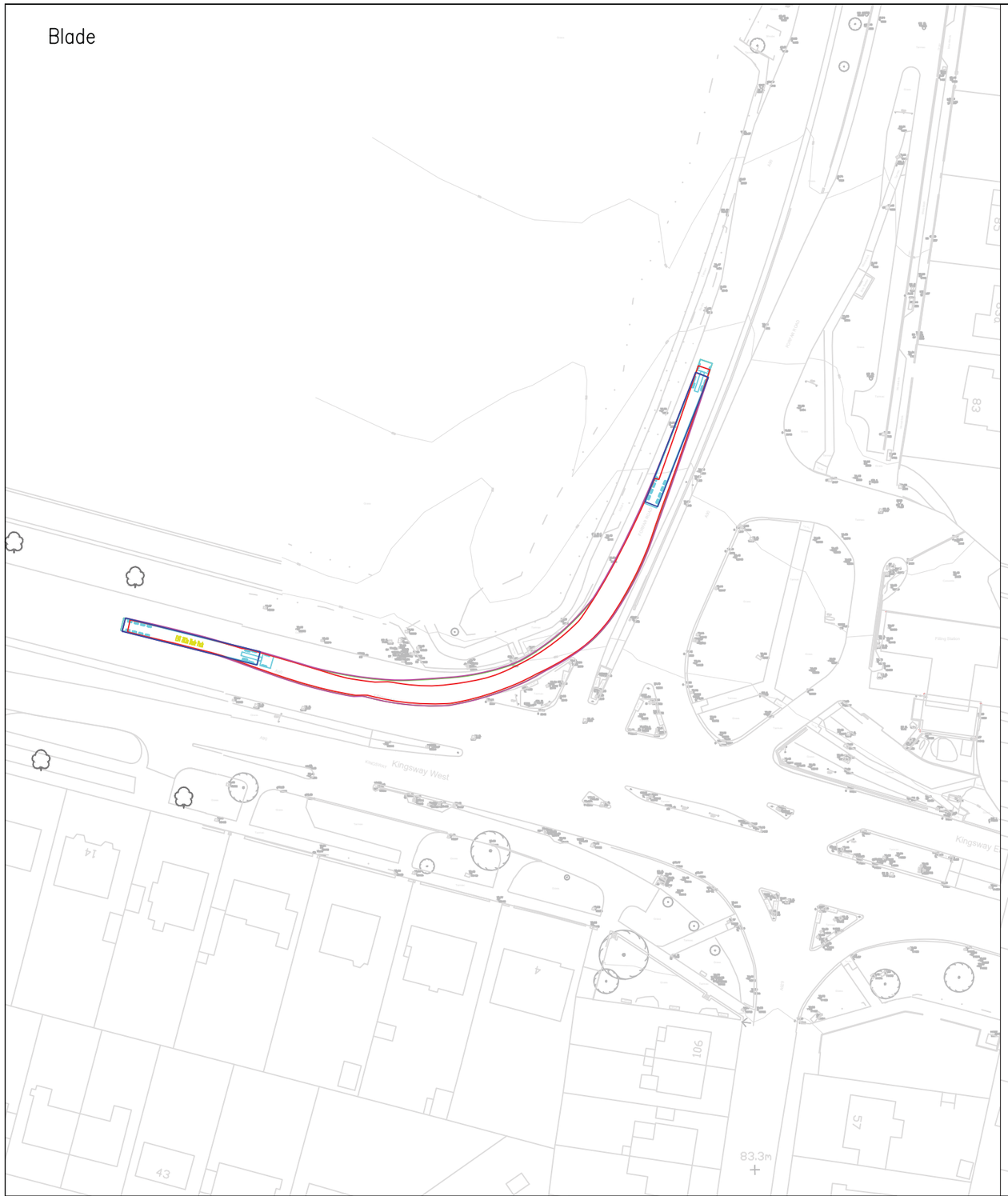
Drawing Status: Draft

Drawing No.: SK07

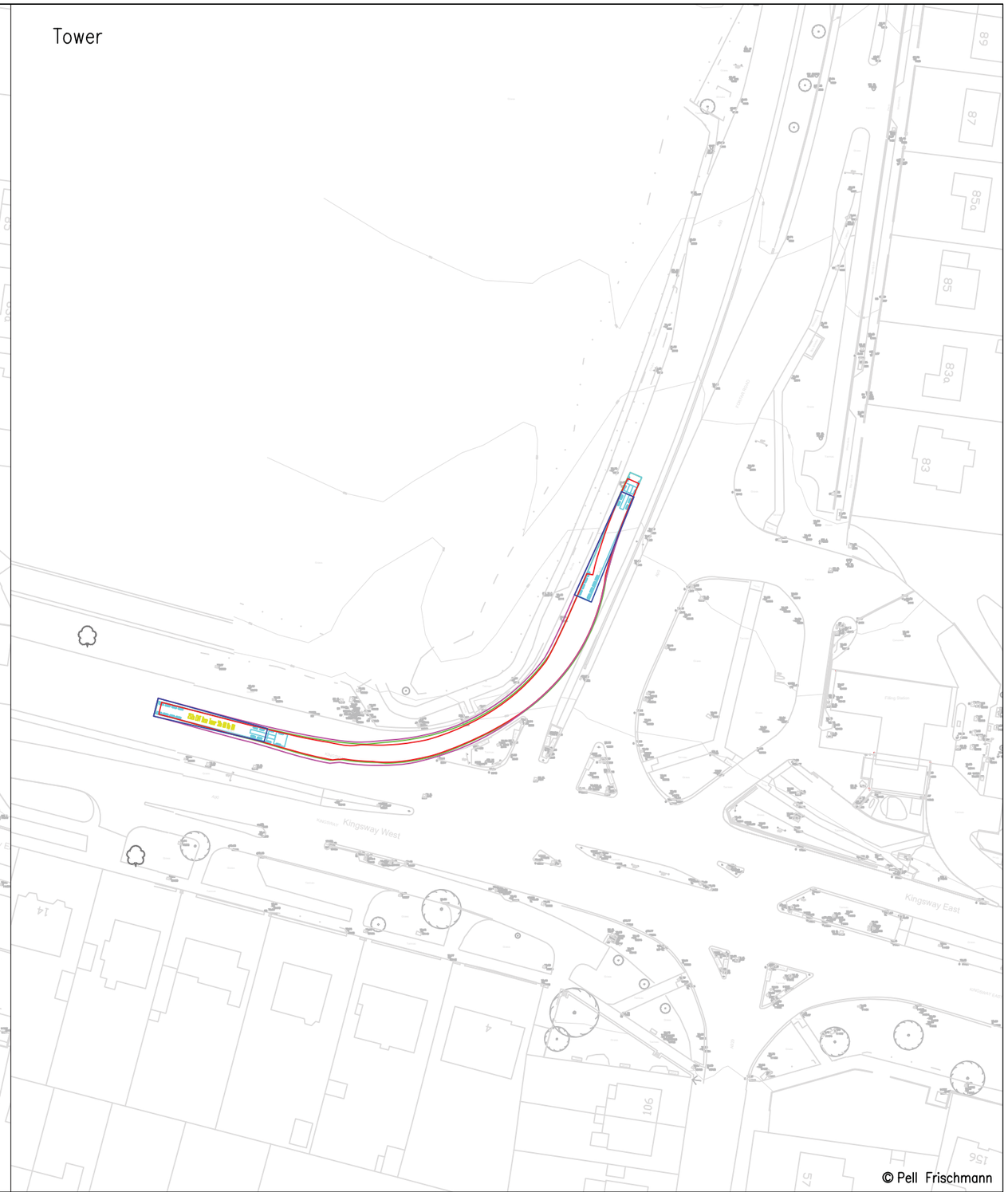
Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: 0

Blade



Tower



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Email: pfedinburgh@pellfrischmann.com
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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Forfar Road Junction

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		9

Scale: 1:1000 @ A3

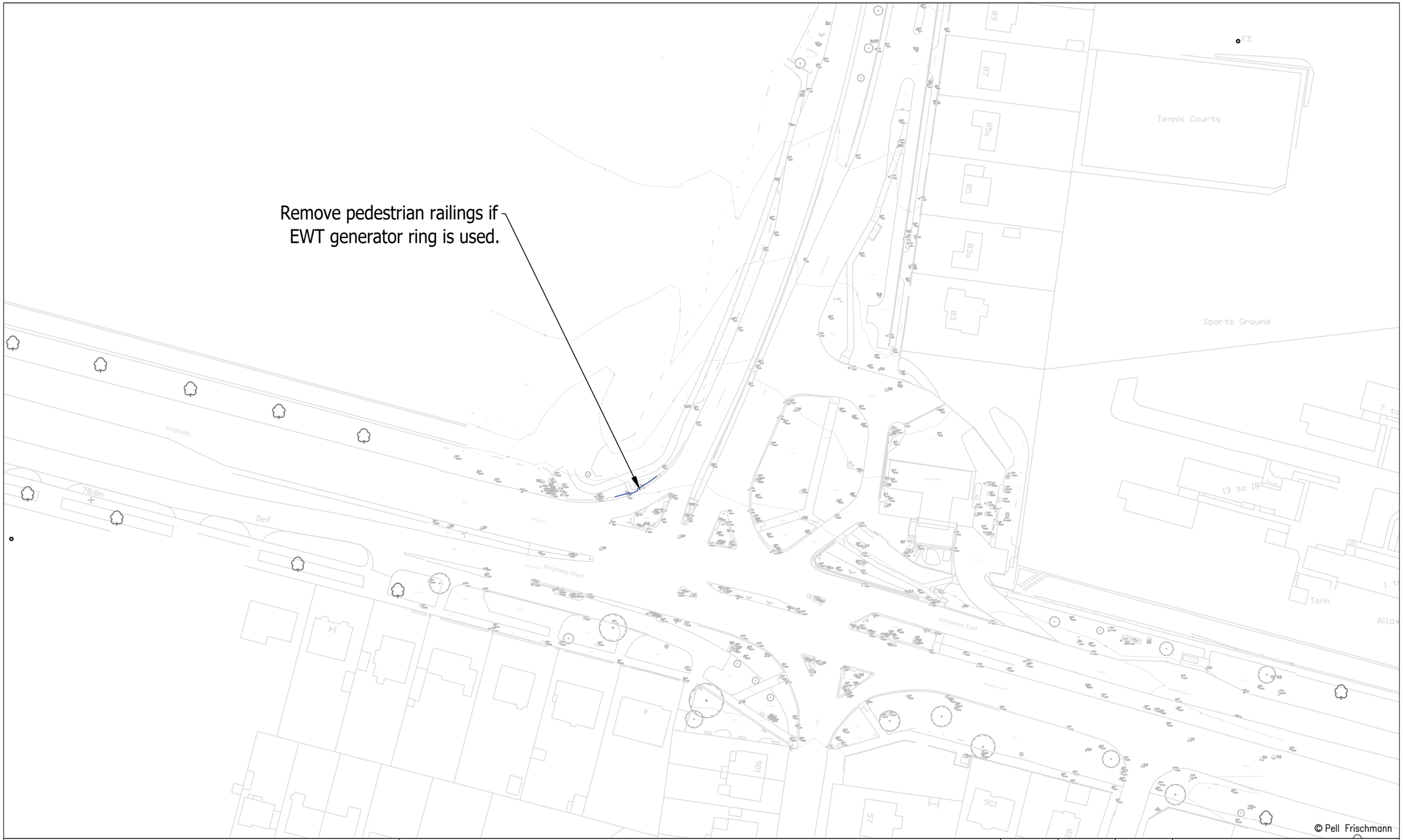
File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK08

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

Revision: 0



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www.pellfrischmann.com

Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Scott Fyfe Roundabout

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		9

Scale: 1:1000 @ A3

File No.: 230910 tracking – public.dwg

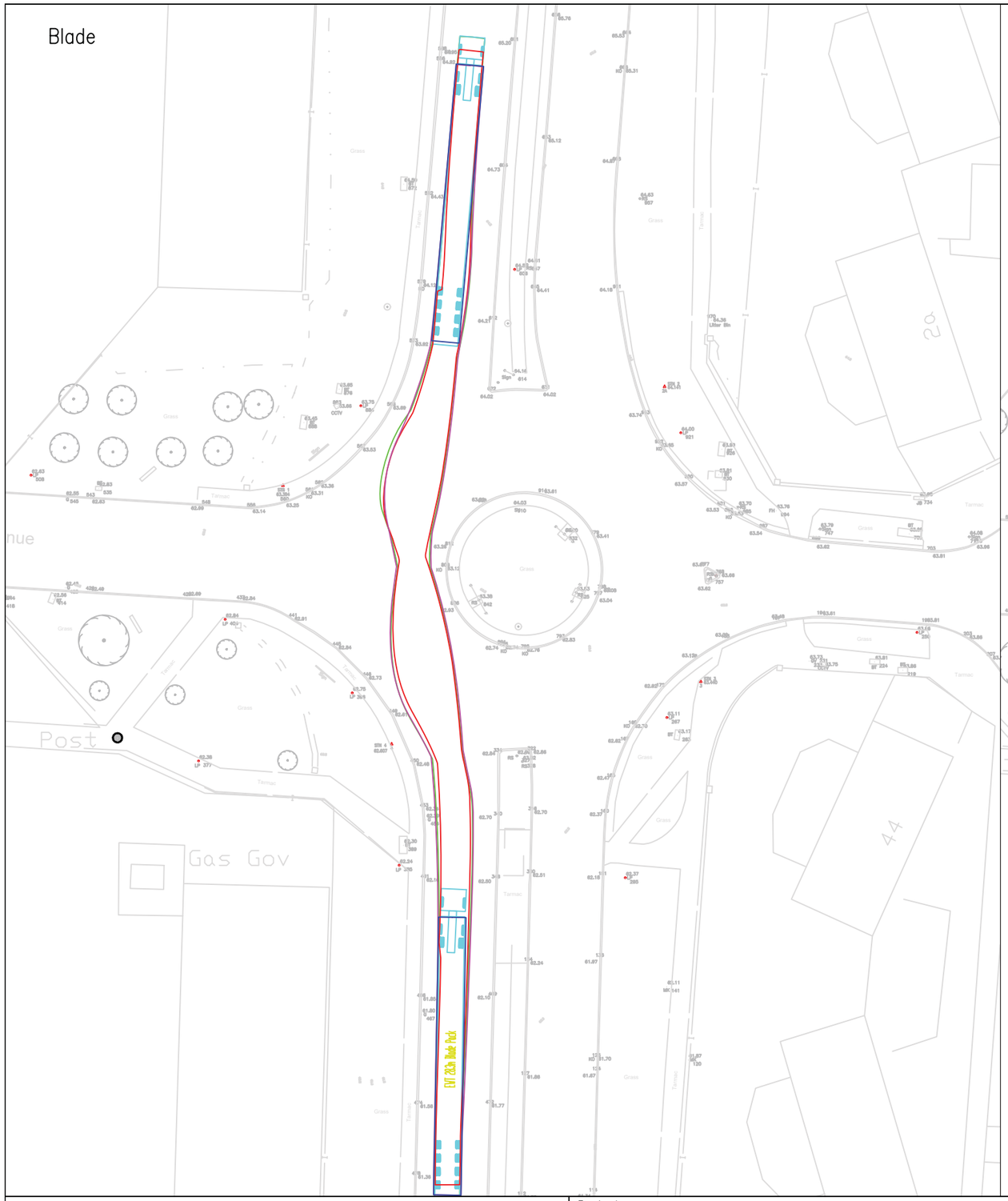
Drawing Status: Draft

Drawing No.: SK08A

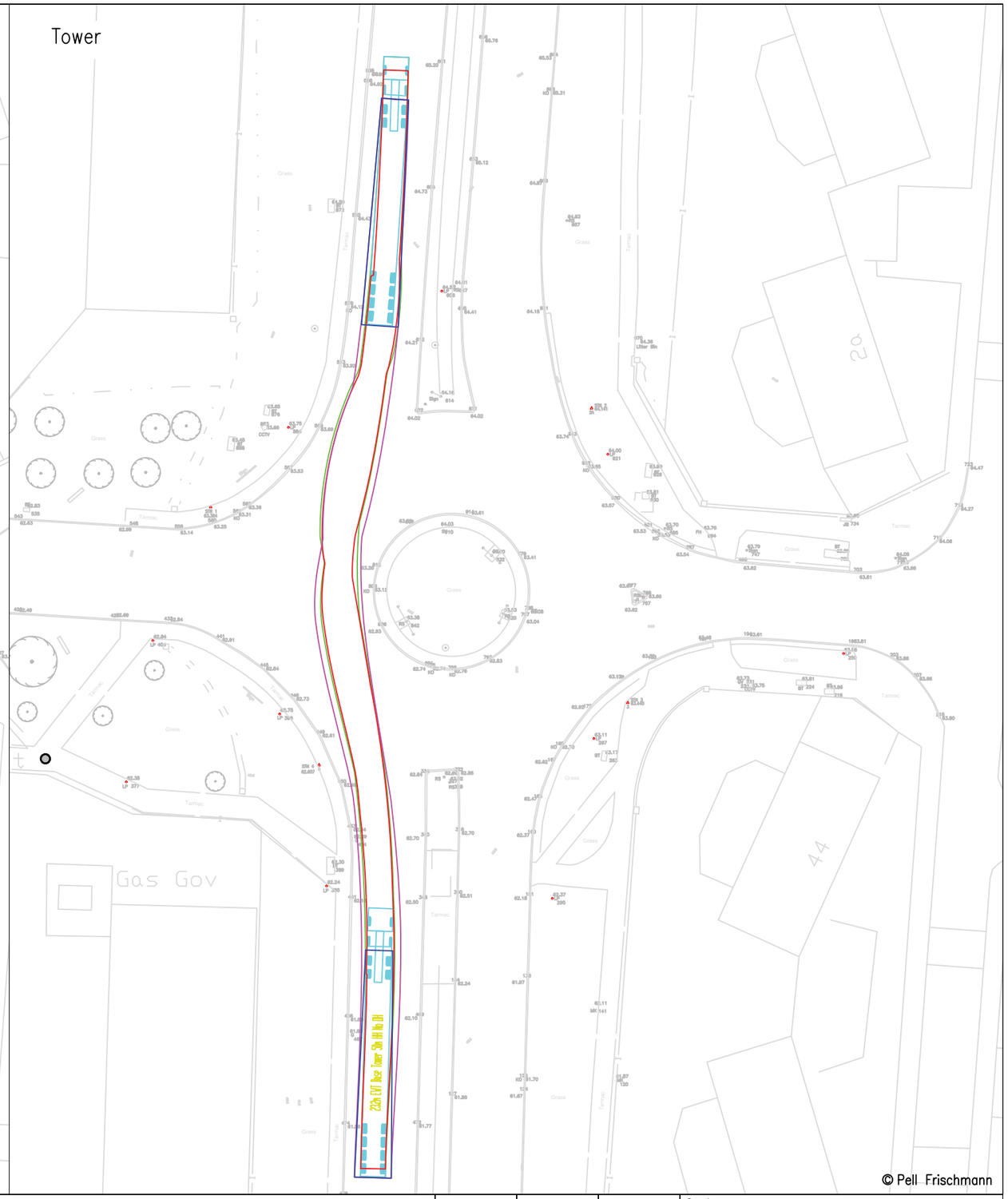
Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: 0

