Environmental Impact Assessment Report

M74 West Renewable Energy Park

# **Appendix B: Route Survey Report**

Volume 4: Technical Appendices Confidential

TA 9.1: EIAR

# Pell Frischmann

M74 West Wind Farm

Abnormal Indivisible Load Route Survey

August 2024 10109226

# M74 West Wind Farm Abnormal Indivisible Load Route Survey

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Prepared for

**Renewco Power Limited** 

12 Alva Street Edinburgh EH2 4QG Prepared by

93 George Street Edinburgh EH2 3ES

Pell Frischmann



Pell Frischmann

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# M74 West Wind Farm Abnormal Indivisible Load Route Survey

# 1 Introduction

# 1.1 Purpose of the Report

Pell Frischmann (PF) has been commissioned by Renewco Power Limited to undertake a survey of the Abnormal Indivisible Load (AIL) delivery route for wind turbine loads associated with the construction and development of M74 West Wind Farm, located to the southeast of Douglas, South Lanarkshire.

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

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

It is the responsibility of the turbine supplier to ensure that the entirety of the proposed access route is suitable and satisfactory and that all third party land rights have been secured. The turbine supplier will be responsible for ensuring that the finalised proposals meet the appropriate level of health and safety consideration for all road users and are in accordance with the relevant legislation at the time of delivery.

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# 2 Site Background

### 2.1 Candidate Turbine

Renewco Power Limited have indicated that the candidate turbine is the SGRE155 turbine at a tip height of 200m. The details of the components are detailed in Table 2-1 below.

**Table 2-1: Turbine Size Summary** 

Component	Length (m)	Width (m)	Height / Min Diameter (m)	Weight (t)
Blade	76.705	4.322	3.030	25.644
Base Tower	14.034	4.800	4.800	84.015
Mid Tower 1	19.880	4.800	4.800	84.276
Mid Tower 2	24.360	4.800	4.793	79.566
Mid Tower 3	30.520	4.793	4.500	77.048
Top Tower	31.208	4.500	3.503	62.438
Hub	4.772	4.500	4.110	54.960
Nacelle	15.162	4.205	3.643	80.003
Drive Train	7.446	3.130	3.218	84.679

# 2.2 Proposed Delivery Equipment

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

Towers would be carried in a 4+7 clamp adaptor style trailer, whereas loads such as the hub, nacelle housing and top towers would be carried on a six-axle step frame trailer.

Figure 1-1: Blade Trailer



Figure 2-2: Tower Trailer



## 3 Route Section Review

# 3.1 Port of Entry

The proposed Port of Entry (POE) is KGV Docks in Glasgow. The port is the closest suitable port to site and as such is in line with the Government's "Water Preferred" policy towards AIL movements.

The port has been used by renewables deliveries in the past for a number of wind farms, including the original Kennoxhead wind farm as well as Kype Muir, Kilgallioch, Andershaw and Clyde wind farms.

The port has sufficient quay and storage space and is well located for the strategic trunk road network.

### 3.2 Proposed Access Route

Access to the proposed development will be taken from four locations:

Loads for the development area to the east of the M74 will use a temporary access that is to be constructed as part of the proposed development. This access will be controlled and only used for AIL access and will be removed following deliveries. A detailed traffic management plan for the operation of the temporary access will be secured via planning condition and agreed with Transport Scotland and Police Scotland. Agreement in principle has been secured for the junction.

The new access junction is required due to height constraints under the M74 which prevent loaded AIL access. Once unloaded, there is sufficient space for loads to depart the site via the Thirstone Quarry access track onto the B7078.

All other AIL loads will access via the B7078, having departed the M74 at Junction 13. The turbines to the west of the B7078 will be accessed from new access junctions designed and provided for that purpose.

Access to the turbines located between the B7078 and M74 will be accessed from the existing junction for Thirstone Quarry, which would be upgraded to suit turbine deliveries.

The proposed route from the POE to site access junctions has been reviewed during a site visit. The route is as follows:

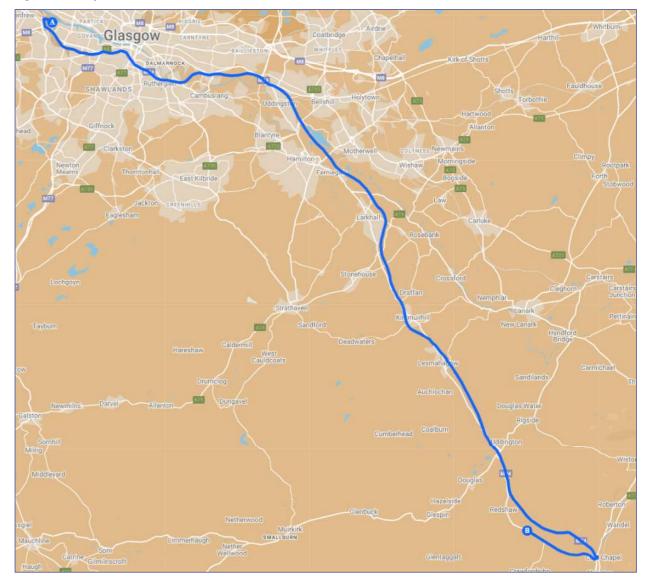
- Loads will exit the east gate from KGV Dock taking the second exit at the roundabout heading north west on Kings Inch Drive;
- Loads will take the second exit at the roundabout to stay on Kings inch Drive;
- Loads will take the second exit at the roundabout to stay on Kings inch Drive;
- Loads will turn left at the Kings Inch Drive / Mayo Avenue Junction;
- Loads will merge onto M8 via the ramp to Glasgow;
- Loads will take the M74 exit toward Carlisle;
- Loads for the area east of the M74 will depart the M74 at the bespoke access junction. All other loads will continue southbound;
- At Junction 13 of the M74, loads will depart the motorway;
- At the roundabout, loads will take the 5th exit onto A702;
- At the roundabout, loads will take the 2nd exit onto B7078; and
- Loads will proceed to their respective access junctions.

The proposed access route section is illustrated in Figure 3-1. The layout of the site and proposed site access junctions are illustrated in Figure 3-2.

Abnormal Indivisible Load Route Survey

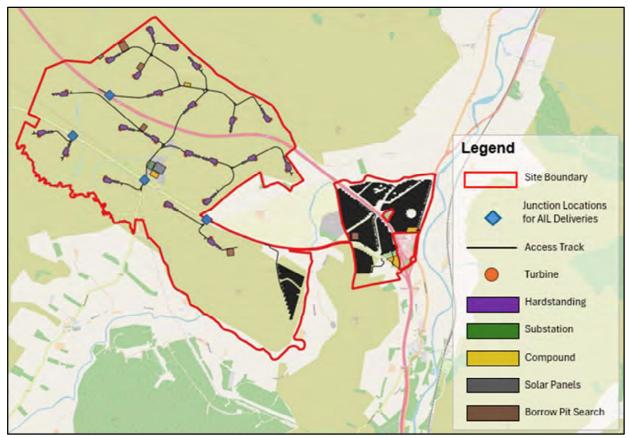
Figure 3-1: Proposed Access Route

M74 West Wind Farm



POI

Figure 3-2: Proposed Site Layout and Junction Locations



### **Route Constraints**

The constraints noted on the route are detailed in Table 3-1. These cover all constraints only on the section shown in Figure 3-1 above. Transport issues within the development site have not been taken into consideration.

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

**Table 3-1: Constraint Summary** 

POI	Key Constraint	Details
1	Kings Inch Drive Roundabout 1	Loads will exit the port via the AIL access gate onto Kings Inch Drive.  Loads will cross the central island of the junction and utilise the existing overrun area. Two road signs on the exit splitter island should be removed to enable oversail.

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#### Details



**Key Constraint** 

Loads will proceed ahead taking the second exit onto Kings Inch

Loads will oversail the northern verge on approach, but no works are required. They will oversail the southern verge on approach where one lighting columns should be removed.

Loads will oversail the central island where loads should be raised on suspension settings to oversail central island. Two lit road signs should be removed.

Kings Inch Drive Roundabout 3



Loads will proceed ahead at the junction, taking the second exit. No physical mitigation works are required at this location.

Kings Inch Drive / Mayo Avenue Junction



Loads will turn left at the junction onto M8 slip road southbound.

Loads will oversail the northern central reservation where escorts should hold oncoming vehicles during movements as the blade tip will oversail onto the opposite side of the road.

Loads will oversail the inside of the left turn where the pedestrian call pole should be lowered.

Loads will overrun and oversail the central reservation of the exit arm. A load bearing surface should be laid and one road sign should be removed. Escorts will need to hold back oncoming vehicles as loads will drive onto the opposite side of the road.

M8 Junction 25a Slip Road



Loads would continue on the slip road and join the M8 heading southeast.

Loads will oversail the inside of the bend where the safety barrier should be confirmed suitable for oversail during the test run.

Loads will then join the M8, proceeding to the M74 southbound.



Loads for the development area to the east of the M74 would use the new access junction as illustrated in Appendix C.

The movement would be supported by the Police escort and an approved traffic management contractor.

