

Pell Frischmann

Ballincor Wind Farm

Abnormal Indivisible Load Route Survey

November 2025

105978

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1 Introduction

1.1 Purpose of the Report

Pell Frischmann (PF) has been commissioned by RWE Renewables Ireland Limited (RWE) to undertake a route access review of potential delivery routes for wind turbine Abnormal Indivisible Loads (AIL) associated with the potential development site, located to the south of Birr, County Offaly.

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

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

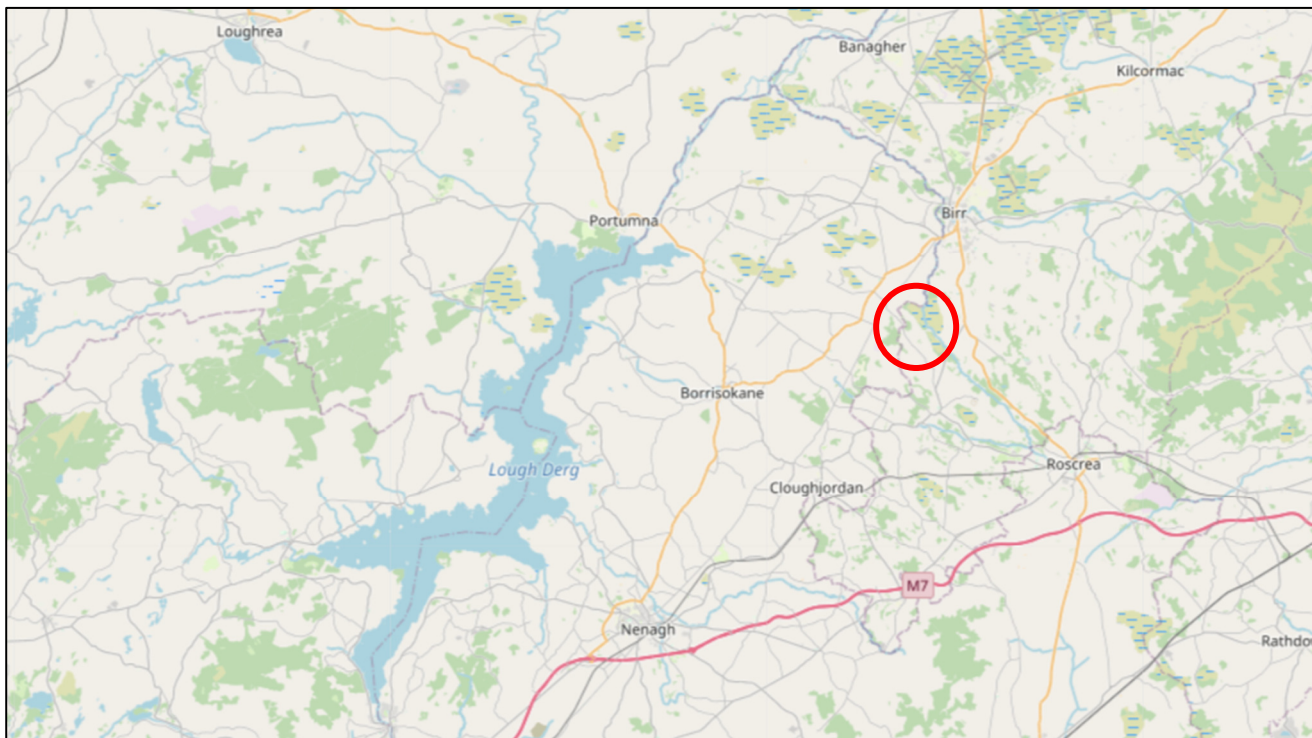
It is the responsibility of the wind turbine supplier to ensure that the entirety of the proposed access route is suitable and meets with their satisfaction. The turbine supplier will be responsible for ensuring that the finalised proposals meet with the appropriate levels of health and safety consideration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

2 Site Background

2.1 Site Location

The development site is located to the south of Birr, County Offaly. Figure 2-1 illustrates the general site location, whilst the development parcel is detailed in Figure 2-2.

Figure 2-1: Site Location Plan



2.2 Candidate Turbine

RWE have indicated that they wish to consider the worst case components from a Nordex N163 turbine at a tip height of 180m.

The details of the components have been provided by Nordex and are detailed in Table 2-1.