Blade



Tower



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Fintry Drive Roundabout

NO MITIGATION REQUIRED

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		10

Scale: 1:500 @ A3

File No.: 230910 tracking – public.dwg

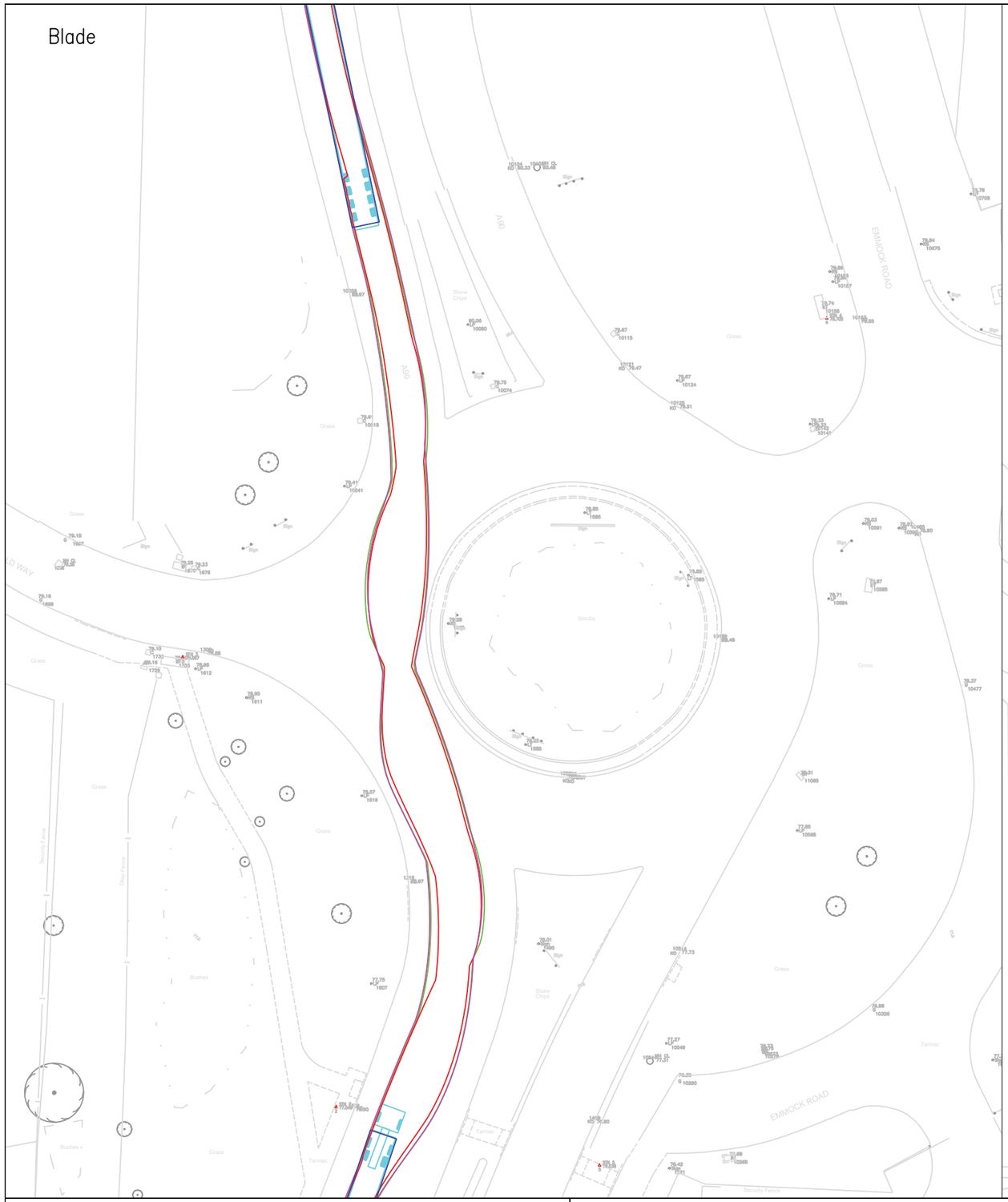
Drawing Status: Draft

Drawing No.: SK09

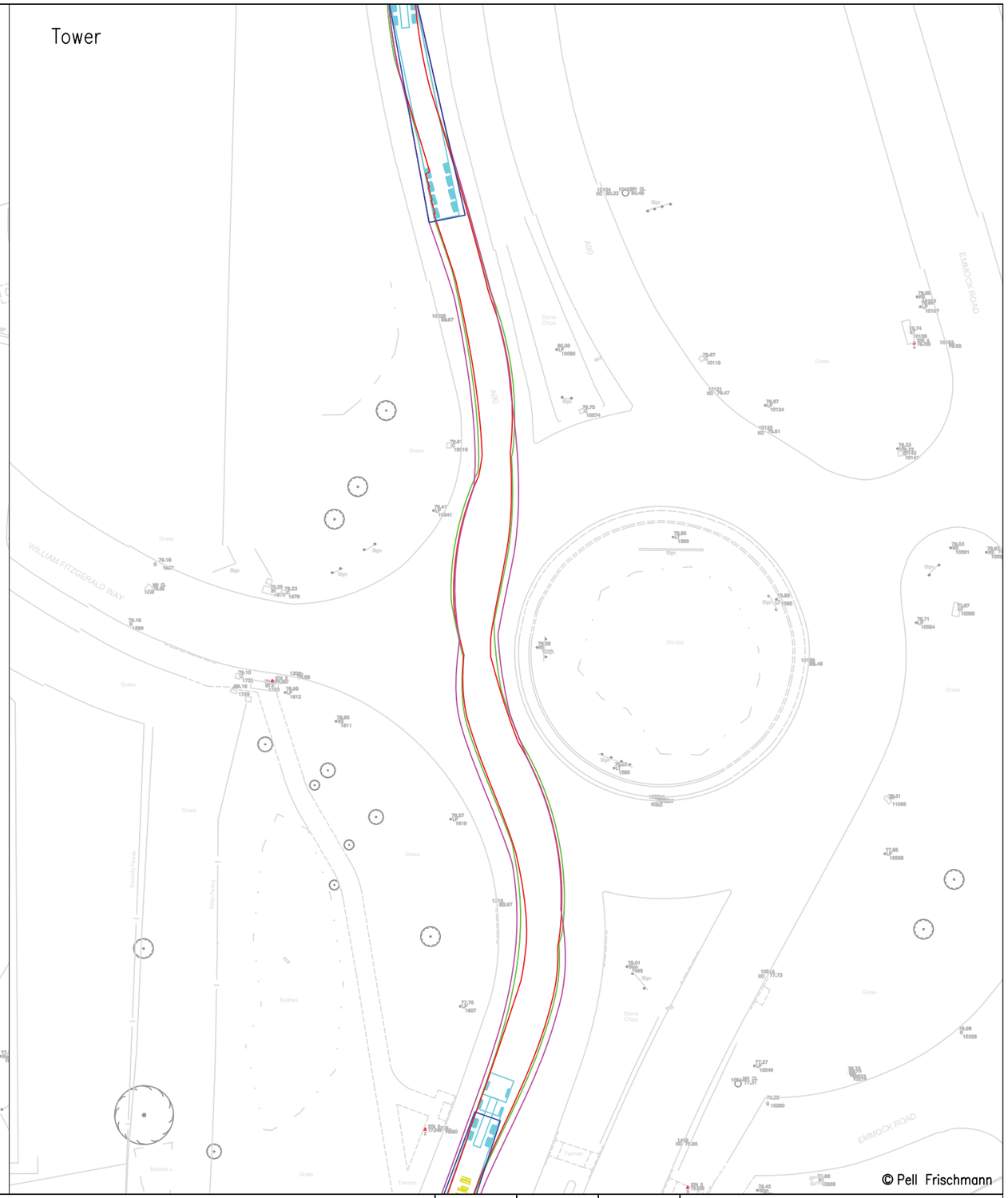
Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: 0

Blade



Tower



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Emmock Roundabout

NO MITIGATION REQUIRED

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		11

Scale: 1:500 @ A3

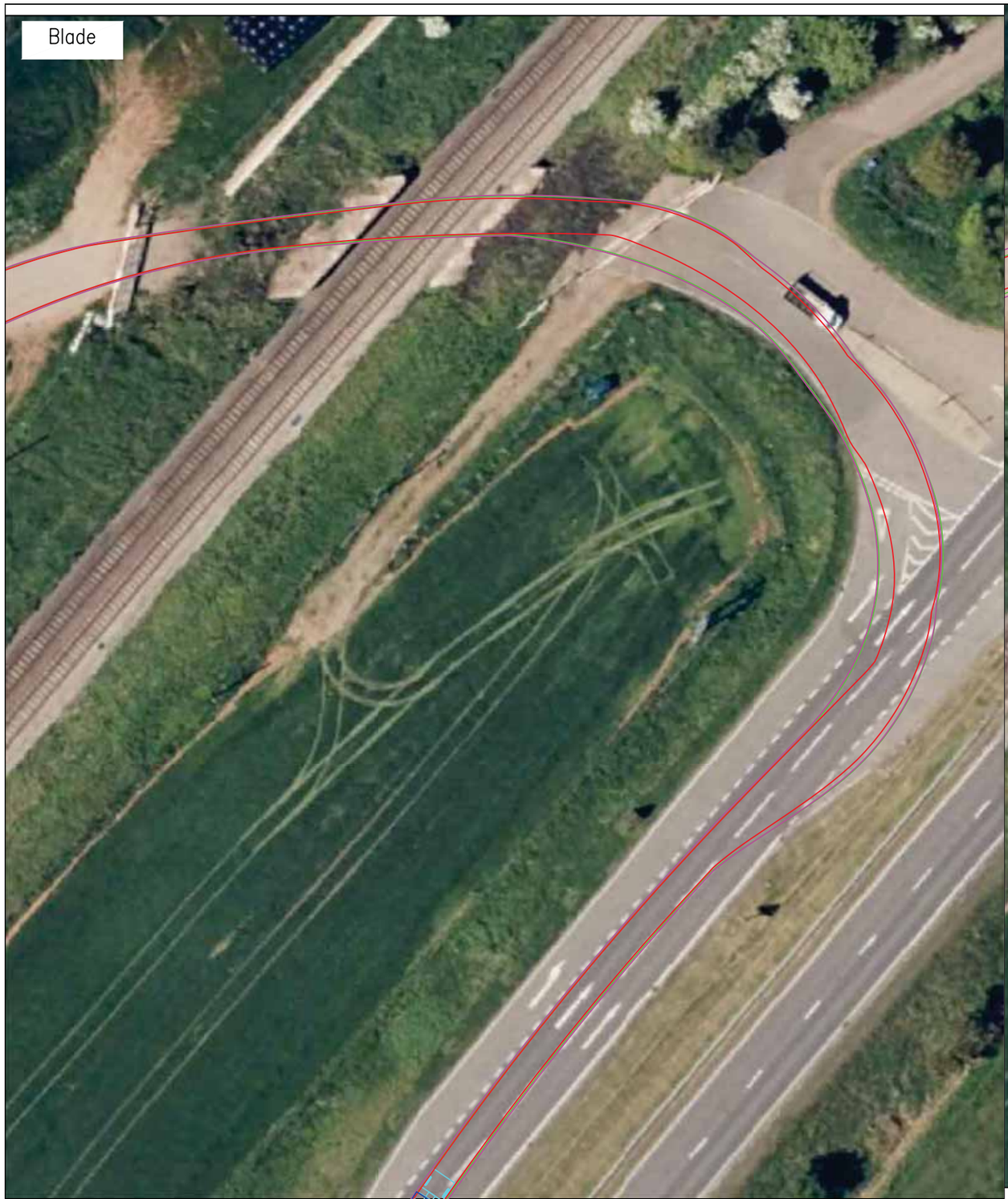
File No.: 230910 tracking – public.dwg

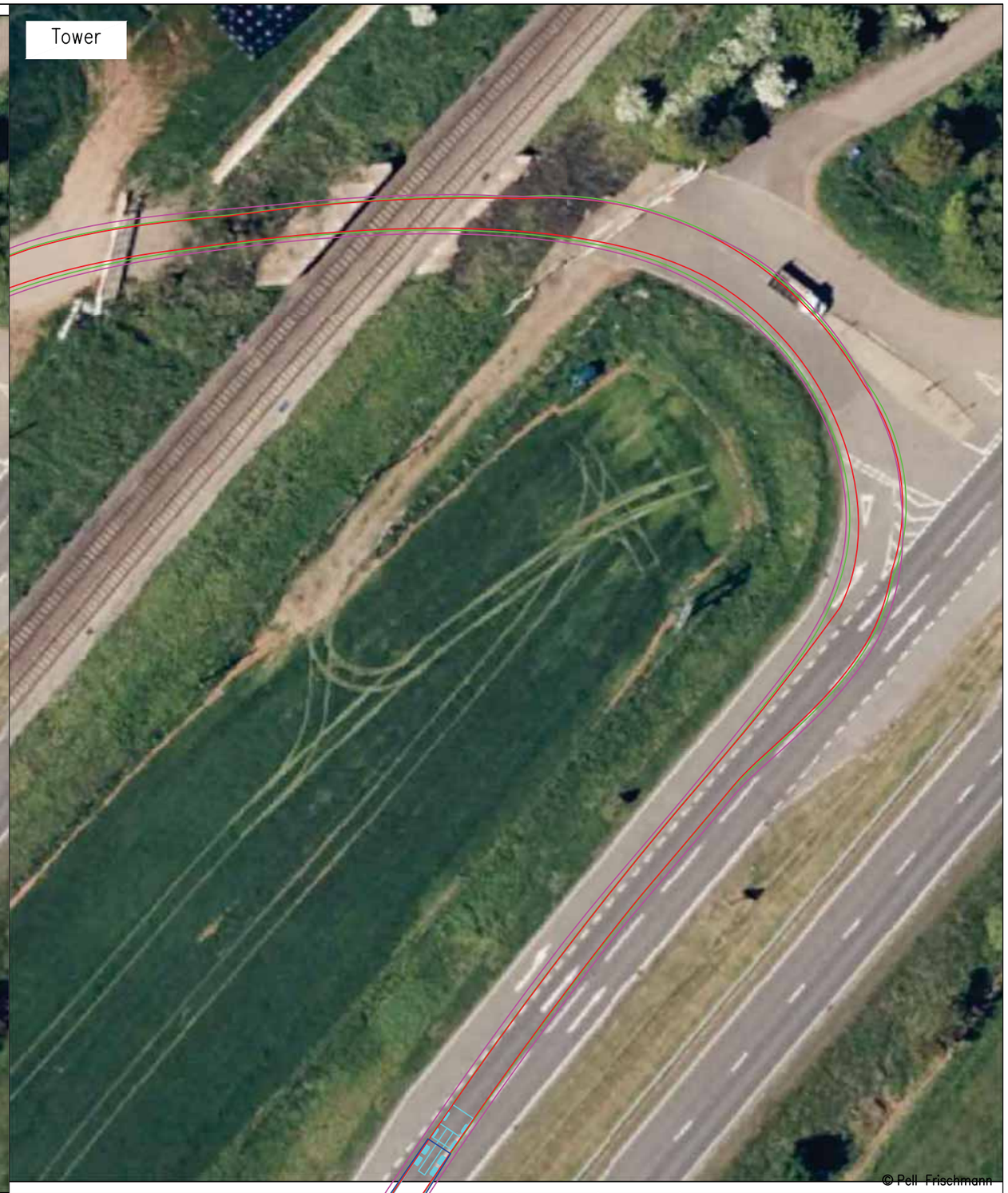
Drawing Status: Draft

Drawing No.: SK10

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: 0





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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: A90 / B966 Junction