All other loads will proceed southbound on the M74.

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POI	Key Constraint	Details
7	M74 Junction 13 Slip Road and Bend	Loads will depart the M74 turning left onto the slip road.
		Loads will require access to the entire carriageway through this location. No physical mitigation is required at this location.
8	M74 Junction 13 / A702 Roundabout	It is proposed that all loads will undertake a contraflow manoeuvre through the roundabout and turn right onto the A702 travelling west.  Loads will oversail the northern verge of the slip road where three lighting columns and two road signs should be removed.  Vehicles will overrun and oversail the western verge when turning right where a load bearing surface should be laid in overrun areas. Two lighting columns and three road signs should be removed. Loads will oversail the traffic barrier.
		When exiting, loads will overrun the exit arm splitter island where two bollards, one lighting column and one road sign will need to be removed. The blade tip will over-sail road signs on the central island of the junction.  An overrun area should be provided on the south eastern verge where a load bearing surface should be laid.
9	M74 Junction 14 / B7078 Roundabout	Loads will turn right onto the B7079 and will proceed northbound
		Loads will oversail the northern verge on the entry arm where load suspension should be raised to allow oversail of the traffic barrier. The blade tip will over-sail the entry arm splitter island where one lighting column and one road sign should be removed.  Loads will oversail the northern verge of the central island, however no physical works are required as the blade tip will oversail the signs.  Loads will oversail the north eastern verge of the exit arm where
10	D7070 Assess Jamestian	one lighting column should be removed.
10	B7078 Access Junction	Loads for the southern turbines would turn left at the junction.  The existing junction will be upgraded as shown in Appendix C in Drawing: Site Entrance D General Arrangement. The escorts will need to hold oncoming traffic whilst loads turn at this location.

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### M74 West Wind Farm Abnormal Indivisible Load Route Survey

POI	Key Constraint	Details
11	Quarry Access Junction	Loads for the turbines located between the B7078 and M74 will turn right at the existing junction which would be upgraded as illustrated in Appendix C.
		Loads for the western turbine will turn left at the existing junction which would be upgraded as noted in Appendix C in Drawing: Site Entrance B & C General Arrangement.
		The escorts will need to hold oncoming traffic whilst loads turn at this location.
		Loads for the northern turbine will continue ahead.
12	West Access Junction	Loads for the west turbine will turn left onto the B740 and then turn right at this location into a new access junction as illustrated in Appendix C in Drawing: Site Entrance B & C General Arrangement.
		The escorts will need to hold oncoming traffic whilst loads turn at this location.
13	North Access Junction	Loads for the northern access junction would turn left at the junction.
		The existing junction will be upgraded as shown in Appendix C in Drawing: Site Entrance A General Arrangement. The escorts will need to hold oncoming traffic whilst loads turn at this location.

# 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
- Magenta The oversail tracked path of the load where it encroaches outwith the trailer (load swept path).

Where mitigation works are required, the extents of overrun and oversail areas are illustrated on the swept path drawings.

Please note that where assessments have been undertaken using Ordnance Survey (OS) base mapping, CAD based aerial mapping and historic topographical data, there may be errors in these data sources.

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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, aerial mapping, historic topographical surveys or client supplied data.

Where mitigation works are required, the extents of over-run and oversail areas are illustrated on the swept path drawings. Additional land areas to those indicated in the swept path assessment drawings may be required to facilitate the construction of the proposed physical mitigation measures depending on the site conditions and topography. The extent of any additional areas required to construct mitigation works highlighted within this study and the detailed design of said mitigation works is outwith the scope of this study and should be confirmed on detailed topographical survey data.

The access junction drawings are provided in Appendix C.

### 3.5 Weight Review

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

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

Table 3-2: ESDAL Consultees

Organisation	Email Address		
Glasgow City Council	abnormalloads@glasgow.gov.uk		
Renfrewshire Council*	ei@renfrewshire.gov.uk		
M8 DBFO	m8dbfo.abloads@amey.co.uk		
Amey	SWAbloads@amey.co.uk		
M6 DBFO	m8dbfo.abloads@amey.co.uk		
Police Scotland	osdwindfarmabnormalloads@scotland.pnn.police.uk		
Network Rail	AbLoadsESDAL@networkrail.co.uk		
Historic Rail Estate	rsgbrb@jacobs.com		
South Lanarkshire Council	abnormalloads@southlanarkshire.gov.uk		
Transport Scotland	AbnormalLoads@transport.gov.scot		

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

## 3.6 Third Party Land

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

### 3.7 Summary of Issues

It is strongly suggested that following a review of this document, Renewco or their turbine supplier should undertake the following prior to the delivery of the first abnormal loads, to ensure load and road user safety:

- That any necessary topographical surveys are undertaken and that swept path results are completed;
- 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;

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#### M74 West Wind Farm

#### Abnormal Indivisible Load Route Survey

- A review of height clearances 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 are 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; 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.

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# 4 Summary

# 4.1 Summary of Access Review

PF has been commissioned by Renewco Power Limited to prepare a route survey report to examine the issues associated with the proposed delivery route to the proposed M74 West Wind Farm, located to the southeast of Douglas, South Lanarkshire.

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

Where mitigation works are required, the extents of over-run and oversail areas are illustrated on the swept path drawings. Additional land areas to those indicated in the swept path assessment drawings may be required to facilitate the construction of the proposed physical mitigation measures depending on the site conditions and topography. The extent of any additional areas required to construct mitigation works highlighted within this study and the detailed design of said mitigation works is outwith the scope of this study and should be confirmed on detailed topographical survey data.

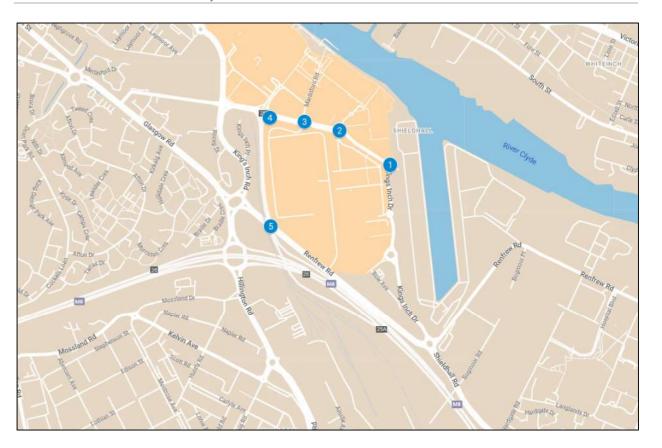
The report is presented for consideration to Renewco Power Limited. Various road modifications, structura reviews and interventions are required to successfully negotiate the section of route.