Table 2-1: Nordex N163 Turbine Components Summary

Component	Length (m)	Width (m)	Height / Min Diameter (m)	Weight (t)
Blade	81.500	4.395	4.110	28.871
Base Tower	14.520	4.300	4.274	77.174
Mid Tower 1	22.095	4.274	4.262	73.728
Mid Tower 2	29.972	4.262	4.254	73.228
Top Tower	34.946	4.254	3.258	57.769

Following review of the turbine dimensions it was decided that the assessment should be based on the Nordex N163 blade and Mid Tower 2 with base tower dimensions in order to represent the worst-case components.

2.3 Proposed Delivery Equipment

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

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

Figure 2-2: Superwing Carrier Trailer



Figure 2-3: Clamp Tower Trailer



3 Access Route Review

3.1 Port of Entry

The only suitable Port of Entry (PoE) for this site is Foynes Port.

At Foynes, loads can be offloaded by geared vessels or onshore mobile cranes. The harbour has been used for delivery of components for a number of windfarms including Cappawhite and Lisheen wind farms.

Figure 3-1: Port of Foynes Layout



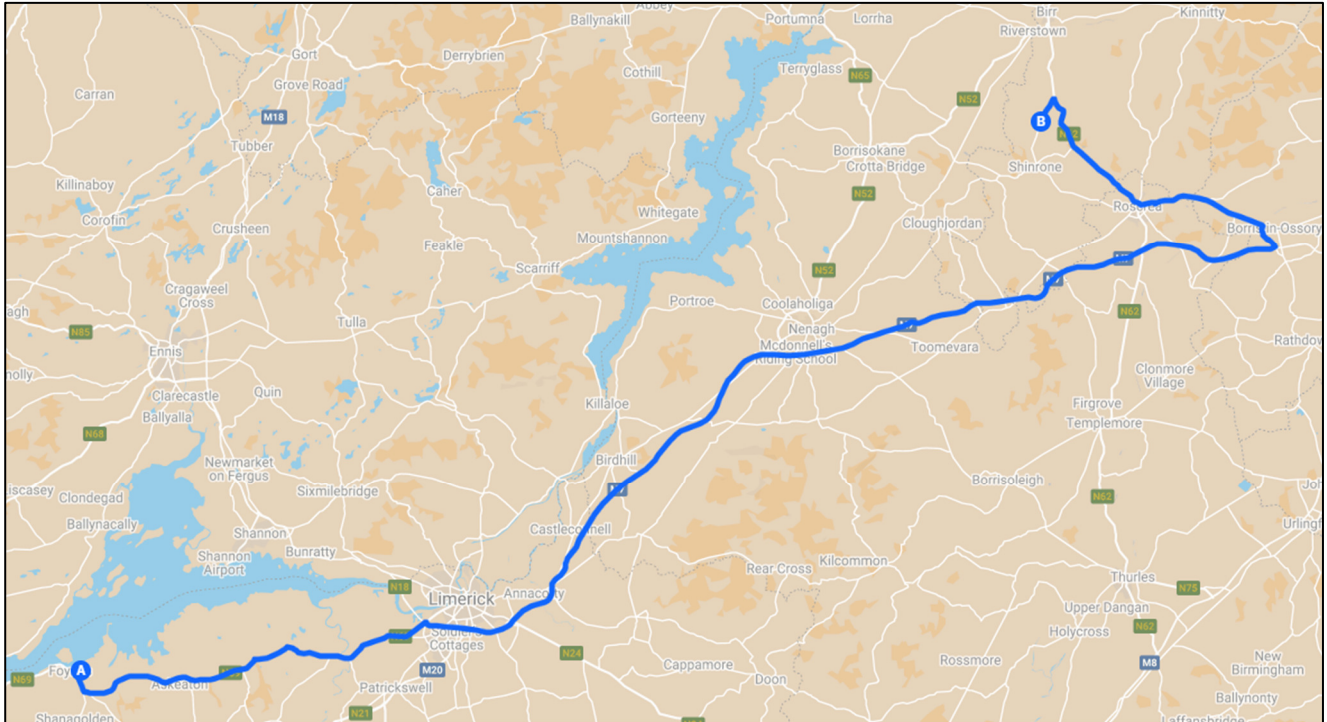
3.2 Proposed Access Route

The access route from Foynes is detailed below.

- Loads would depart the docks and join the N69 eastbound;
- Loads would depart the N69 and will join the N18 on the outskirts of Limerick;
- Loads will continue eastbound on the N18;
- Loads will continue east onto the M7;
- Loads will depart the M7 at Junction 21 and join the northbound R435;
- At Kyle Manor loads will turn left and join the R445;
- Loads will continue west on the R445 to the Dublin Road Roundabout where loads will turn right and then left to travel west towards Roscrea;
- Loads will turn right from Dublin Road onto the N62 travelling north west through Roscrea;
- Loads will travel north west on the N62 to Sharavogue where they will turn left onto the R492 and continue south west to the proposed site entrance.