NO MITIGATION REQUIRED

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		12

Scale: 1:500 @ A3

File No.: 230910 tracking – public.dwg

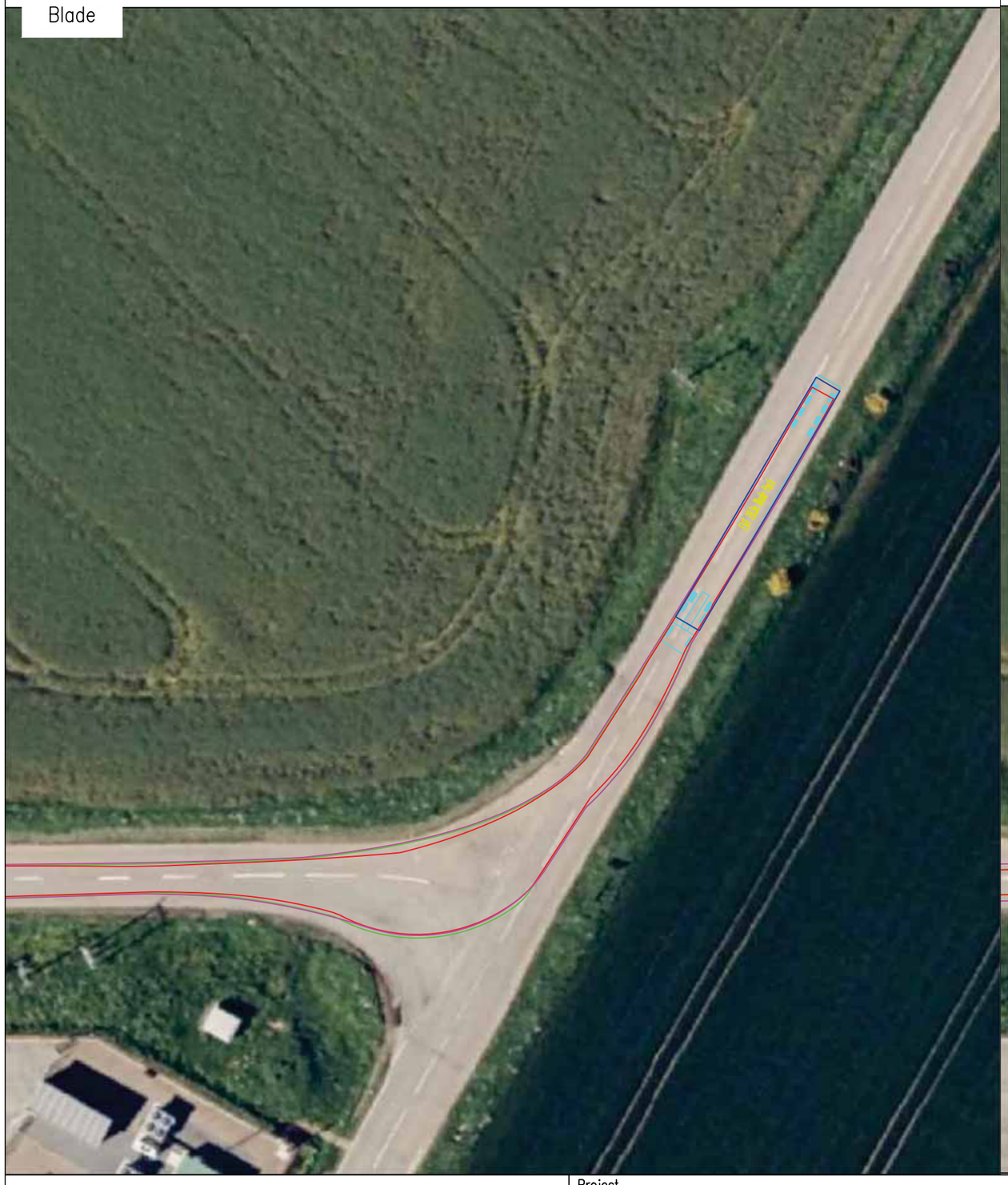
Drawing Status: Draft

Drawing No.: SK11

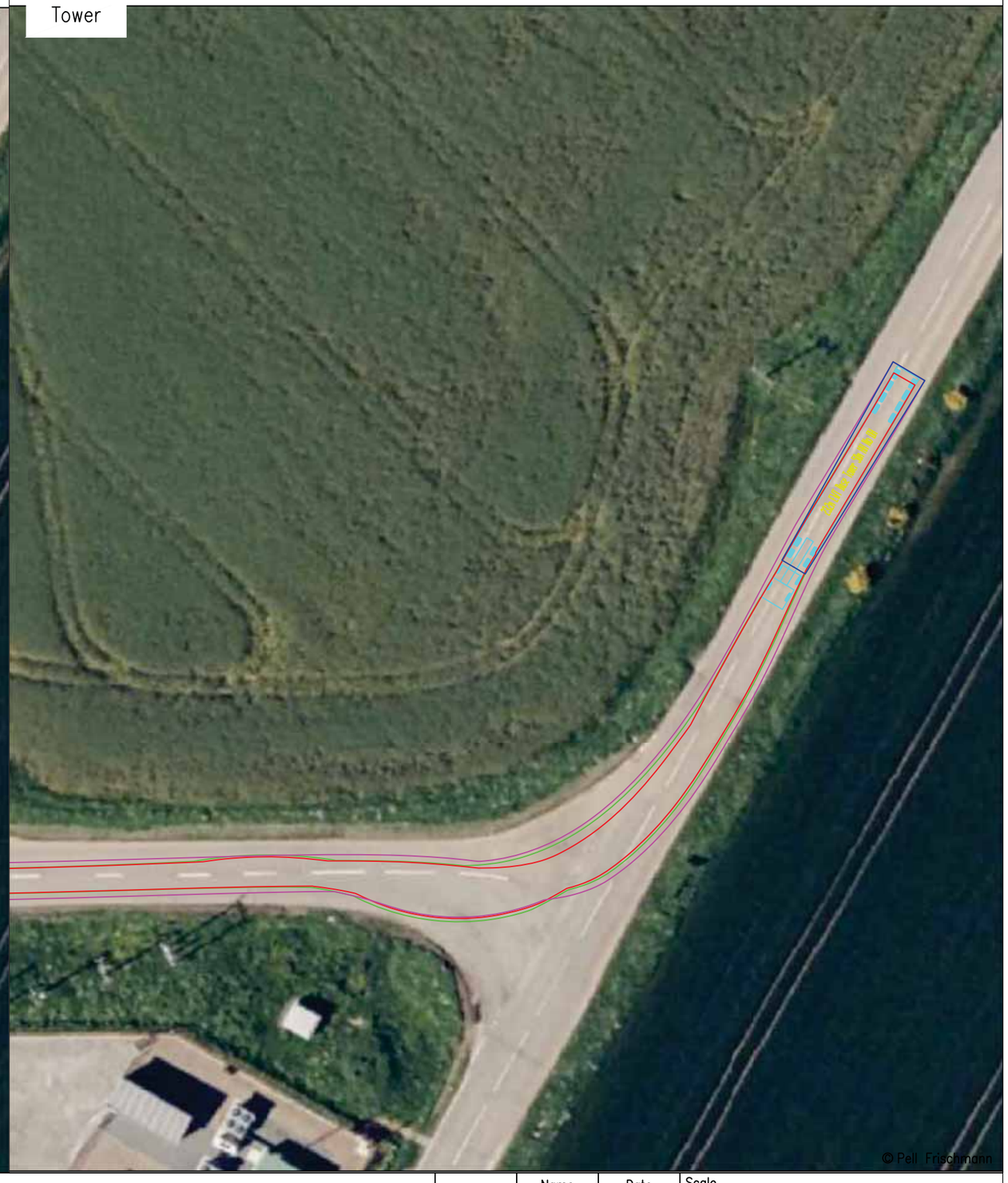
Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: 0

Blade



Tower



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: B966 Junction

NO MITIGATION REQUIRED

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		13

Scale: 1:500 @ A3

File No.: 230910 tracking – public.dwg

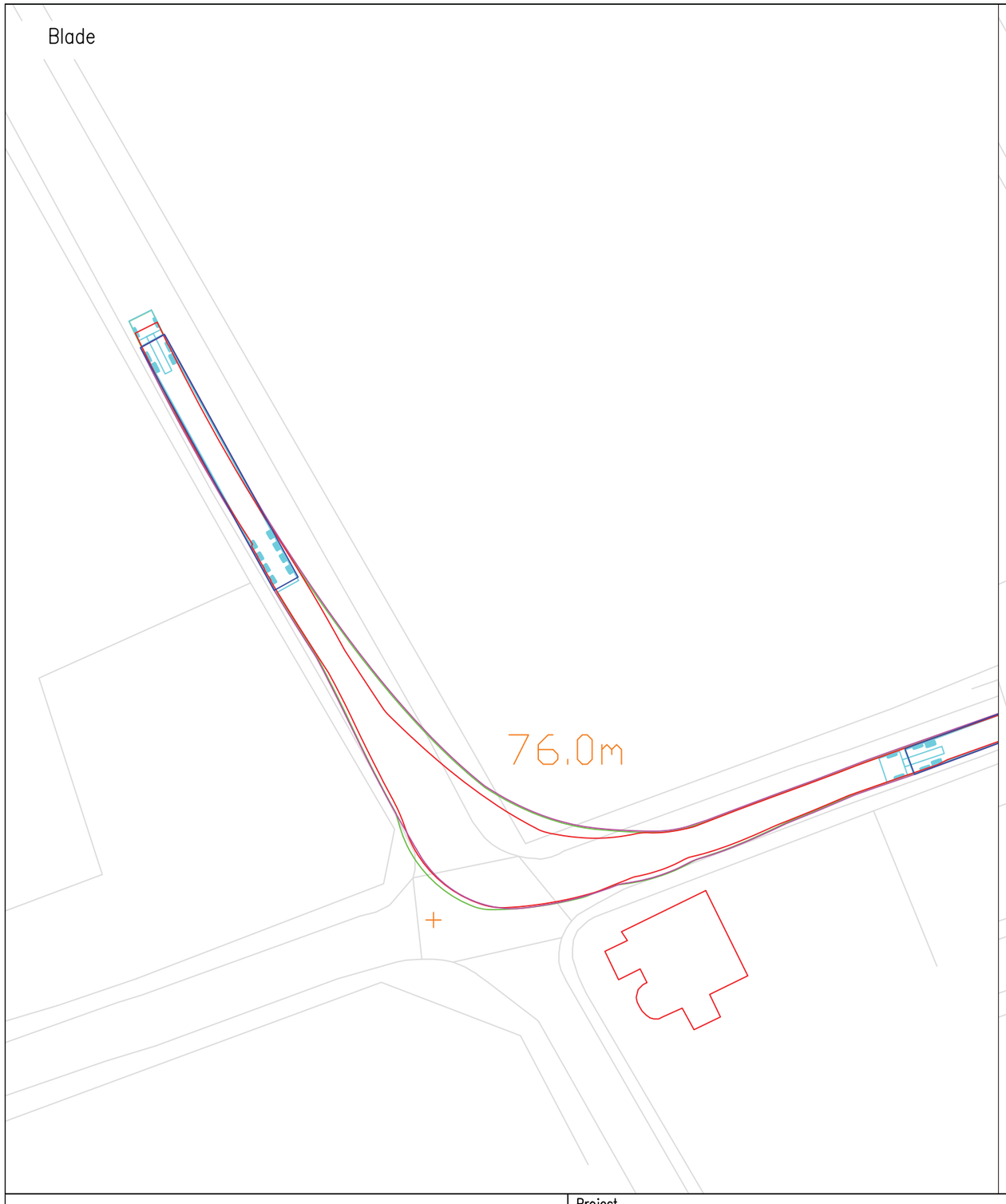
Drawing Status: Draft

Drawing No.: SK12

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: 0

Blade



Tower

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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: B966 / Auchenblae Road Junction

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		16

Scale: Custom @ A3

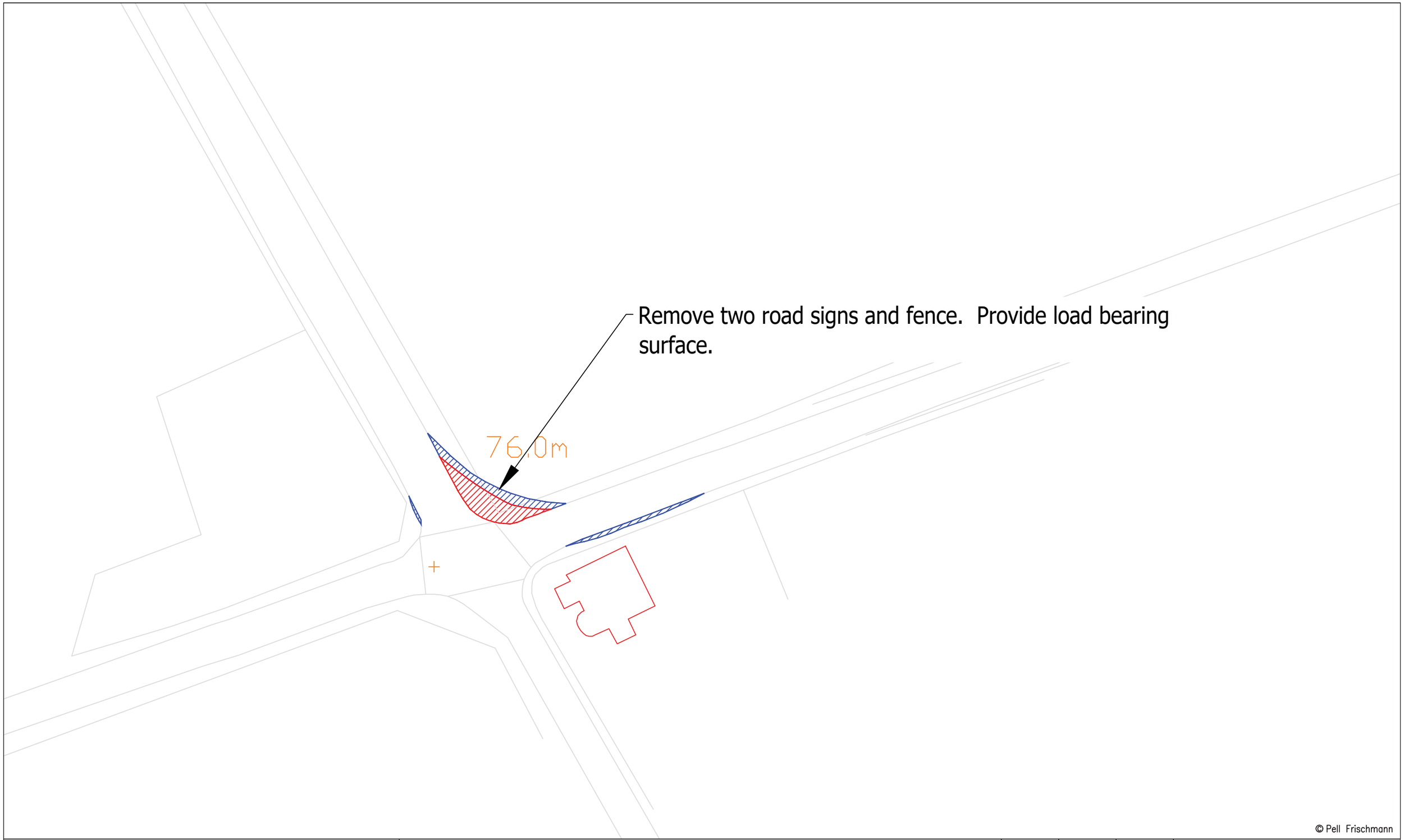
File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK13

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: 0



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: B966 / Auchenblae Road Junction