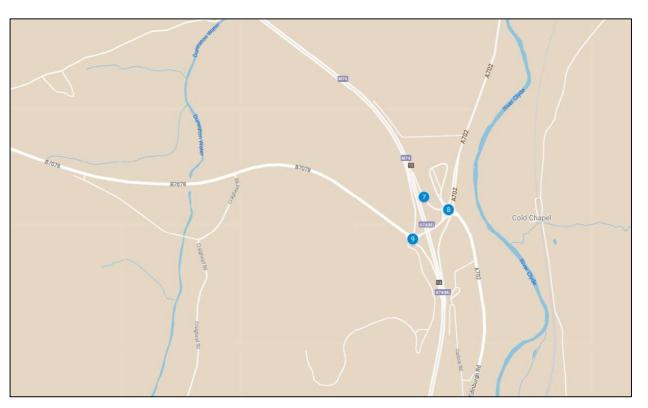
#### 4.2 Further Actions

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

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

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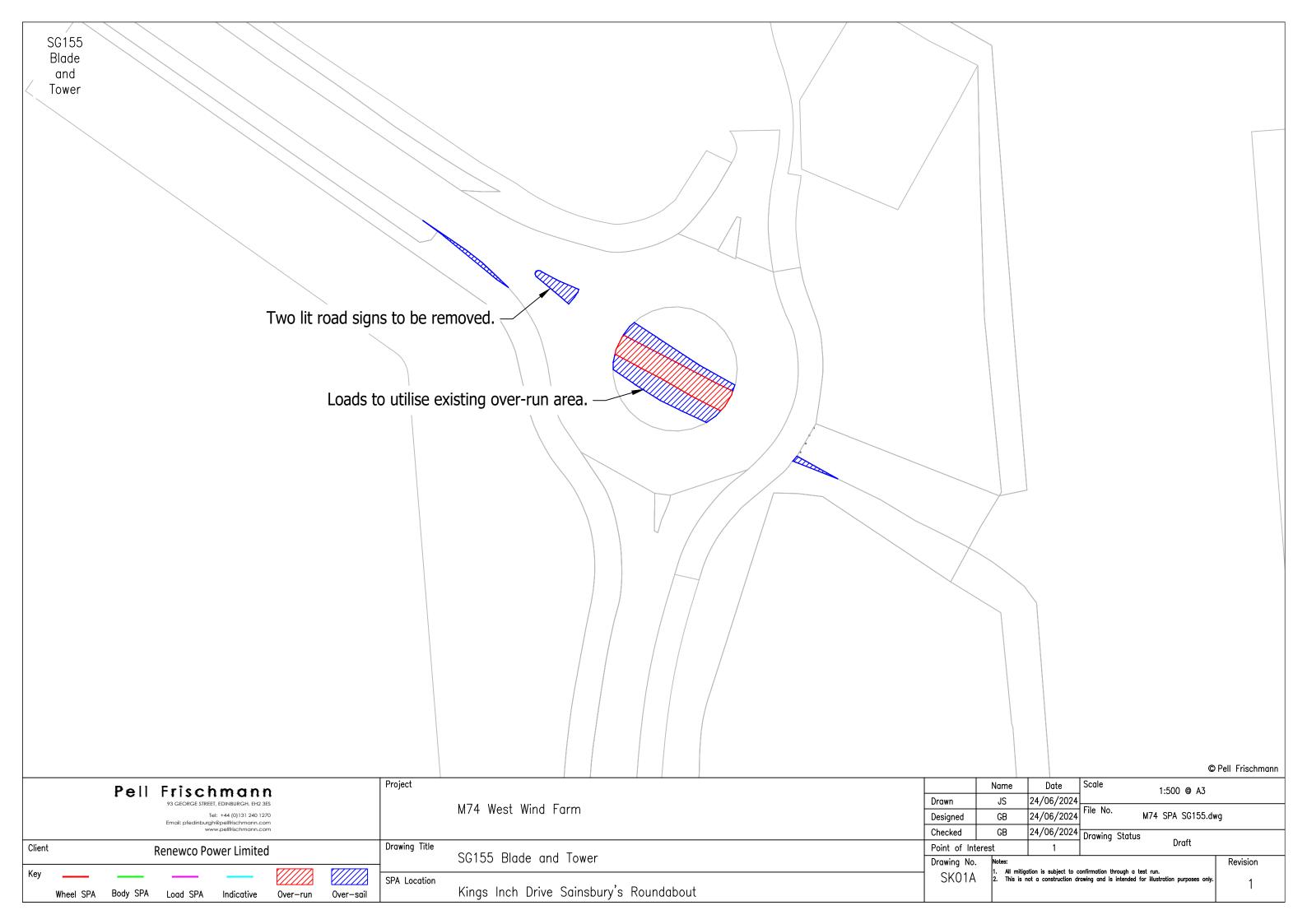