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		16

Scale: 1:500 @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

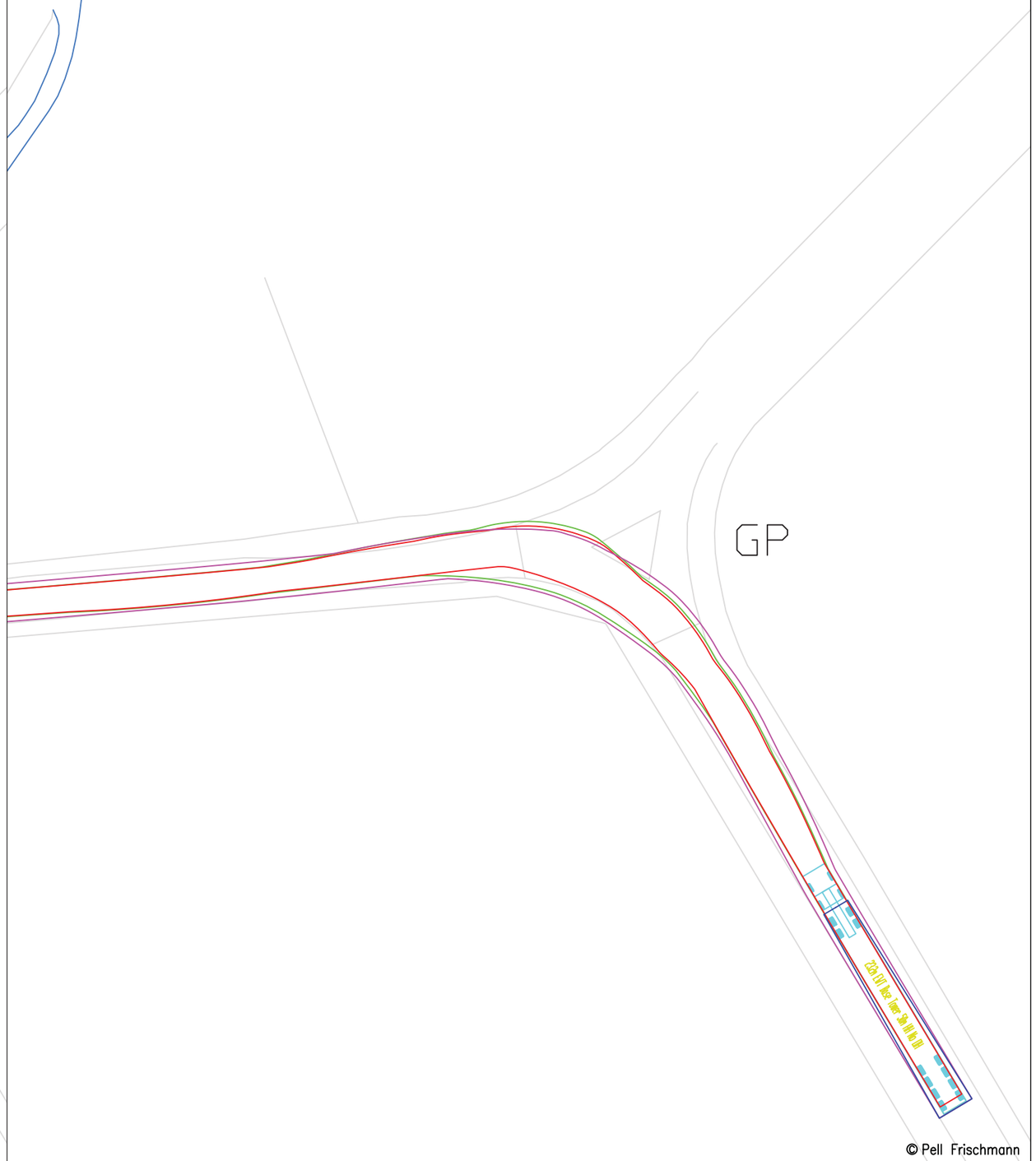
Drawing No.: SK13A

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: 0

Blade

Tower



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Auchenblae Road Bend

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		17

Scale: 1:500 @ A3

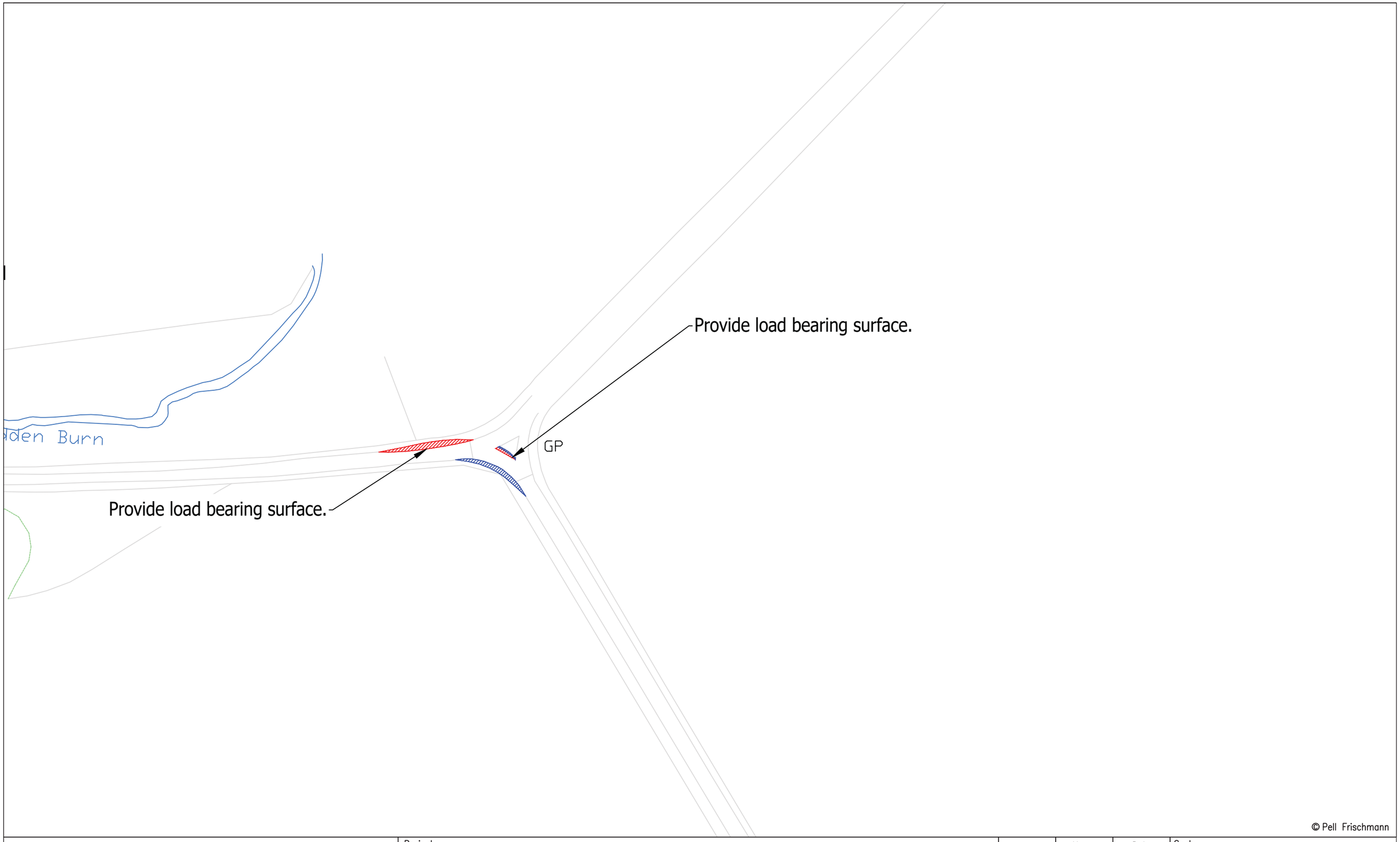
File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK14

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: 0



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Auchenblae Road Bend

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		17

Scale: 1:1000 @ A3

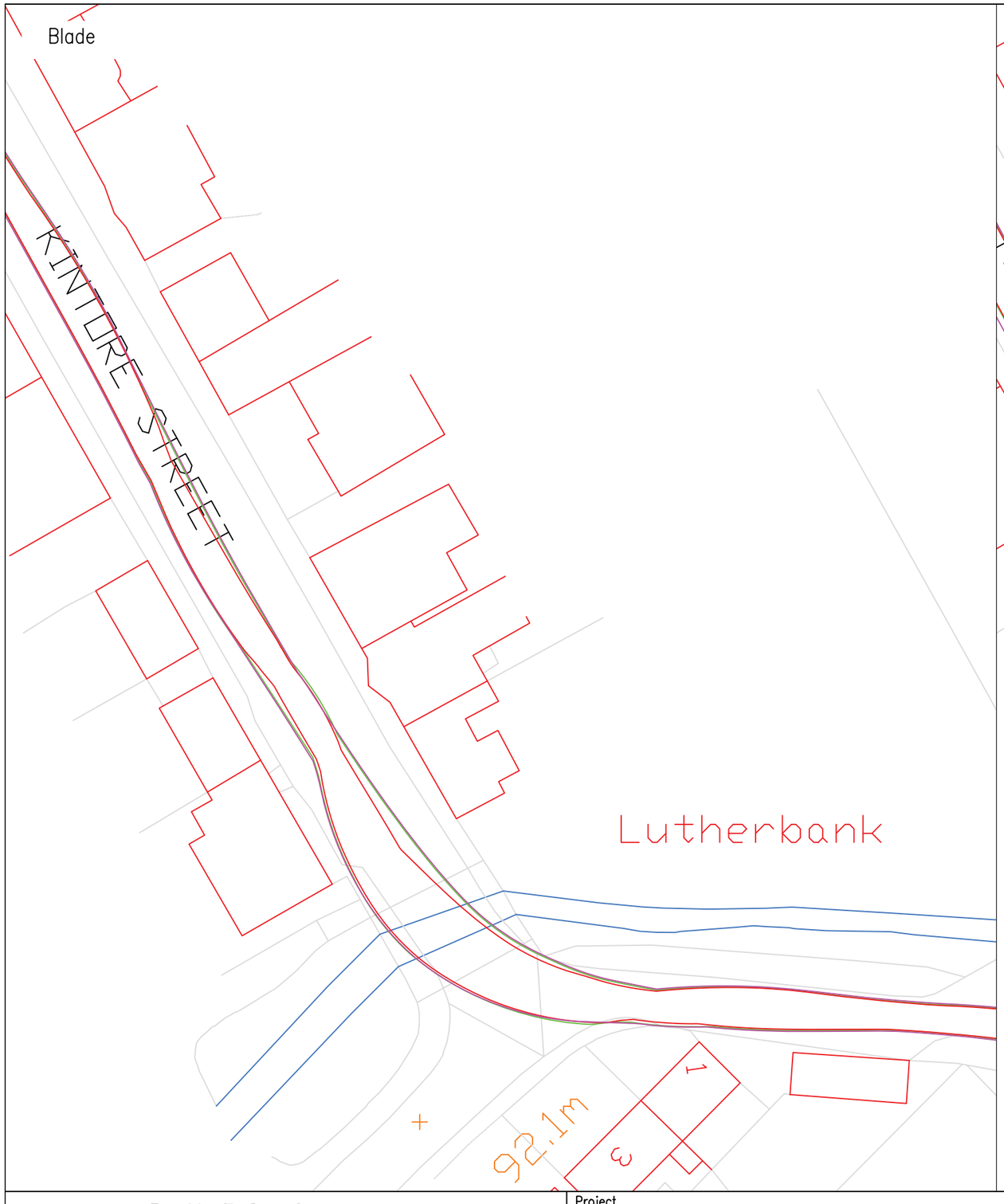
File No.: 230910 tracking – public.dwg

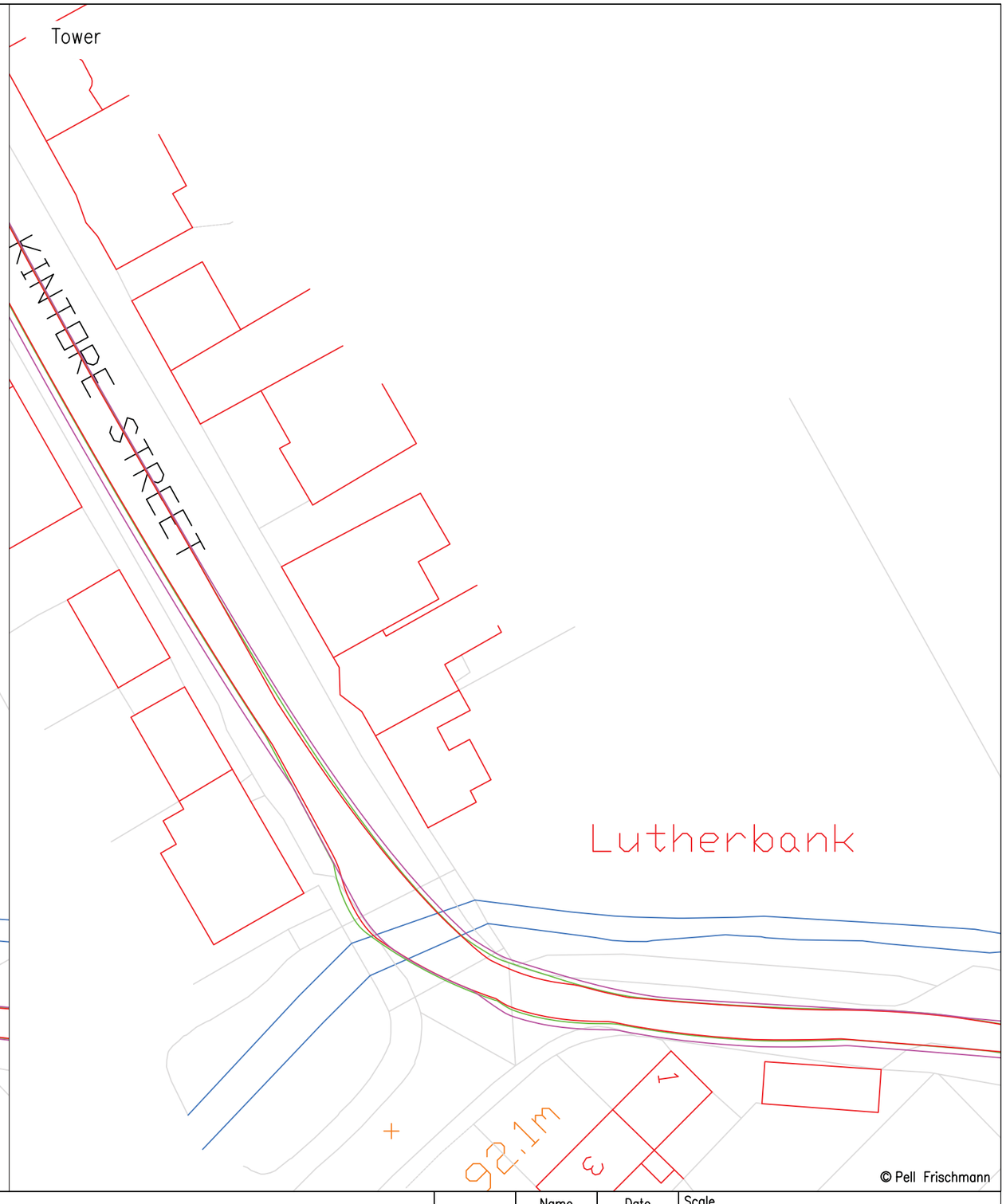
Drawing Status: Draft

Drawing No.: SK14A

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: 0





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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Kintore Street Junction

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		18

Scale: Custom @ A3

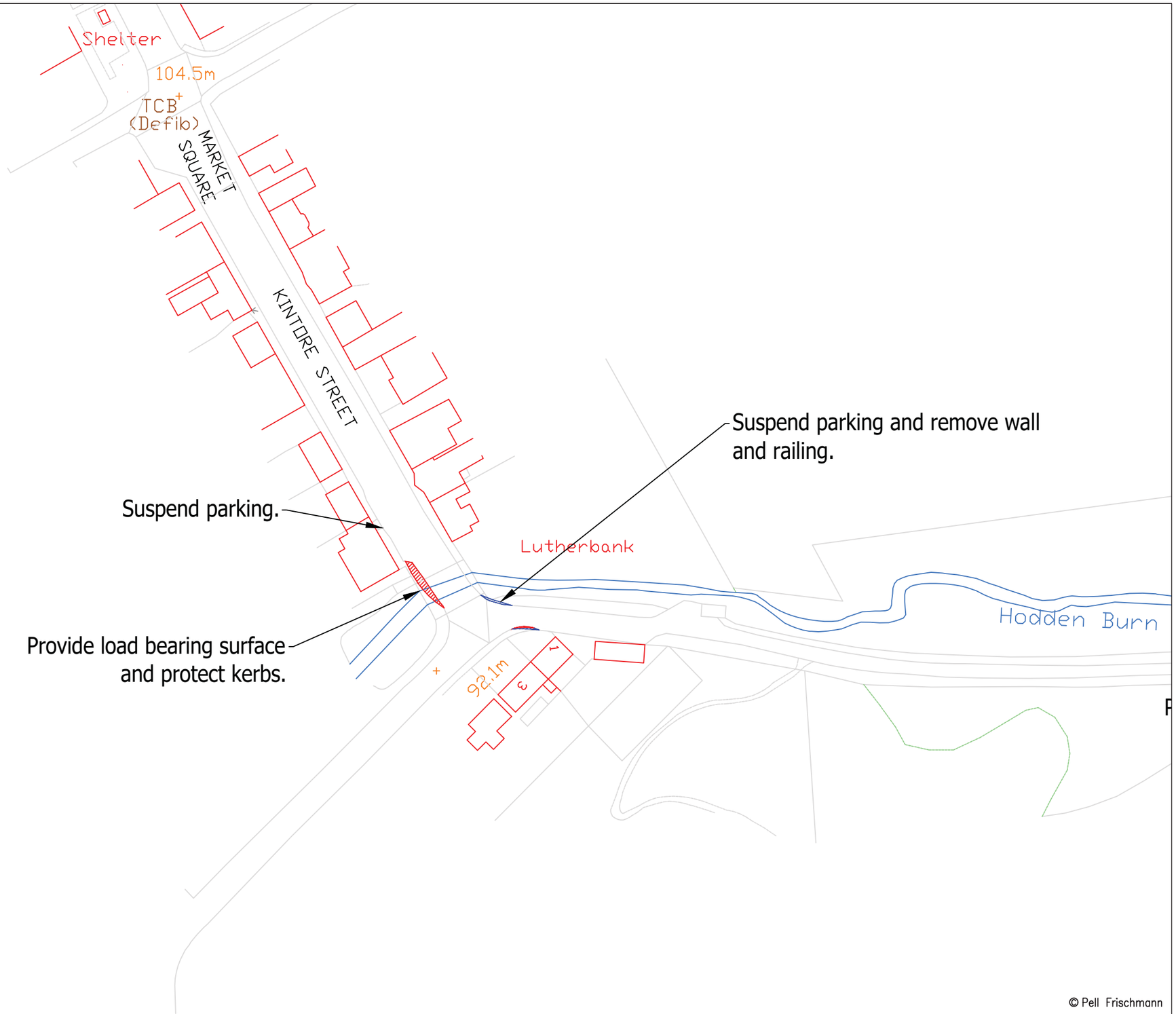
File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK15

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: 0



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Kintire Street Juction

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		18

Scale: 1:1000 @ A3

File No.: 230910 tracking – public.dwg

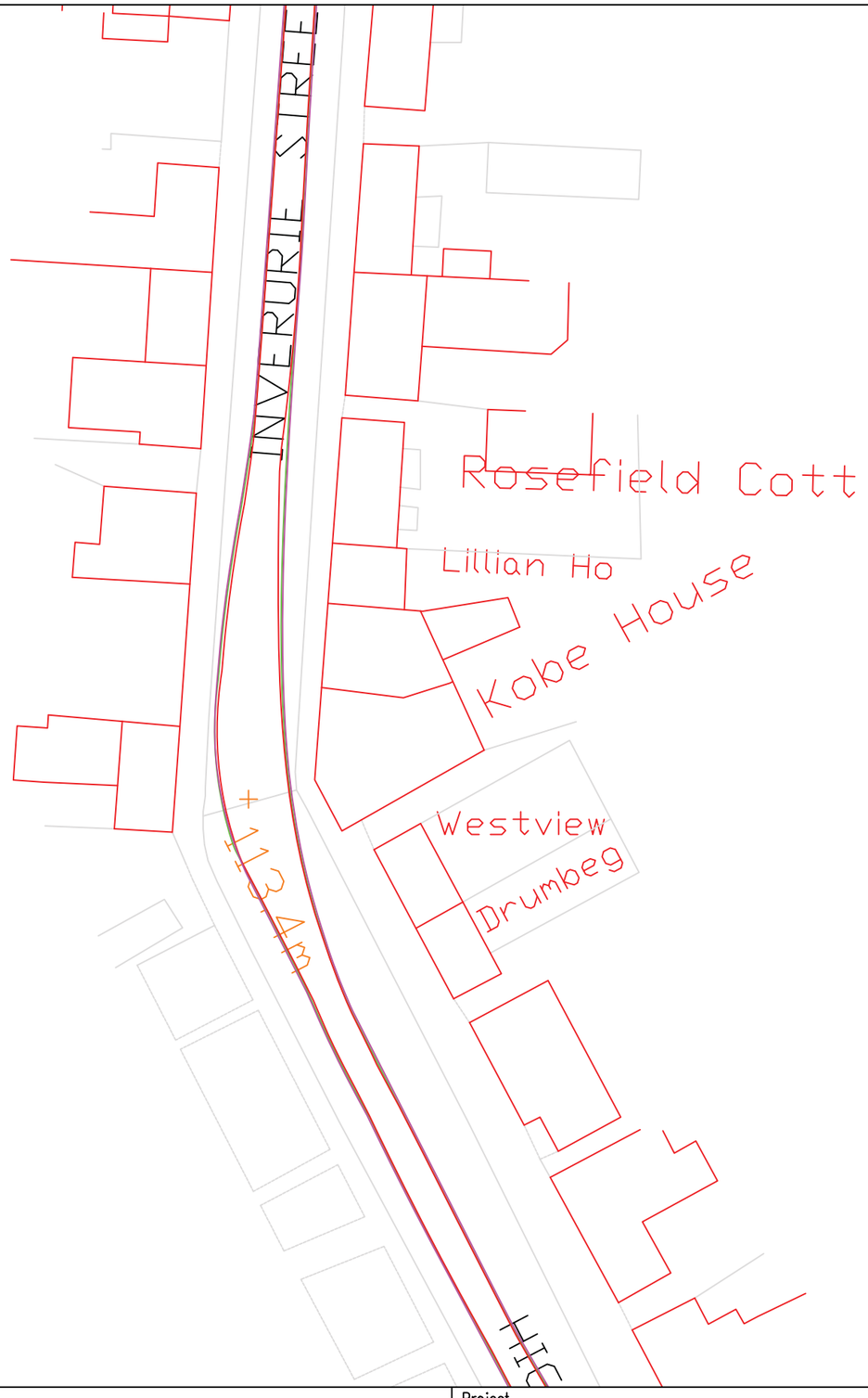
Drawing Status: Draft

Drawing No.: SK15A

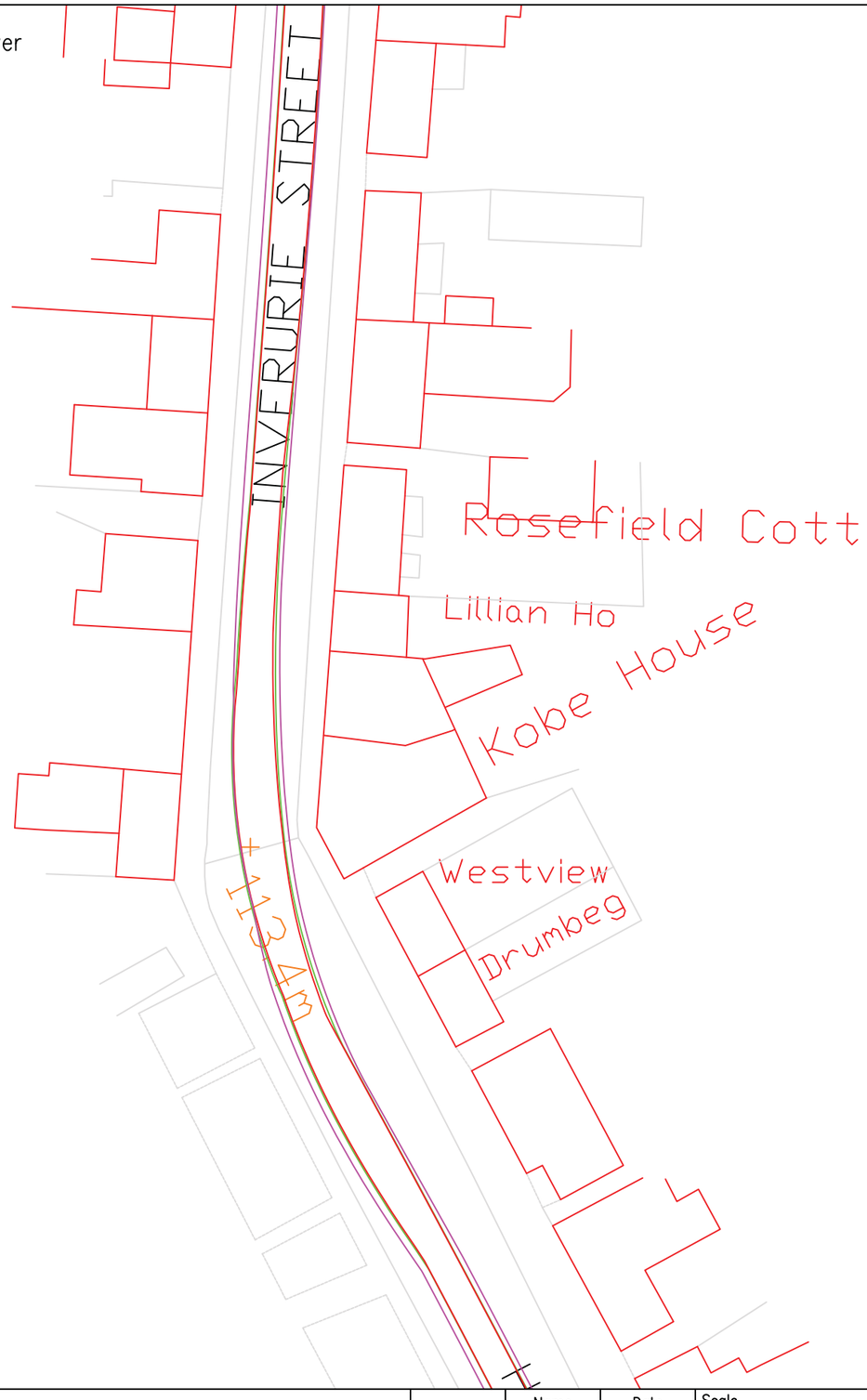
Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: 0

Blade



Tower



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: High Street, Achenblae

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		19

Scale: Custom @ A3

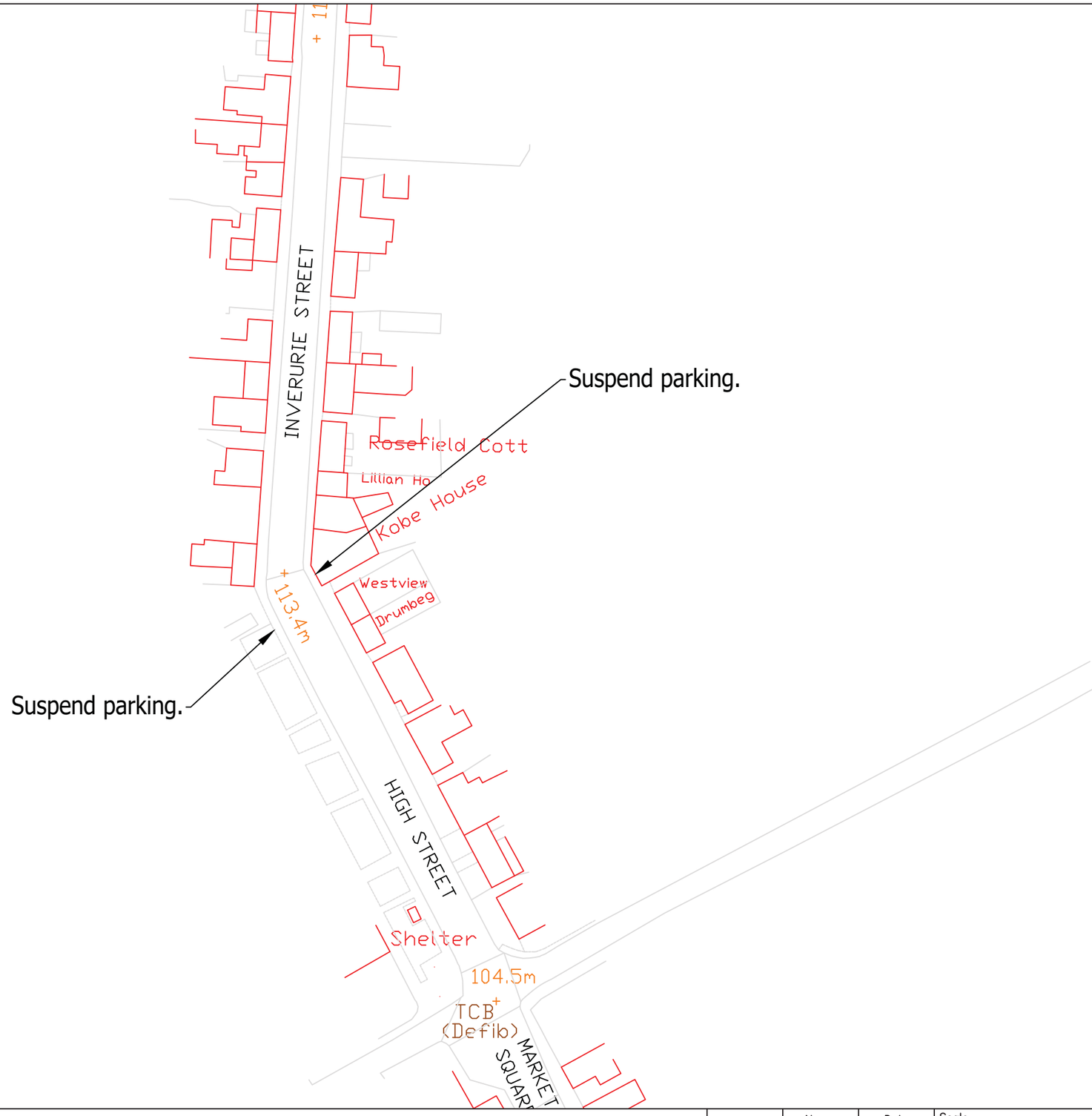
File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK16