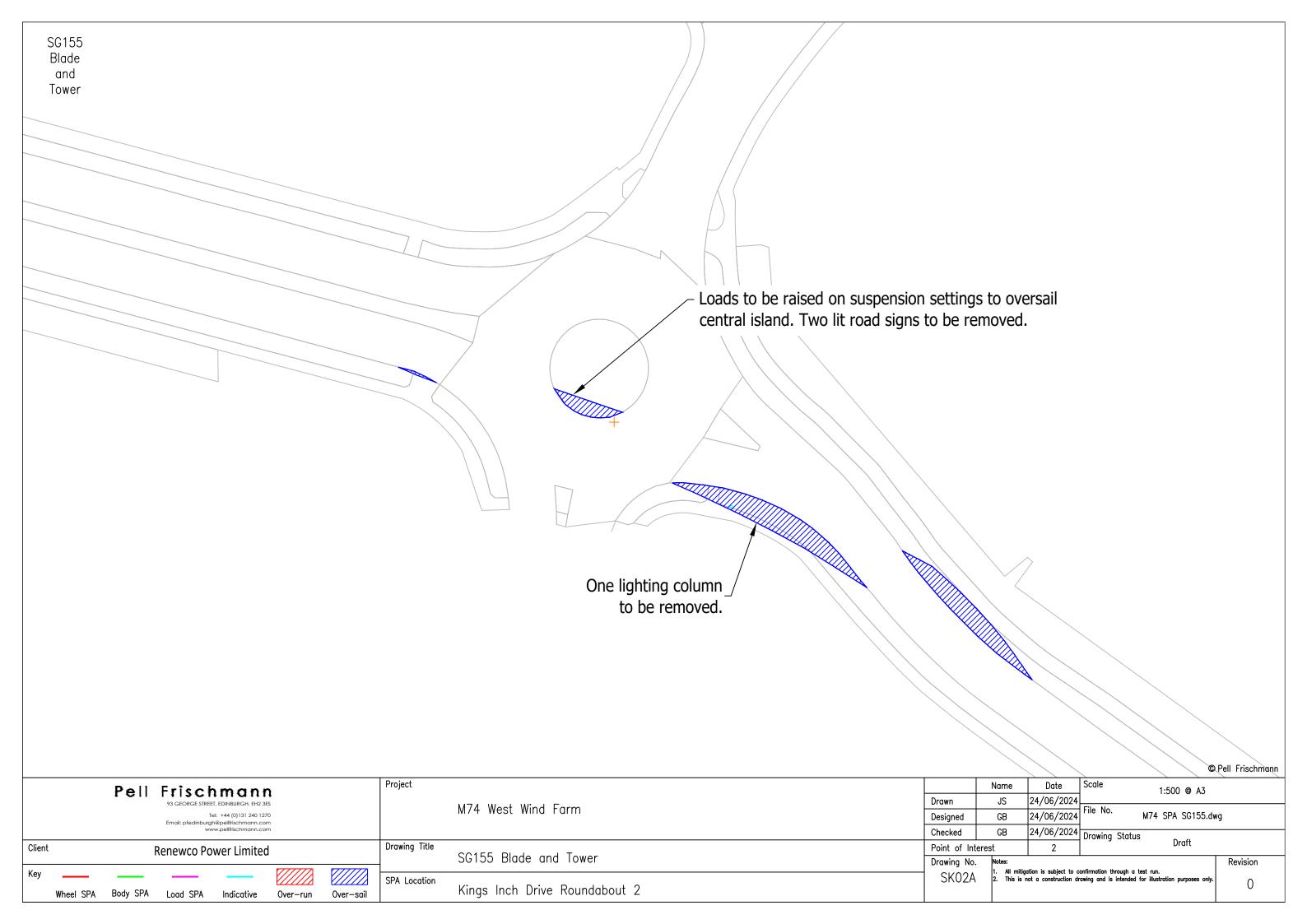


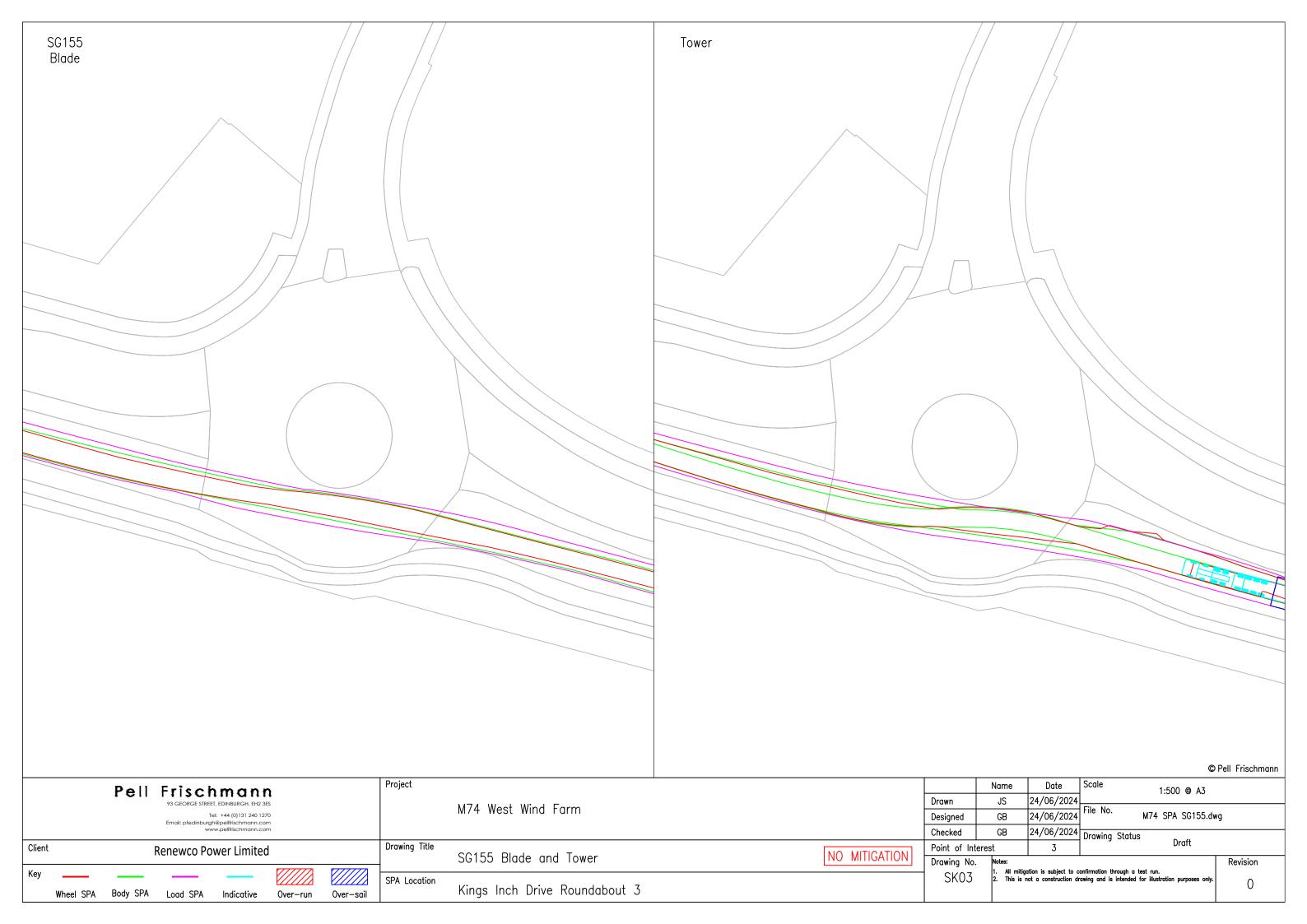
Appendix B Swept Path Assessments



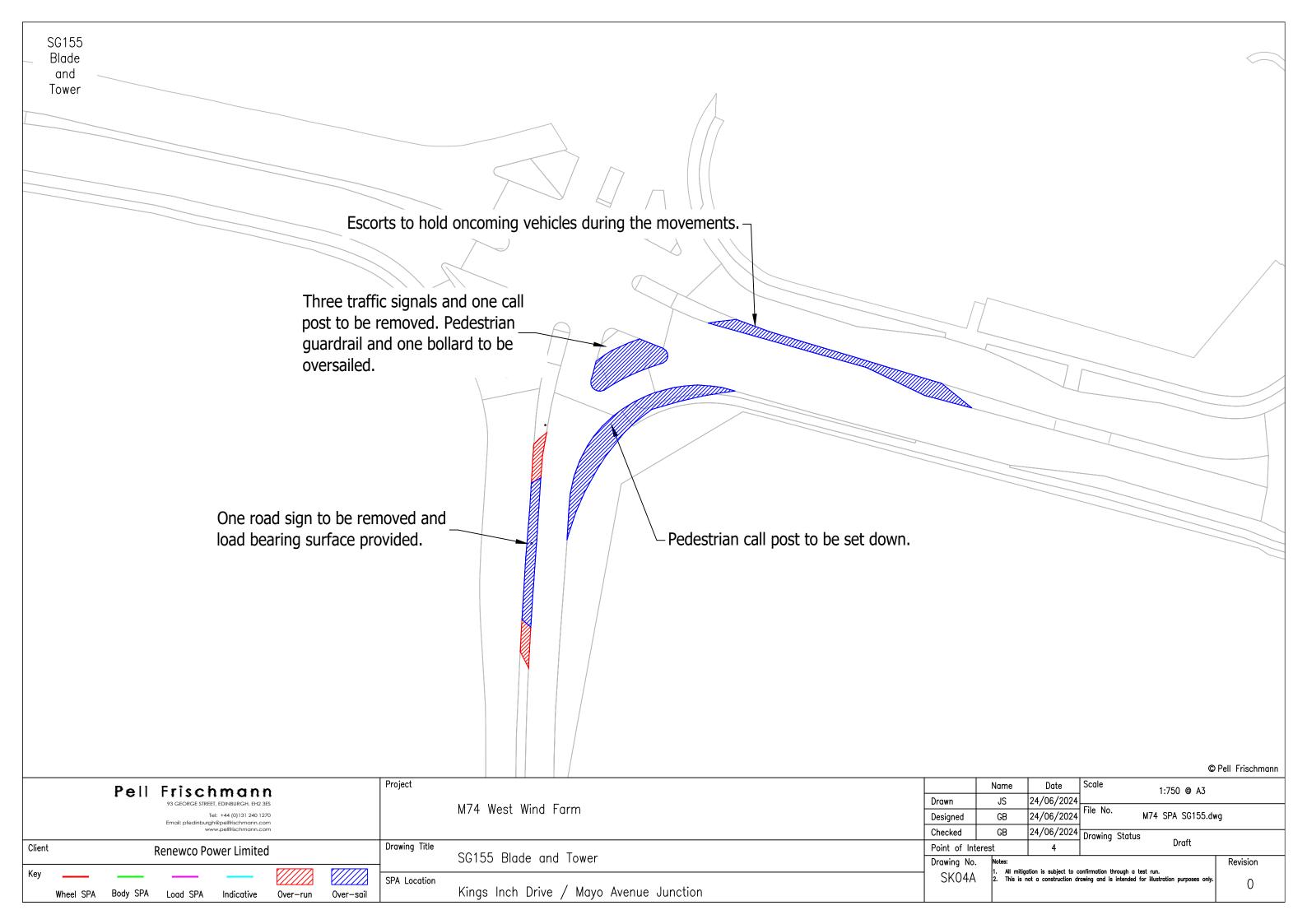


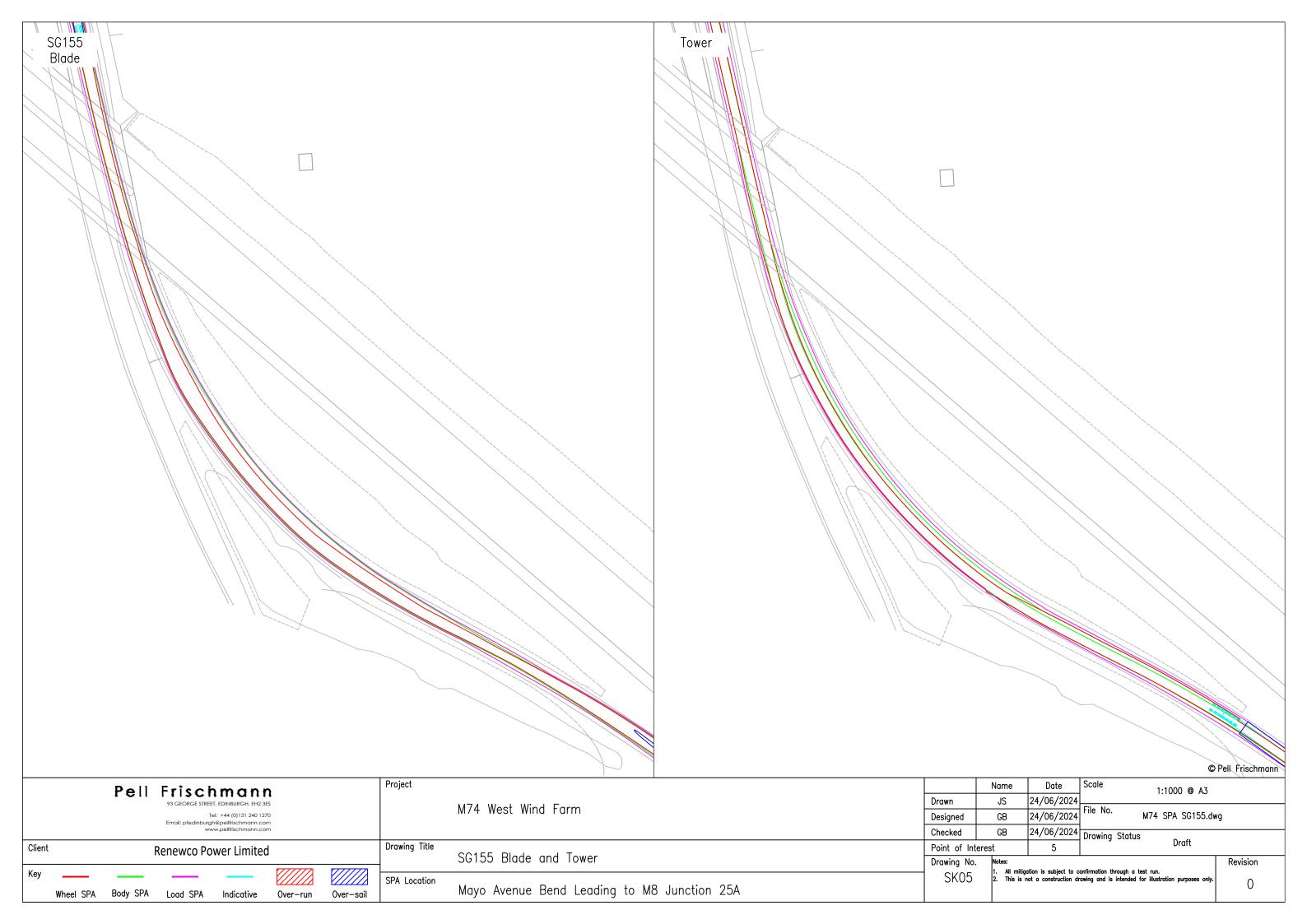


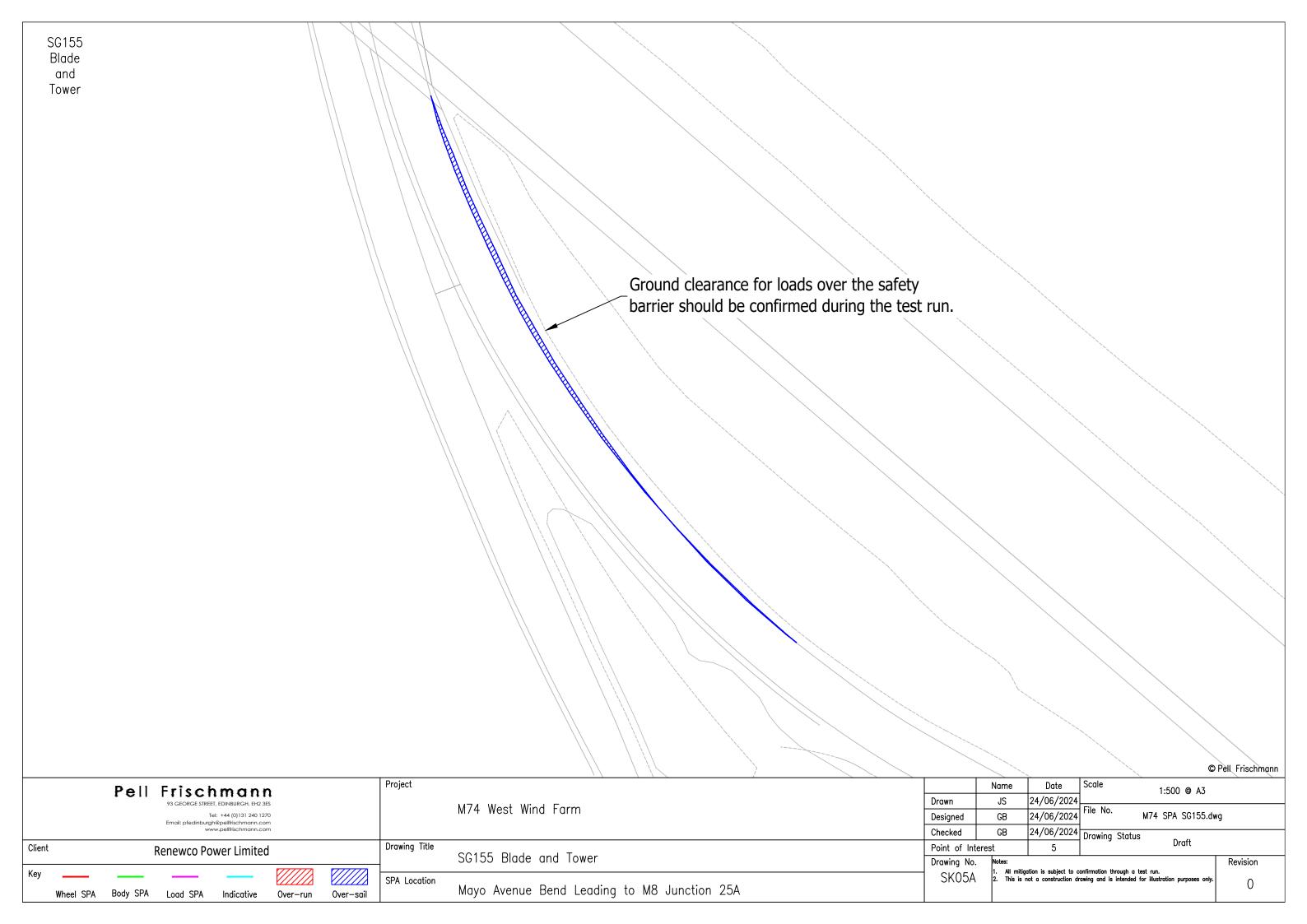


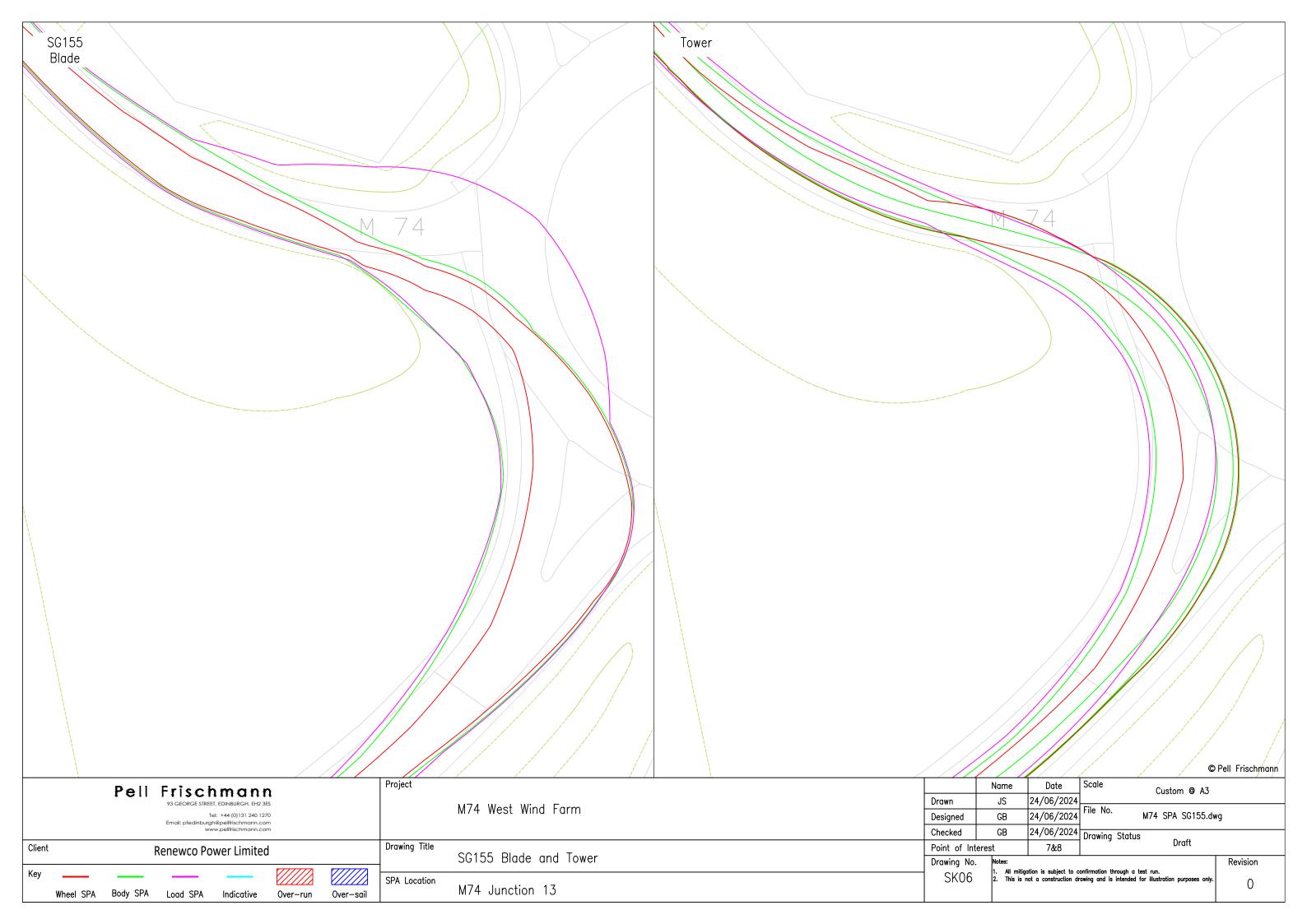


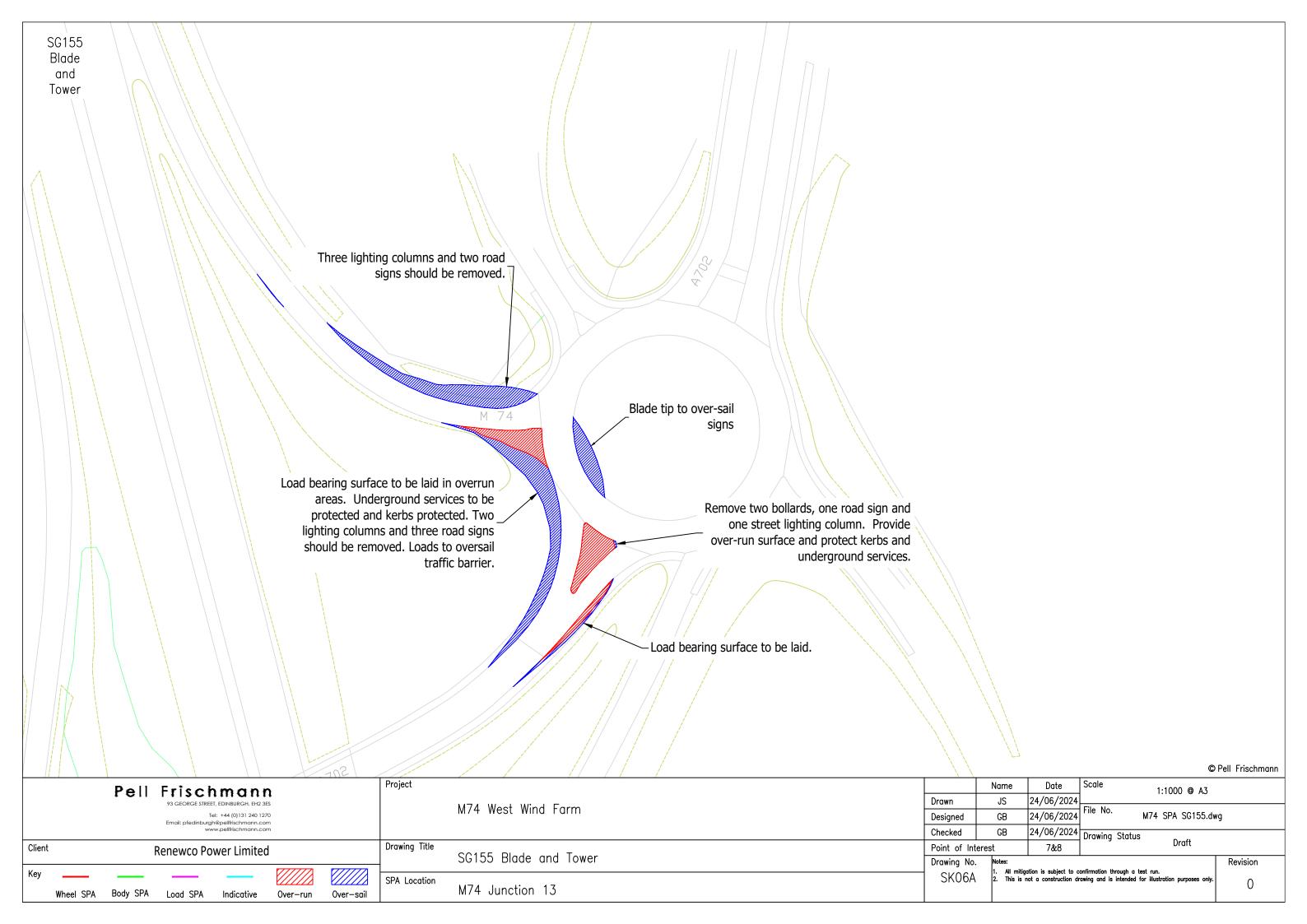


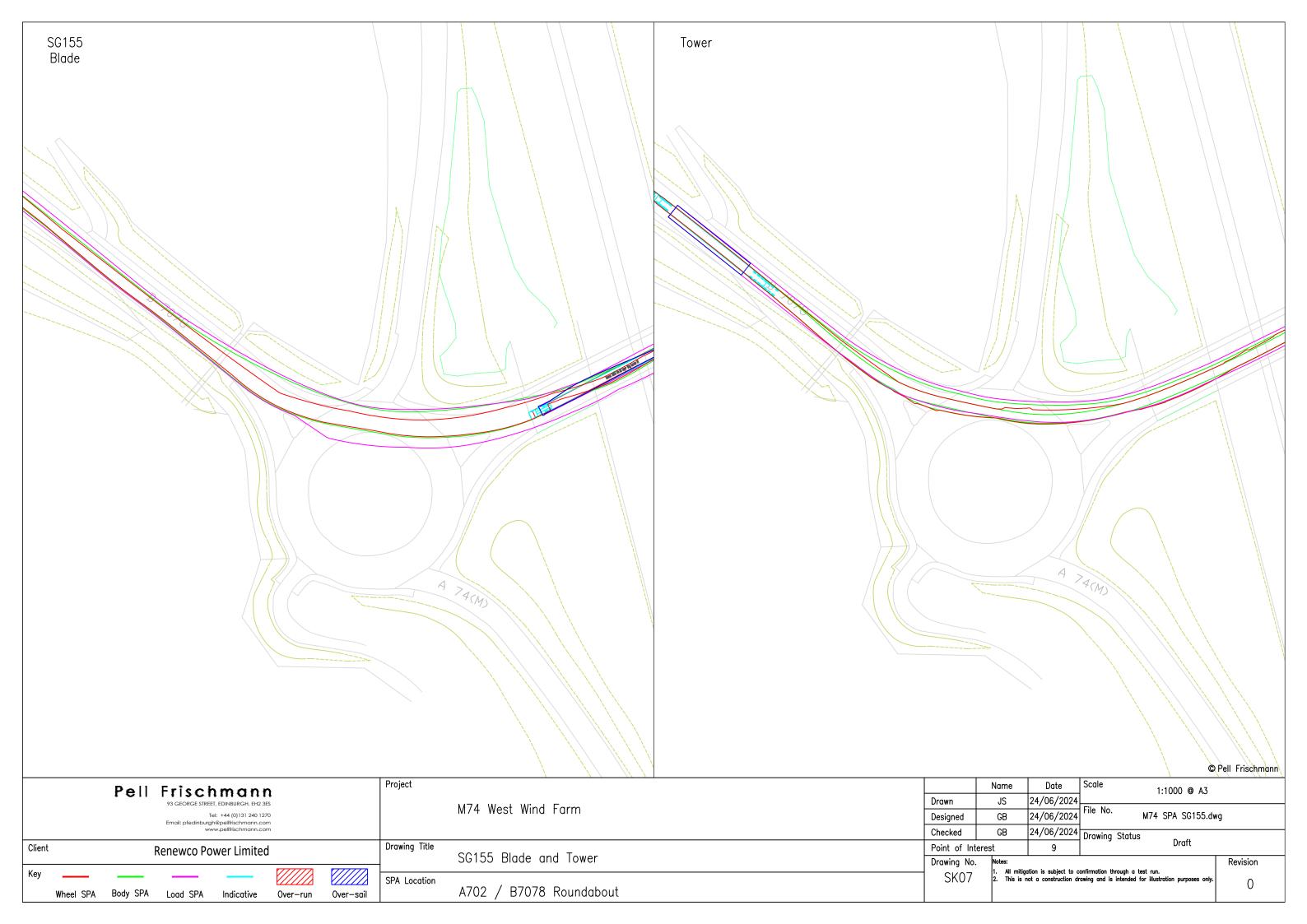


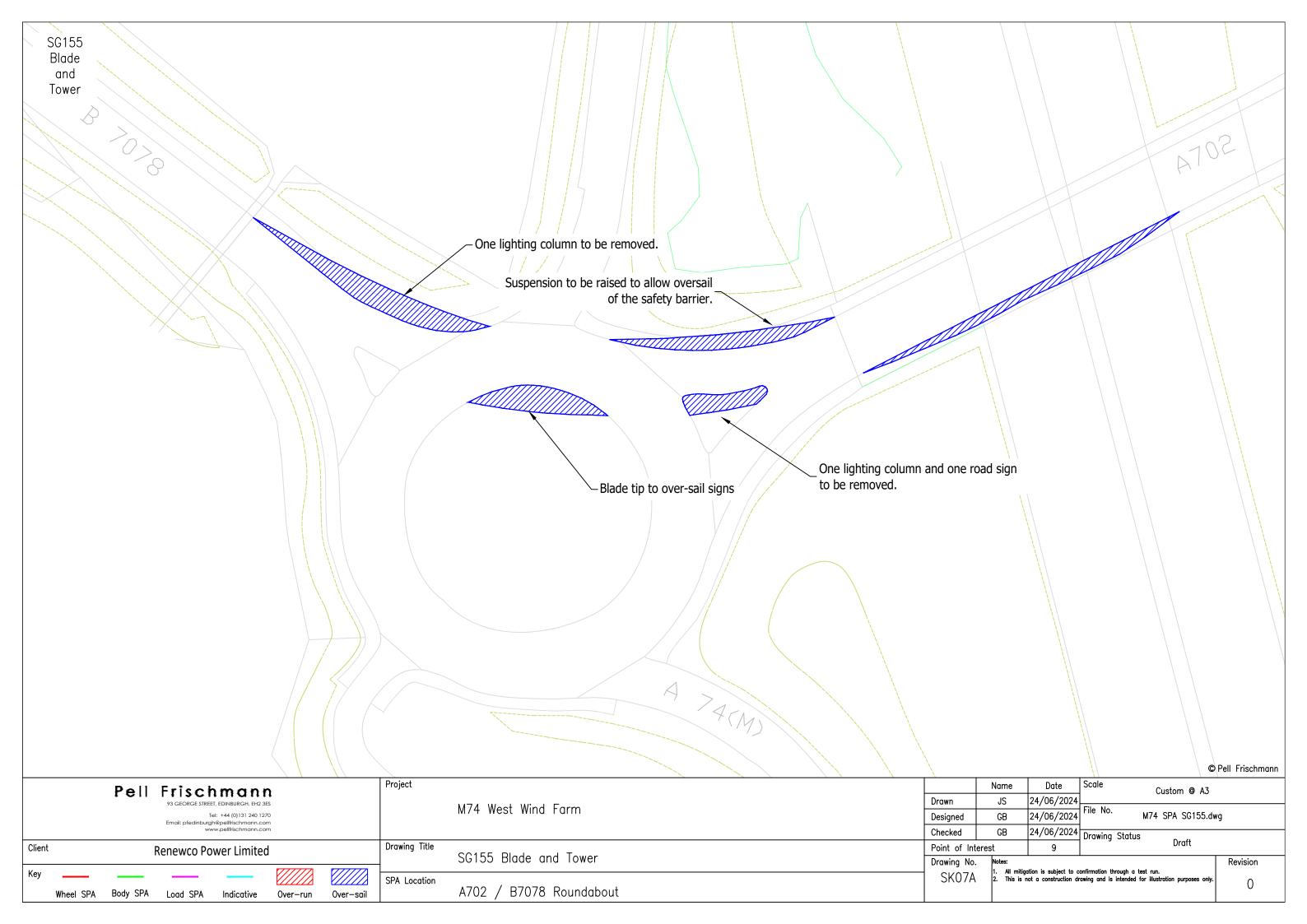




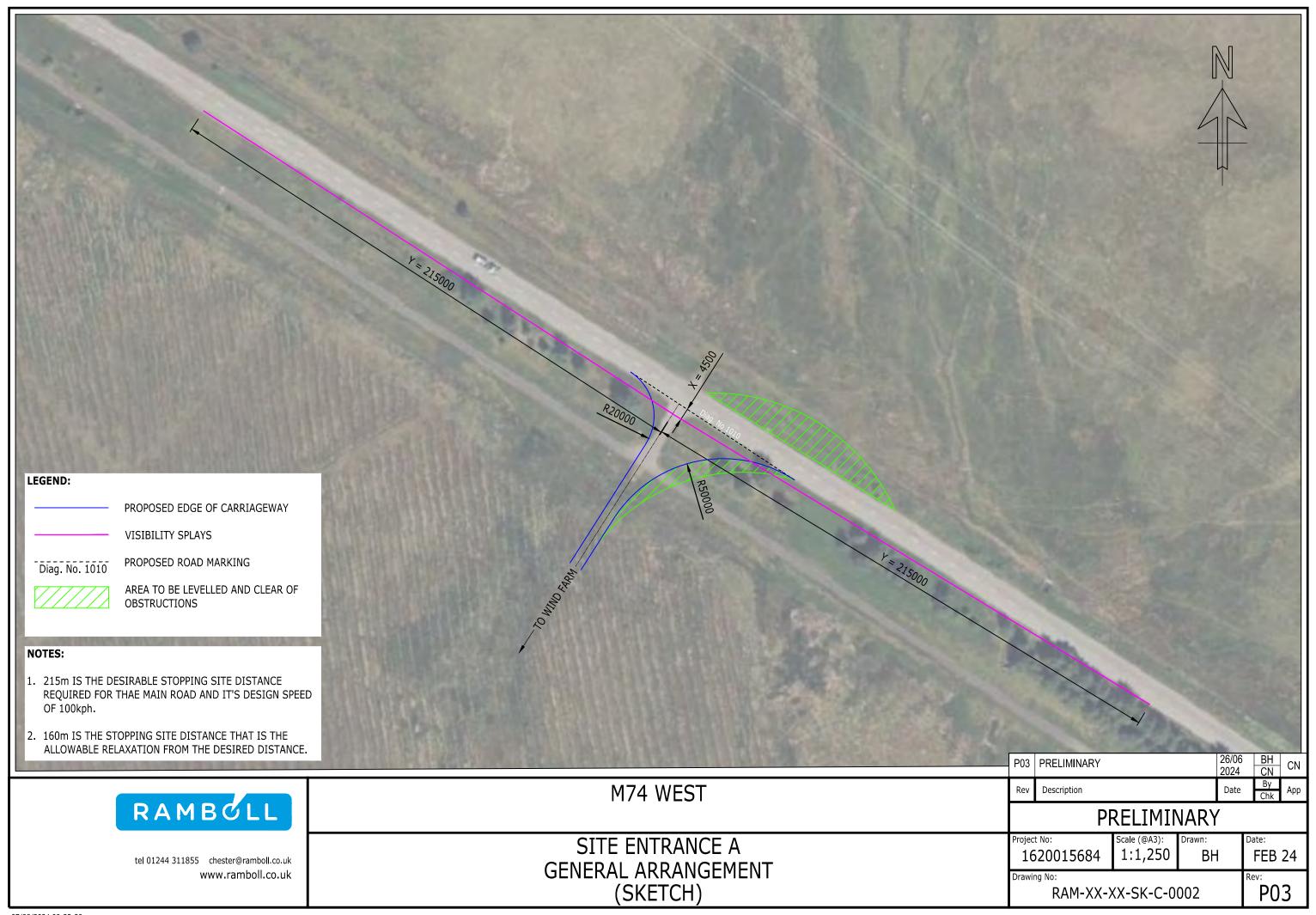


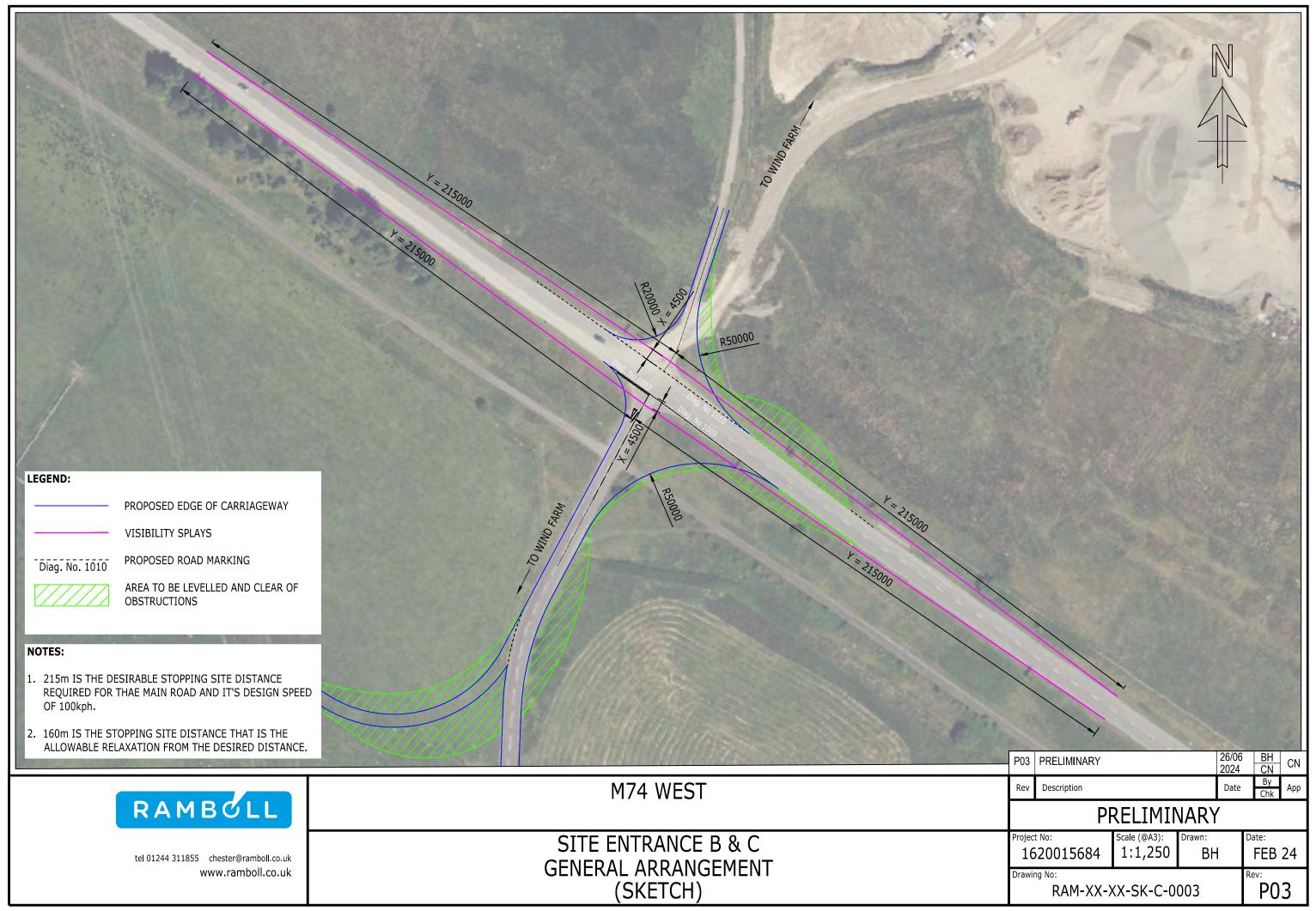


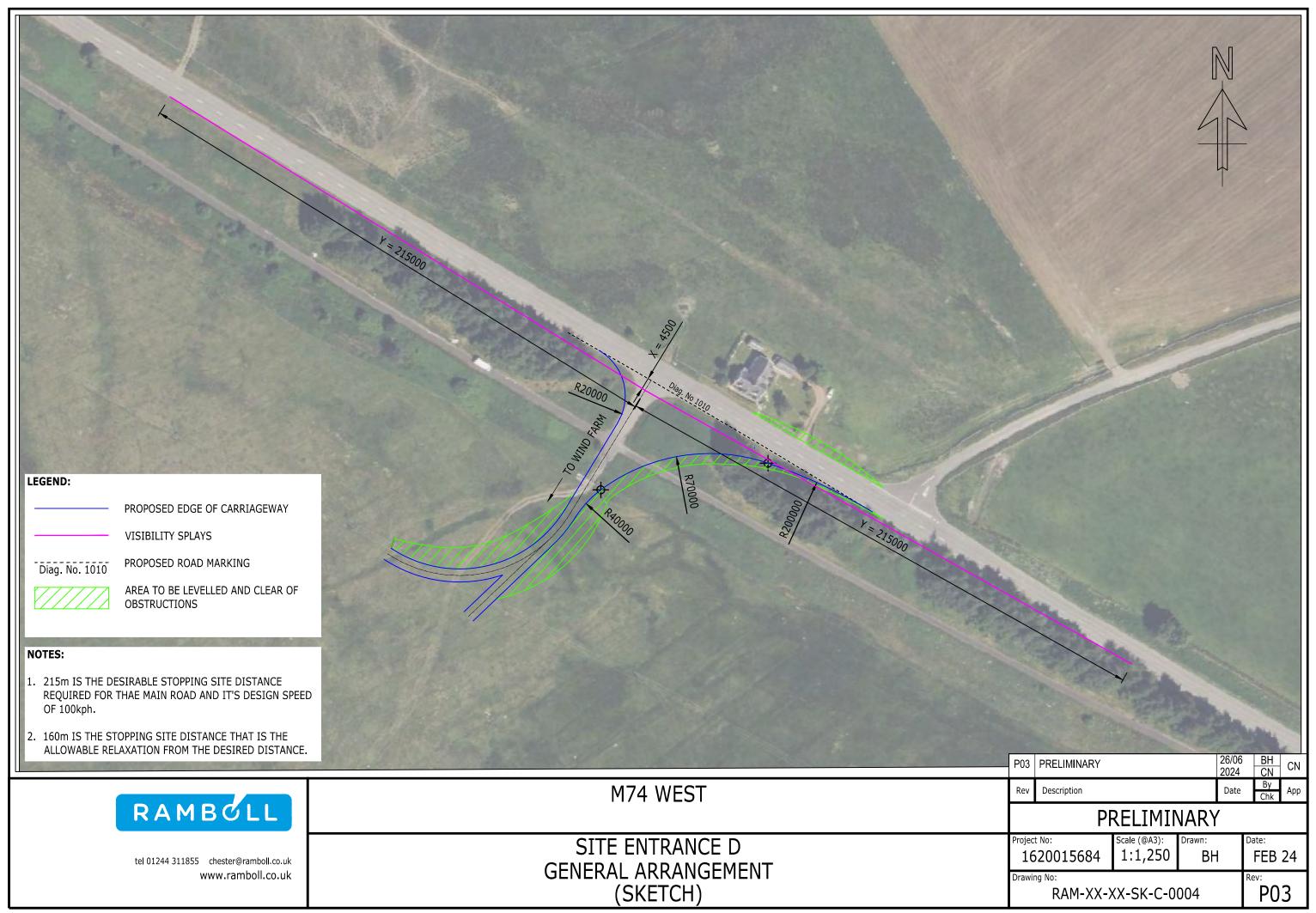




Appendix C Access Junction Drawings







Appendix D ESDAL Consultee Responses

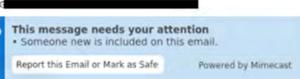
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#### M74 West Wind Farm

#### Abnormal Indivisible Load Route Survey

#### RE: Wind Farm ESDAL

Abnormalloads < Abnormalloads@southlanarkshire.gov.uk > Thu 15/08/2024 14:34



Good Afternoon Jordan,

Any new commissioned abnormal routes for proposed windfarm developments within South Lanarkshire for approvement will be subject to planning approval and conditions. A section 96 agreement will be required stating the agreed route, abnormal loads including gross weights, axles spacings and axle loads for each load, to cross reference when these movements are submitted.

The conditions of the planning approval will also include the requirement for the developer to undertake bridge assessments and Principal inspections of all affected structures agreed on route.