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: 0



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: High Street, Auchenblae

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		19

Scale: 1:1000 @ A3

File No.: 230910 tracking – public.dwg

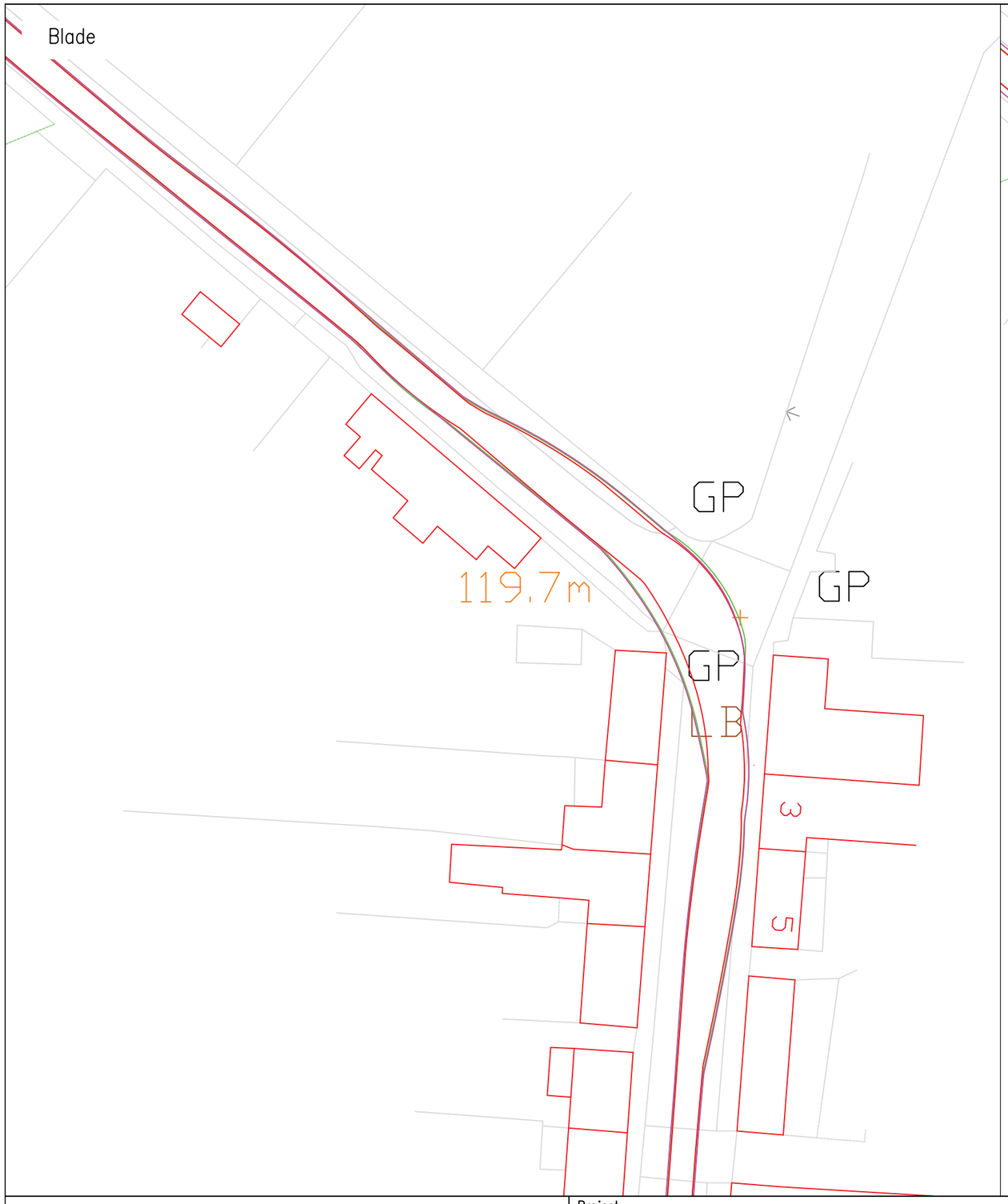
Drawing Status: Draft

Drawing No.: SK16A

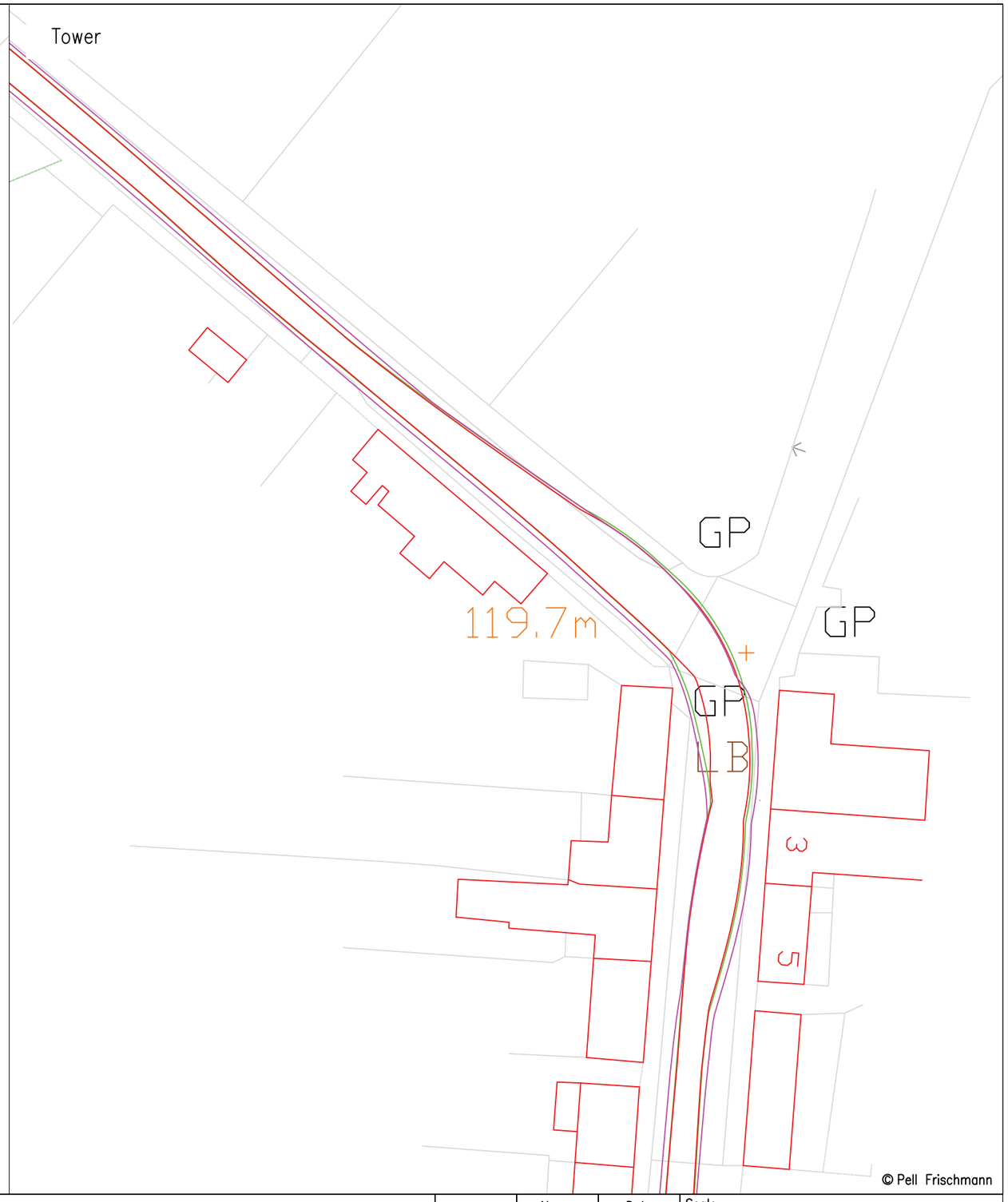
Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: 0

Blade



Tower



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Glen Road Junction, Achenblae

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		20

Scale: Custom @ A3

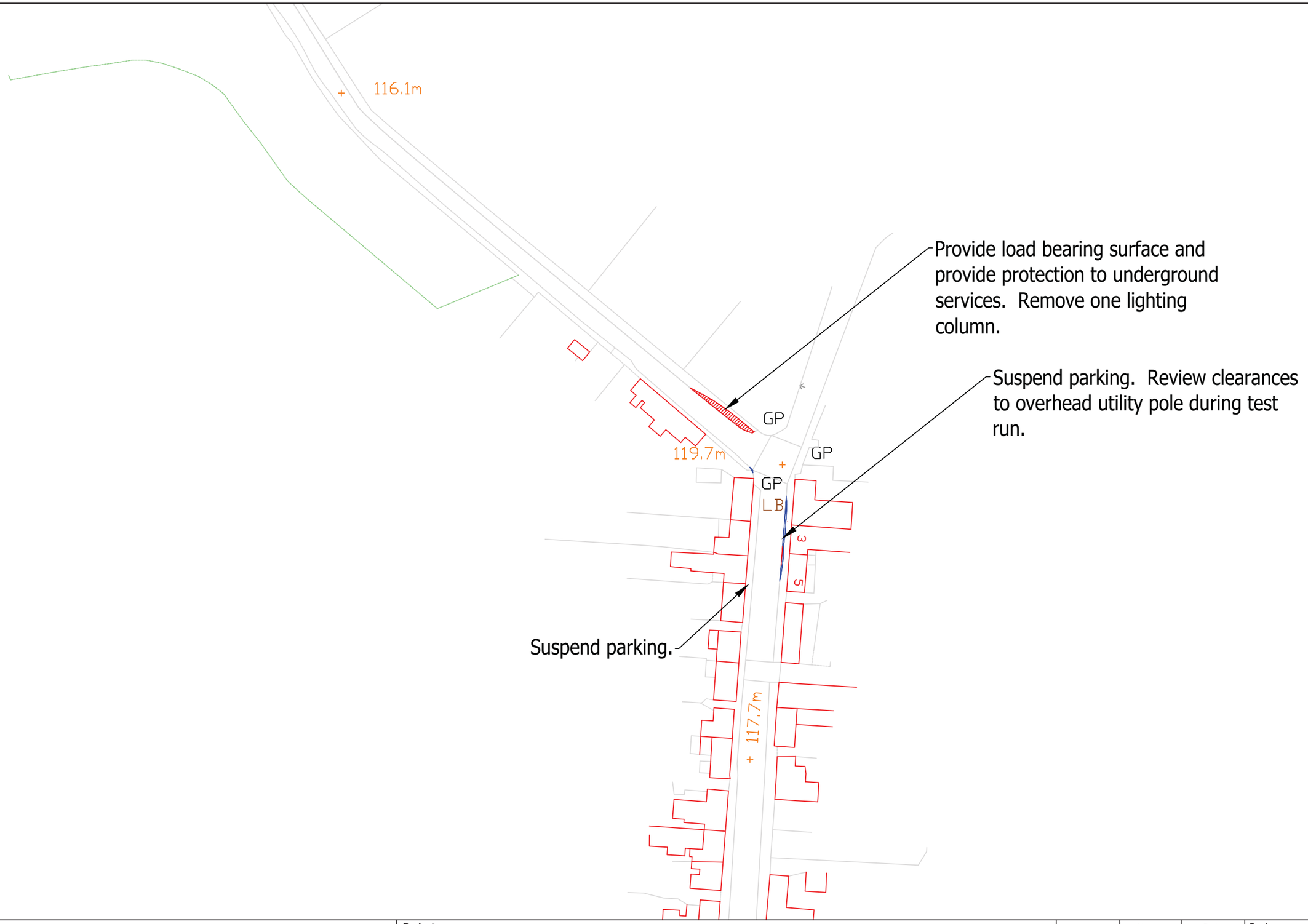
File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK17

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: 0



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Glen Road Junction, Auchenblae

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		20

Scale: 1:1000 @ A3

File No.: 230910 tracking – public.dwg

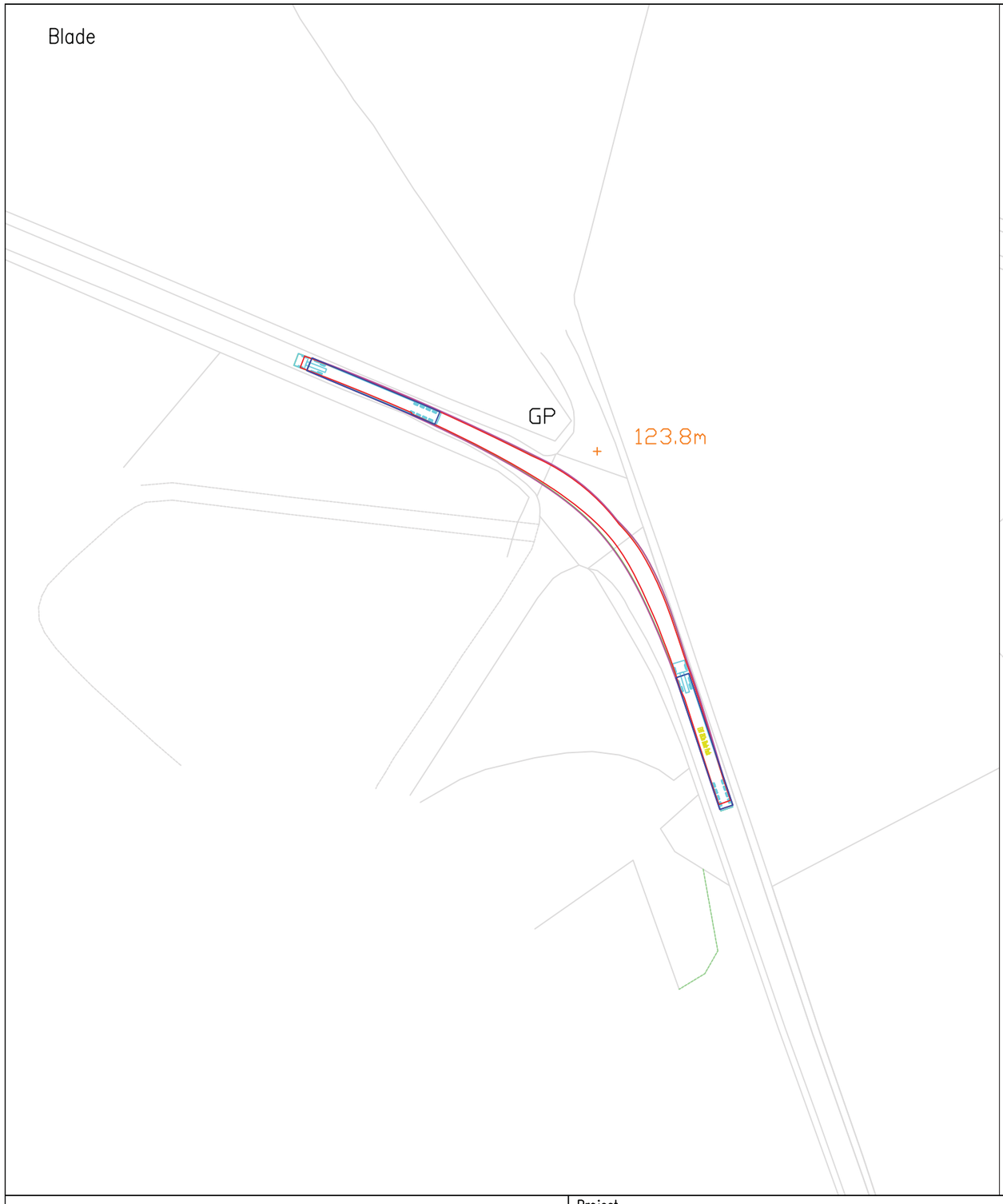
Drawing Status: Draft

Drawing No.: SK17A

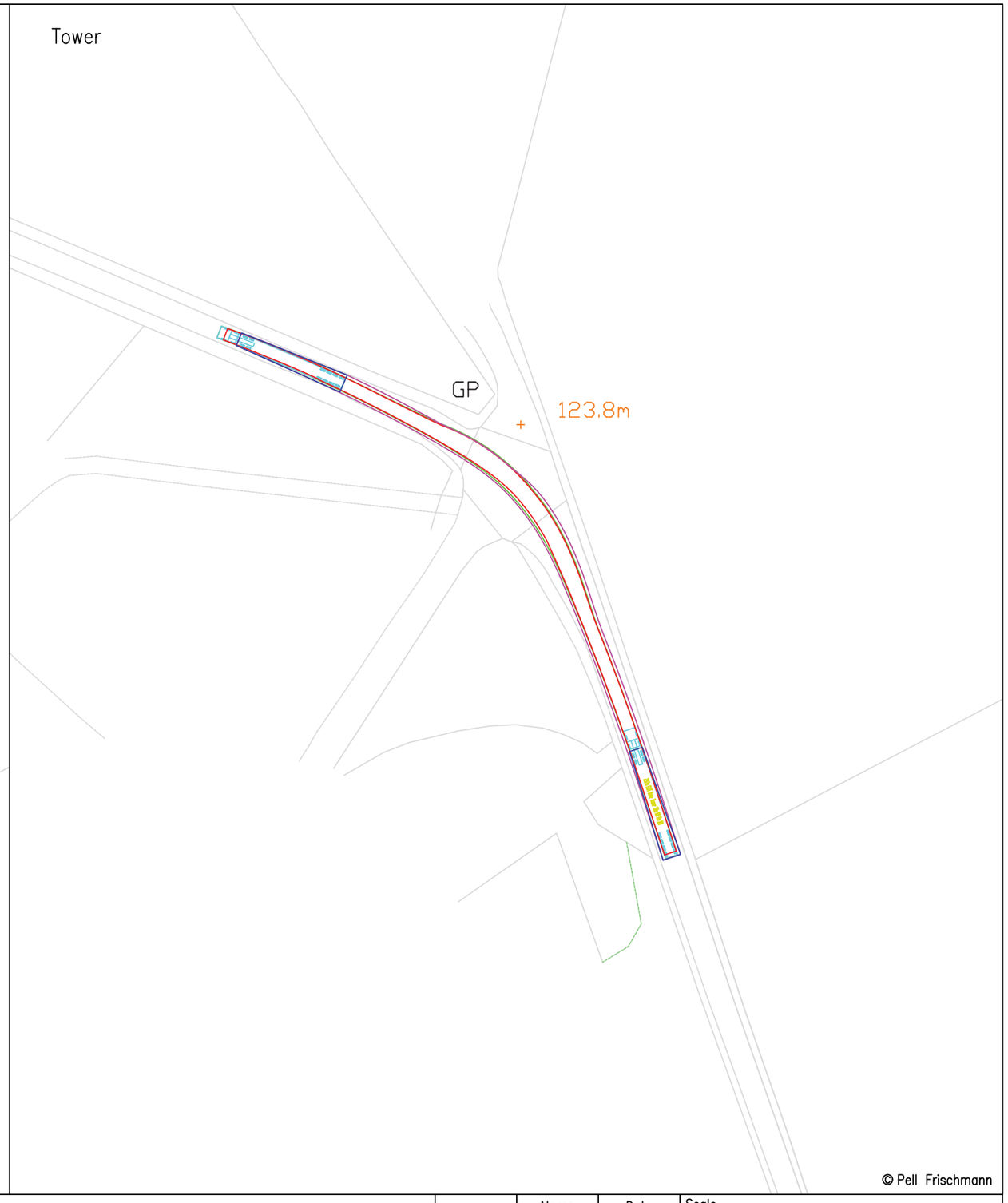
Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: 0

Blade



Tower



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www.pellfrischmann.com

Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Glen Road Bend

NO MITIGATION REQUIRED

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		21

Scale: 1:1000 @ A3

File No.: 230910 tracking – public.dwg

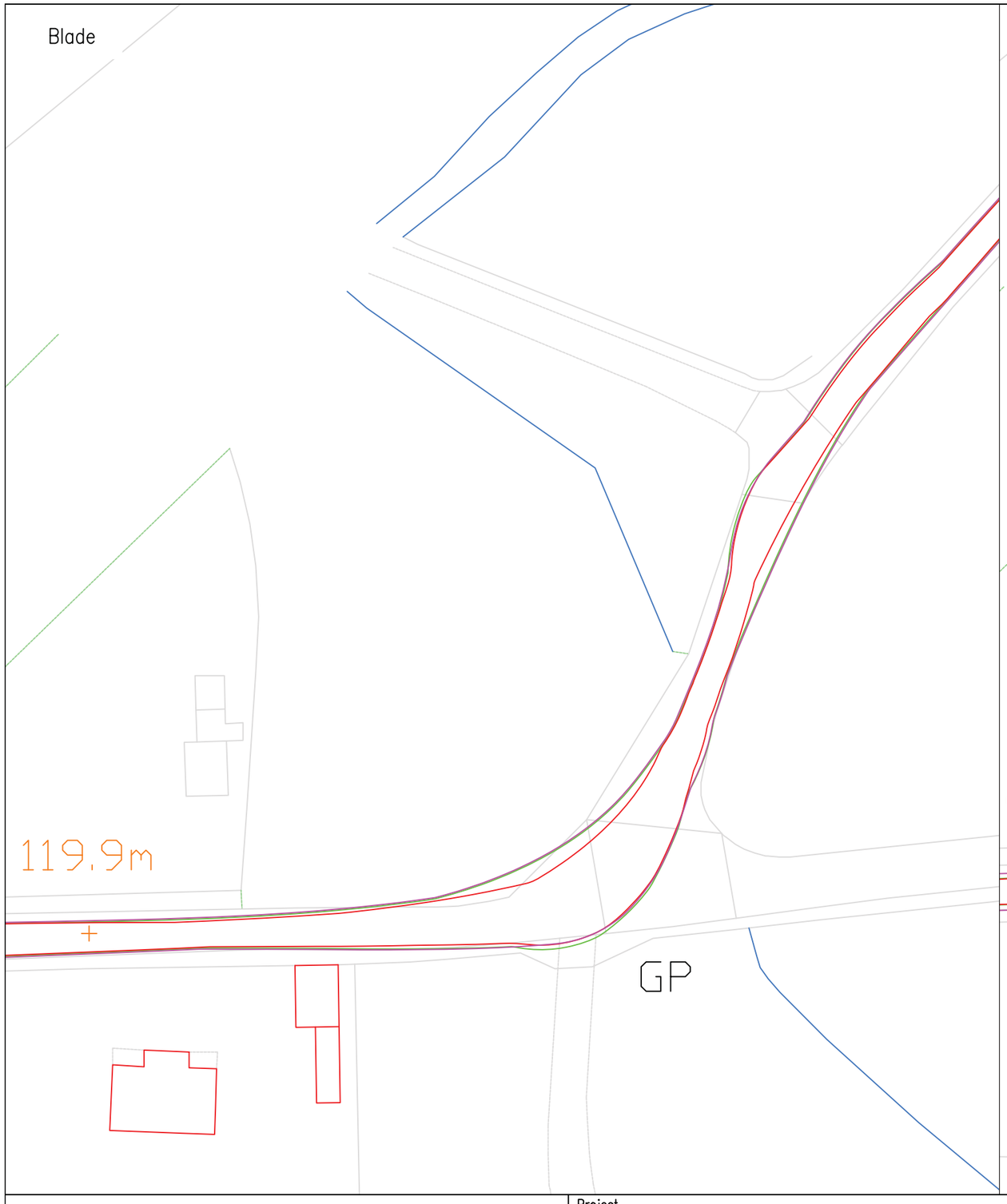
Drawing Status: Draft

Drawing No.: SK18

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: 0

Blade



Tower

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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: C7K Junction

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		23

Scale: 1:500 @ A3

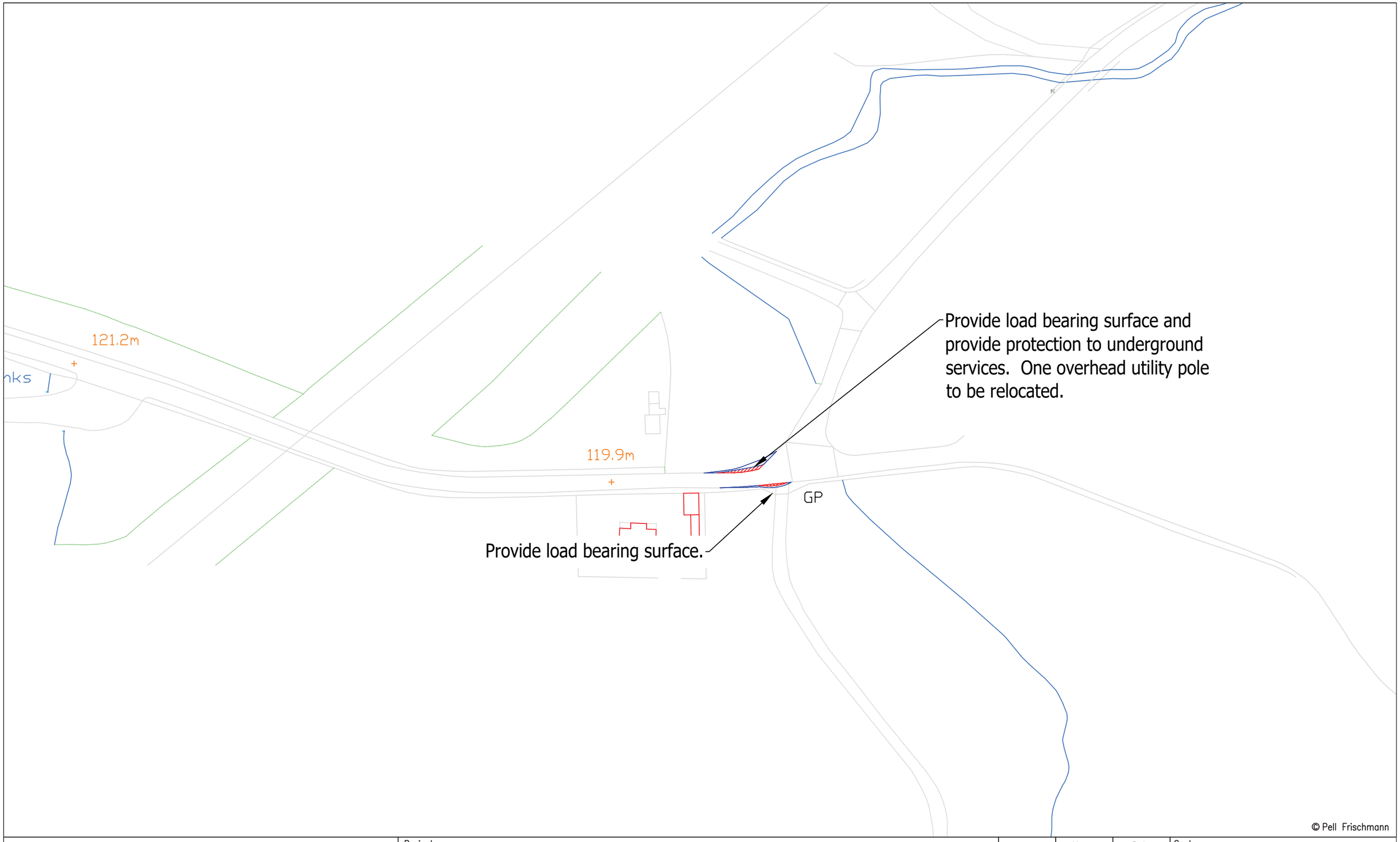
File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK19

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: 0



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: C7K Junction

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		23

Scale: 1:1000 @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

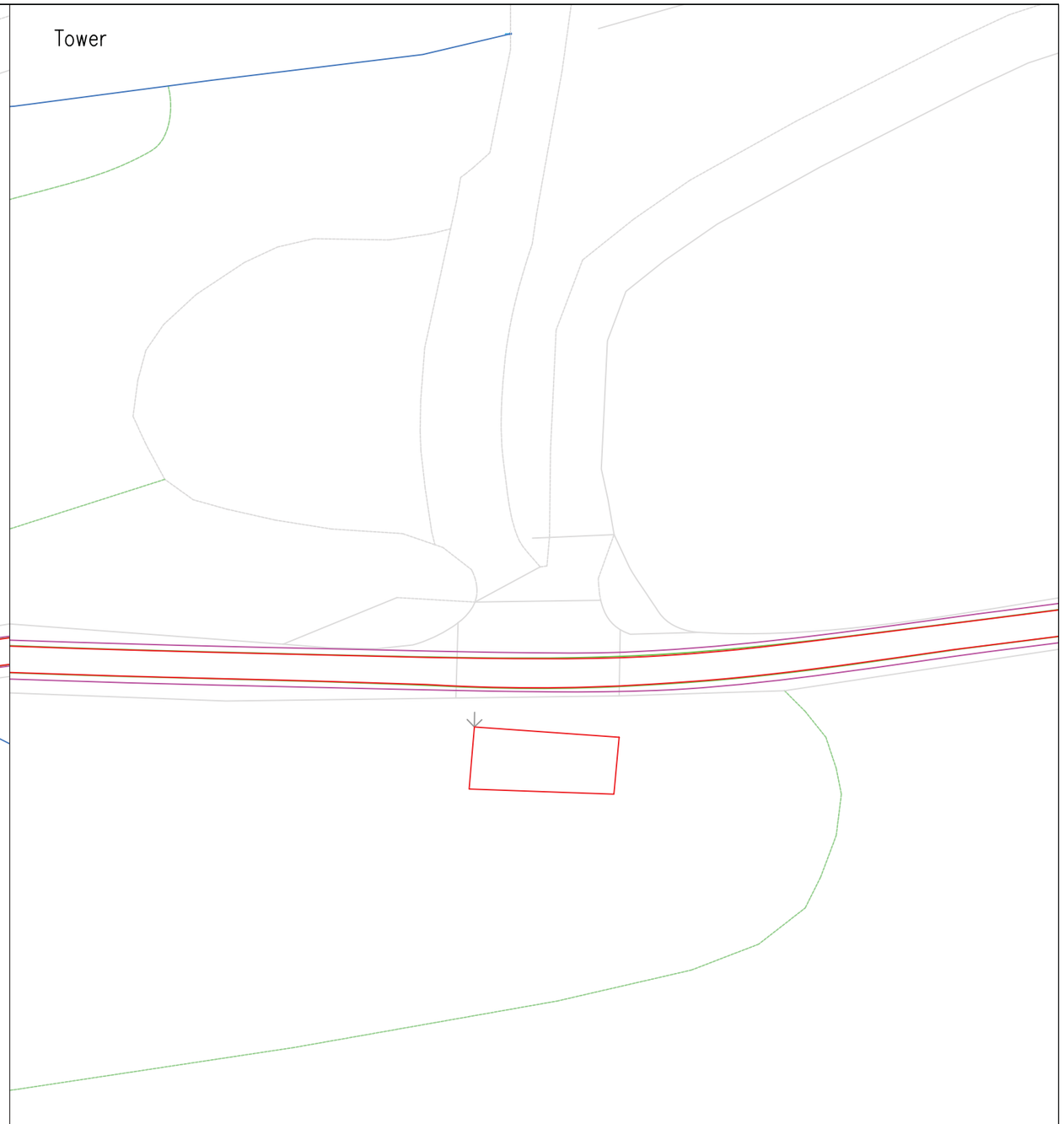
Drawing No.: SK19A

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: 0

Blade

Tower



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: South of Drumtochty Castle

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		24

Scale: 1:500 @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK20

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: 0

Blade

Tower

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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: North of Garrold Wood

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		25

Scale: 1:500 @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK21

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: 0

Blade

Tower

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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: South of Colt Moss

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		26

Scale: 1:500 @ A3

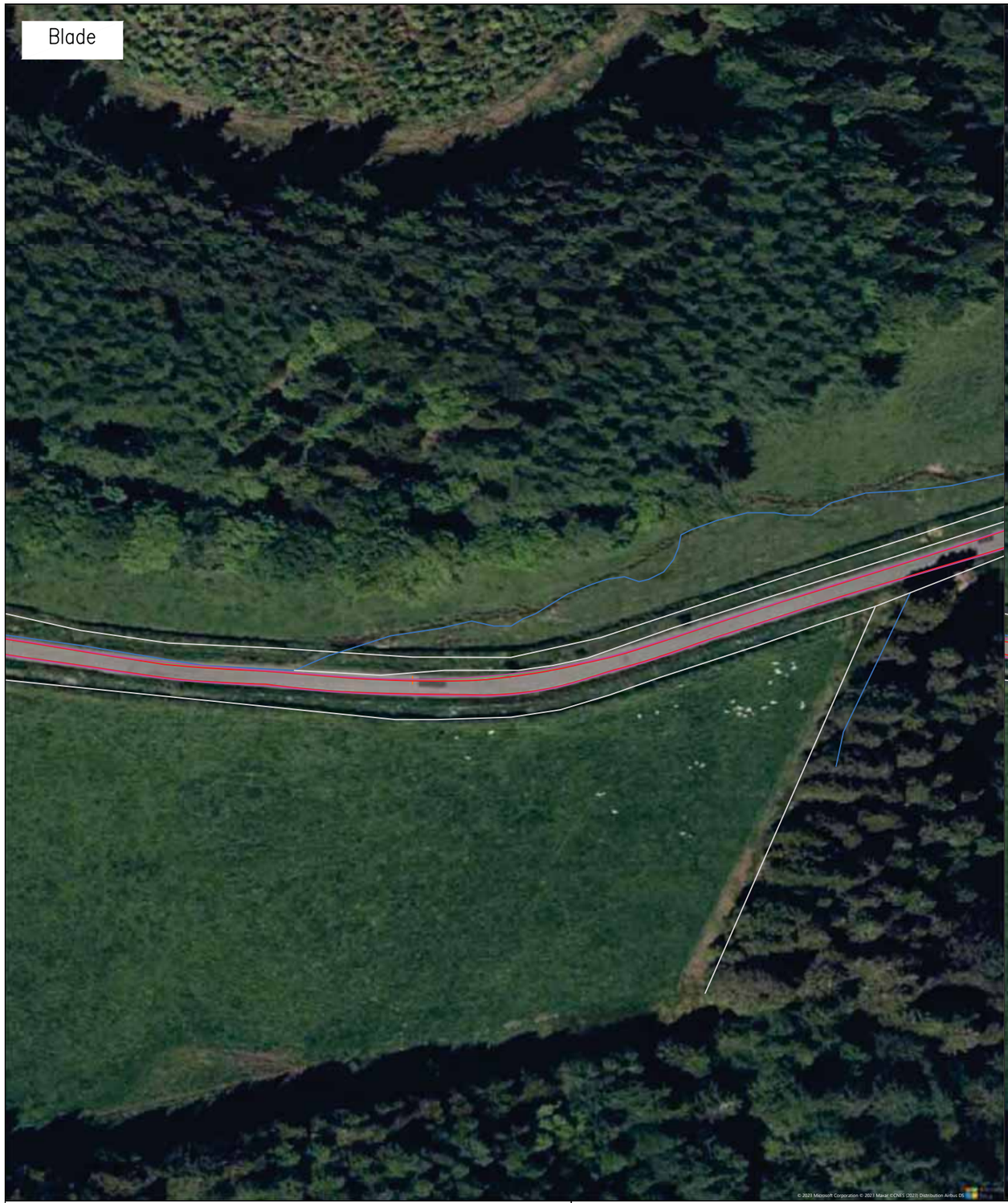
File No.: 230910 tracking – public.dwg

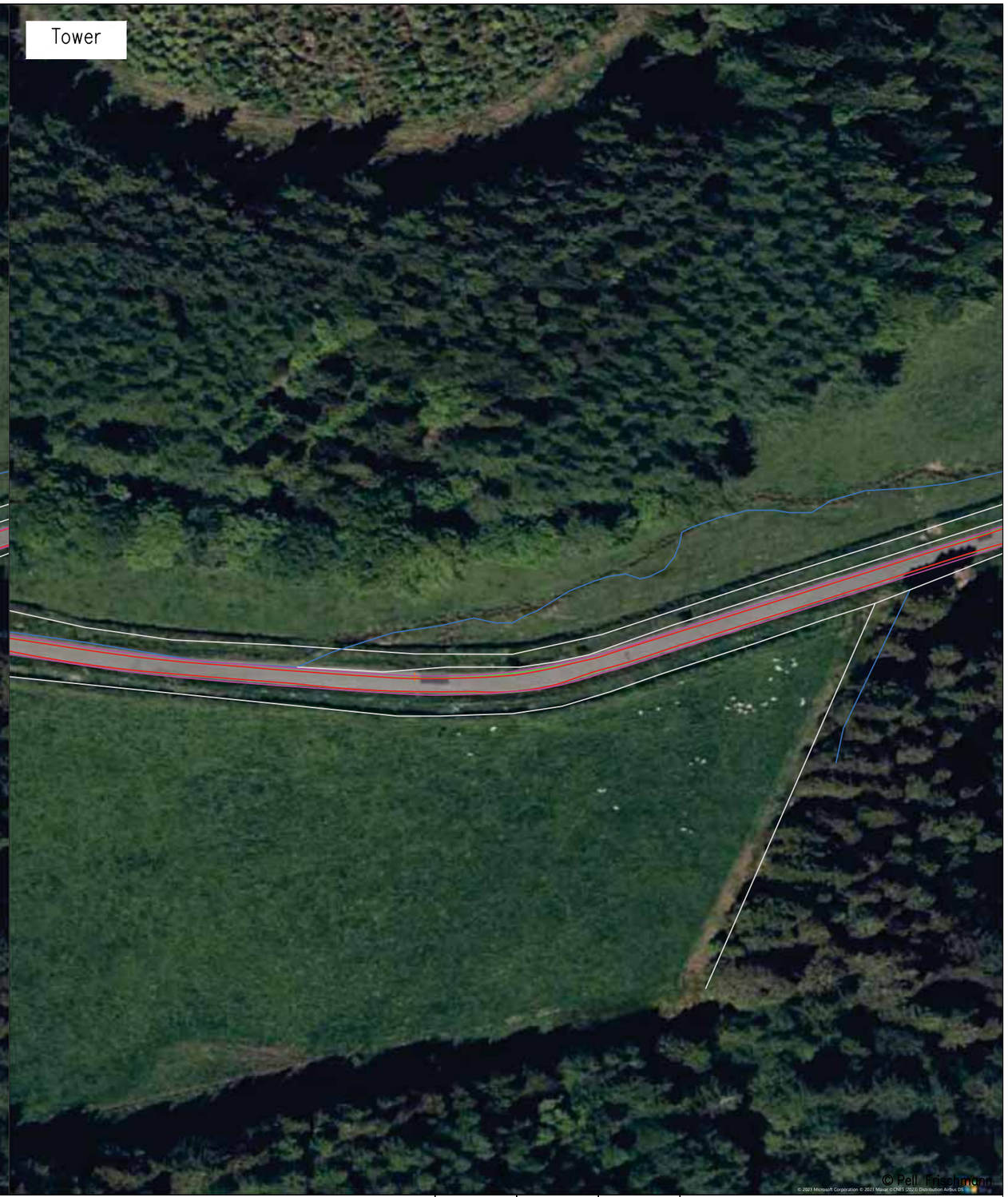
Drawing Status: Draft

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: 0





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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: North of Holeglen Wood