Many thanks

#### **David Raeside**

Engineering Officer - Structures
Roads, Transportation and Fleet Services
Community and Enterprise Resources
South Lanarkshire Council
Council Offices
Floor 7
Almada Street
Hamilton

ML3 0AA

Council website: www.southlanarkshire.gov.uk

#### RE: Wind Farm ESDAL

Vassill Dimitrov <Vassill.Dimitrov@amey.co.uk>

Thu 15/08/2024 12:42

To:

Good afternoon,

Your proposed route includes a section of the M8 and M74 under the maintenance remit of Amey in the South West Unit.

In general, we do not anticipate that a structure on our section of the route will present an issue.

However, we cannot confirm this until full vehicle configurations are received and assessed appropriately.

Regards

V Dimitrov

RE: Wind Farm ESDAL

M8DBFO Abloads < M8DBFOAbloads@amey.co.uk>

Thu 15/08/2024 11:29

To

Cc:M8DBFO Abloads < M8DBFOAbloads@amey.co.uk>

On behalf of Scottish Roads Partnership

When crossing Raith Bridge 0.25 miles south of J5 of the M74 any vehicle over 100te but not exceeding 150te MUST straddle lanes 1 and 2. No other traffic should be on the bridge at the same time.

Regards

lain Franklin CEng MICE MCIHT

Principal Engineer | Consulting

Amey Compound, Braid Square, Glasgow G4 9YQ amey.co.uk

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#### M74 West Wind Farm

Abnormal Indivisible Load Route Survey

#### RE: Wind Farm ESDAL

### rsgbrb <rsgbrb@jacobs.com>

Fri 16/08/2024 11:30

To

Hi Jordan,

OK - thanks for that. I'll await further developments, then (no pun intended!).

Best regards

Tania

#### Tania Howell

Abnormal Loads Officer (on behalf of National Highways Historical Railways Estate)

Jacobs

If your mail concerns abnormal load movements, please reply to <a href="mailto:RSGBRB@jacobs.com">RSGBRB@jacobs.com</a>

From

Sent: Friday, August 16, 2024 10:22 AM
To: rsgbrb <rsgbrb@jacobs.com>

Subject: [EXTERNAL] RE: Wind Farm ESDAL

Hi Tania,

Thanks for the response. The specifics around the access location currently form part of a planning application for the proposed development, at this stage we are only looking for confirmation on the suitability of the route from the port of entry to the vicinity of the site.

The specifics around the access will be undertaken at the appropriate time in full consultation with relevant parties.

Kind regards, Jordan



in www.pellfrischmann.com

From: rsgbrb <<u>rsgbrb@jacobs.com</u>>
Sent: Friday, August 16, 2024 10:02 AM

To: Jordan Stirrat < JStirrat@pellfrischmann.com>

Subject: RE: Wind Farm ESDAL

Dear Jordan,

Thank you for your enquiry.

I have looked at the route and can confirm that no HRE structures would be affected by the loads leaving the M74 at Junction 13.