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		27

Scale: 1:1000 @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK23

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: 0

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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: South of Friar's Glen

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		28

Scale: 1:500 @ A3

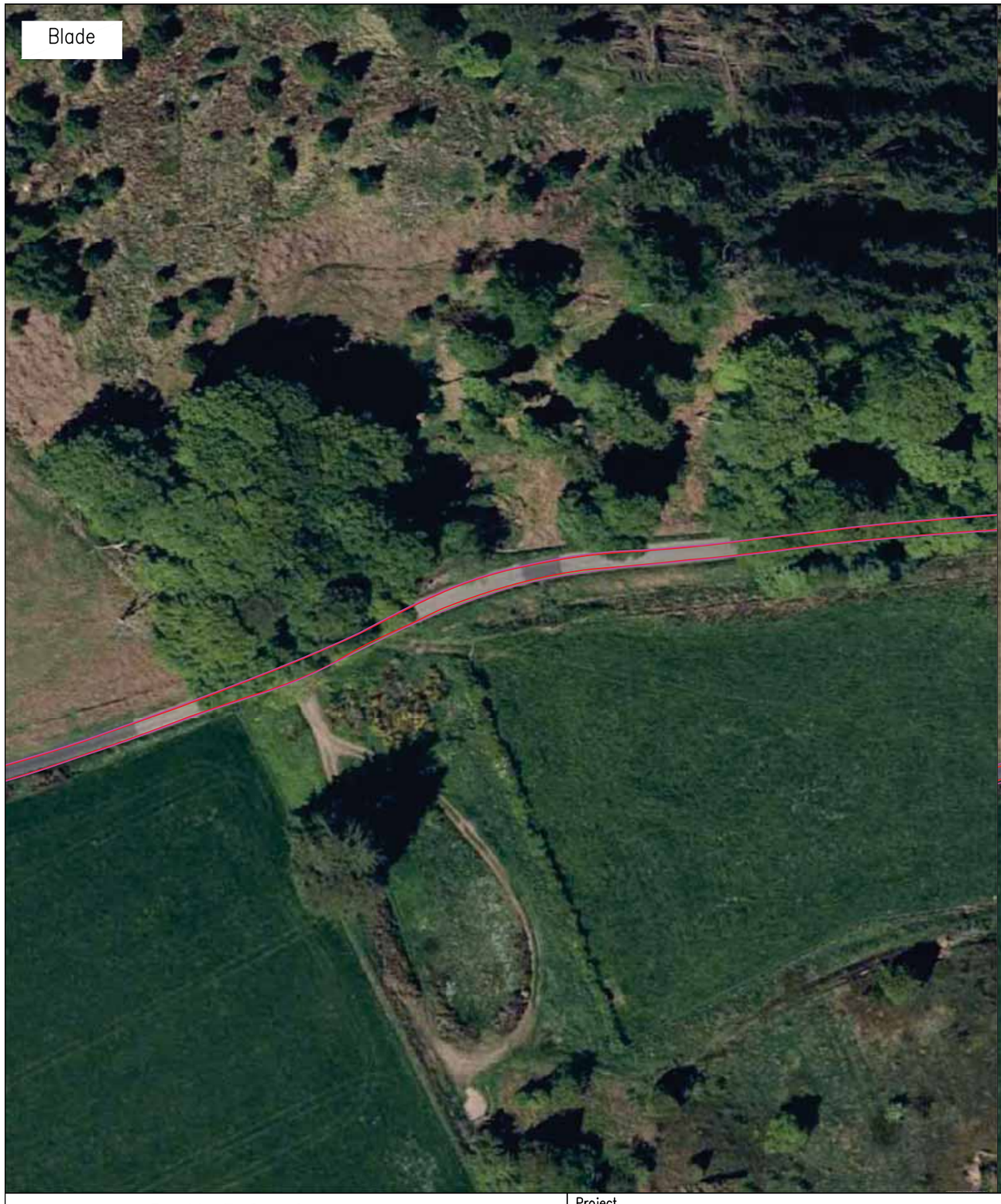
File No.: 230910 tracking – public.dwg

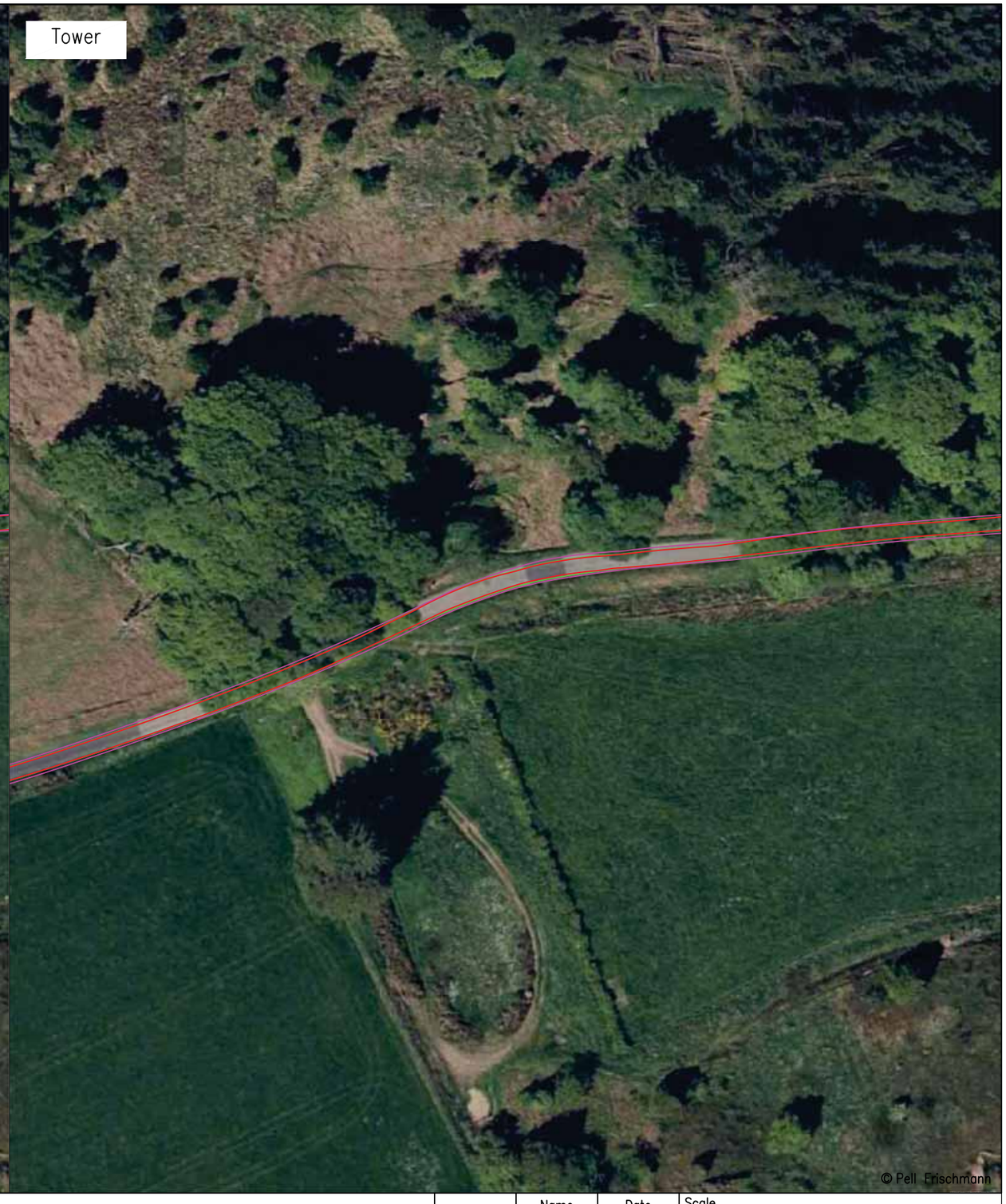
Drawing Status: Draft

Drawing No.: SK24

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: 0





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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: North of Strathfinella Hill

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		29

Scale: 1:1000 @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK25

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: 0

Blade

Tower

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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Site Access Junction

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		30

Scale: 1:500 @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK26

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: 0

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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Site Access Junction

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		30

Scale: 1:500 @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK26A

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: 0

Blade

Tower

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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: A90 Fordoun Junction

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		31

Scale: 1:500 @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK27

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: 0

Blade

Tower

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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: Old Aberdeen Road Rail Bridge

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		32

Scale: 1:500 @ A3

File No.: 230910 tracking – public.dwg

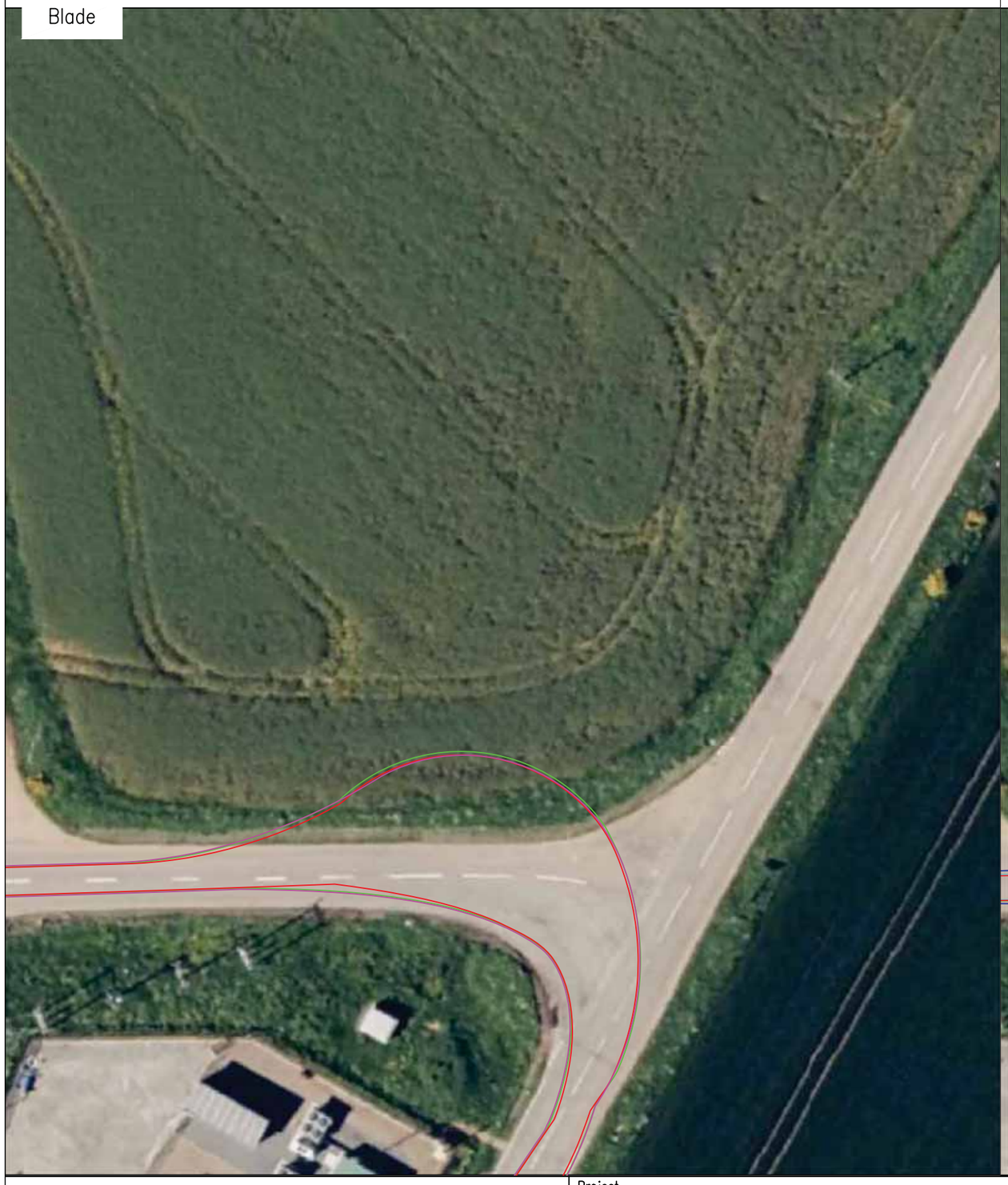
Drawing Status: Draft

Drawing No.: SK28

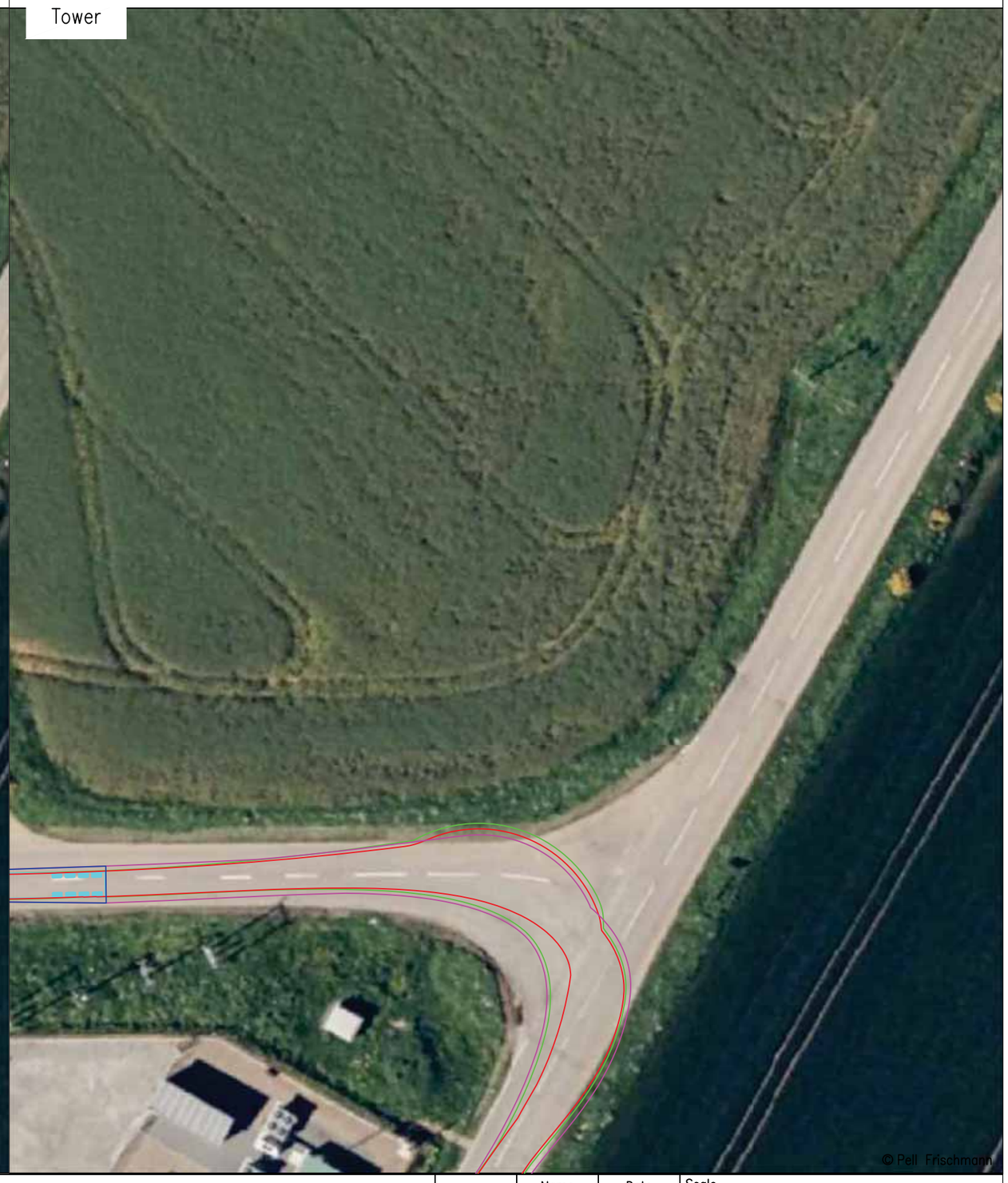
Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: 0

Blade



Tower



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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: B966 Junction

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		13

Scale: Custom @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK29

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: 0

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Client: ITPEnergised

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

Project: Hydroglen

Drawing Title: EWT DW61 50m HH Blades Pack and Base Tower

SPA Location: B966 Junction

	Name	Date
Drawn	GB	28/11/2023
Designed	GB	28/11/2023
Checked	TL	26/09/2023
Point of Interest		13

Scale: 1:500 @ A3

File No.: 230910 tracking – public.dwg

Drawing Status: Draft

Drawing No.: SK29A

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: 0