However, please could you send me a more detailed map of where loads will be leaving the M74 at the bespoke access junction? I'm sure it will be fine, but I do have some structures east of the M74 in that general area, and I just want to satisfy myself that they won't be compromised.

Thanks and regards

Tania

Tania Howell
Abnormal Loads Officer (on behalf of National Highways Historical Railways Estate)
Jacobs

If your mail concerns abnormal load movements, please reply to RSGBRB@jacobs.com

### Pell Frischmann

# M74 West Wind Farm Abnormal Indivisible Load Route Survey

#### RE: Wind Farm ESDAL [OFFICIAL]

OSD Abnormal Loads Scotland <OSDAbnormalLoadsScotland@scotland.police.uk>

To:

#### OFFICIAL

#### Good afternoon

In response to your email enquiry dated 20<sup>TH</sup> Aug 2024, I can provide the following information on behalf of Police Scotland.

When a haulier has been selected for a particular project and they have been furnished with precise dimensions of the load to be transported by road, thereafter as part of the planning process a detailed route survey is produced by the haulier identifying all potential issues often referred to as "pinch points" along the entire proposed route. The route is then examined and commented upon by Transport Scotland /Transerv and the relevant Local Council amongst other partners.

Police Scotland consider the proposed route primarily from a road safety perspective. If due to the abnormal dimensions it is apparent other road users will be required to be directed to stop along the route by police in order to safely facilitate the movement or encroachment into an opposing undivided carriageway will occur, then police officers will be deployed to warn other road users of the presence of the abnormal load. The timings of the movements are dependent on many factors dependant on the route and Transport Scotland may place restrictions on travel during peak times to ensure journey time reliability along their trunk road network.

In general terms the movement of Abnormal Indivisible Loads (A.I.L) along most if not all routes in more rural areas, from my experience has an impact on the infrastructure of the general area and local community although Police Scotland are not best placed to comment in detail on this subject. Examples of this from previous projects could include, delays to freight traffic travelling to or from ferry ports, delays experienced by bus services including tourist bus tours operated in the area (Invergordon Port being a cruise ship port), delays to teachers and or pupils attending for scheduled school start times and delays to staff and the public attending hospital or medical appointments.

#### Regards

Frankie Anderson
Business Support Administrator
Vehicle Recovery & Abnormal Loads
Police Scotland
Fife Divisional HQ
Detroit Road
Glenrothes
Fife
KY6 2RJ