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

Figure 3-2: Proposed Access Route










3.3 Route Constraints





The constraints noted on the route are provided in the table below. These cover all constraints from the port access gate through to the proposed site access junction. No consideration of the transport issues within the development site have been undertaken.




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




Table 3-1: Constraint Points and Details

POI	Key Constraint	Details
1	<p>Port Exit Gate</p> 	<p>Loads will exit the port and continue southbound towards the N69 junction.</p> <p>The marker poles in the middle of the road will need to be removed to enable deliveries.</p>
2	<p>Rail Crossing</p> 	<p>Loads will cross the existing railway crossing.</p> <p>The railway to Foynes is mothballed and no contact with the railway authorities is required for operational purposes. No physical mitigation works are required at this location.</p>
3	<p>N69 Junction</p> 	<p>Loads will turn left at the junction onto the N69.</p> <p>A swept path assessment has been undertaken and loads will overrun and oversail the northern verge where a load bearing surface should be laid. Two road signs should be removed and the vegetation cleared.</p> <p>Loads will overrun both splitter islands where load bearing surfaces should be laid. Four road signs should be removed.</p> <p>Loads will oversail the inside of the junction where one lighting column should be removed.</p> <p>Swept path assessment SK01 is included in Appendix B.</p>




POI	Key Constraint	Details
4	<p>N69 Left Bend at Shrylane</p> 	<p>Loads will continue on the N69 at this location.</p> <p>A swept path assessment has been undertaken and loads will oversail the northern verge where one road sign should be removed and the vegetation trimmed.</p> <p>Loads will then oversail the southern verge where one road sign should be removed and vegetation should be trimmed.</p> <p>The lead escort vehicles will need to hold oncoming traffic in advance of this location.</p> <p>Swept path assessment SK02 is included in Appendix B</p>
5	<p>N69 Left Bend South West of Robertstown Creek</p> 	<p>Loads will continue on the N69 at this location.</p> <p>A swept path assessment has been undertaken and loads will oversail both verges however no physical mitigation is required.</p> <p>Swept path assessment SK03 is included in Appendix B</p>
6	<p>N69 Left Bend West of Borrhigone</p> 	<p>Loads will continue on the N69 at this location.</p> <p>A swept path assessment has been undertaken and indicates that loads will oversail into land on the inside of the left bend where the trailer suspension should be raised to allow oversail of the wall and vegetation should be cleared.</p> <p>Loads will oversail the verge on the outside of the bend where three road signs should be removed and vegetation should be cleared.</p> <p>A review of overhead utility line clearances should be undertaken with the statutory providers along the whole route. A clear head height of 5m, plus flash over protection should be provided.</p> <p>Swept path assessment SK04 is included in Appendix B</p>
7	<p>N69 Right Bend West of Borrhigone</p> 	<p>Loads will continue through the right bend.</p> <p>Loads will occupy the entire road width and oversail the verge on the inside of the bend where vegetation should be trimmed.</p>

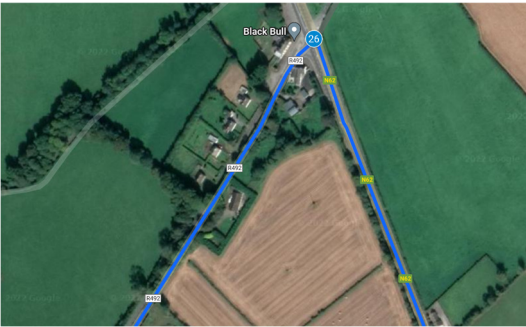

POI	Key Constraint	Details
8	N69 North of Wallace's Cross 	<p>Loads will continue on the N69 at this location.</p> <p>A review of overhead utility line clearances should be undertaken with the statutory providers along the whole route.</p> <p>A clear head height of 5m, plus flash over protection should be provided.</p>
9	N69 West of Toreen 	<p>Loads will continue on the N69 at this location.</p> <p>The tree canopy along the route should be trimmed to allow a clear 5m head height from the road surface.</p>
10	N69 Right Bend Northeast of Toreen 	<p>Loads will continue on the N69 at this location.</p> <p>A swept path assessment has been undertaken and loads will oversail the southern verge where one road sign should be rotated and one traffic bollard should be removed.</p> <p>The lead escort vehicles will need to hold oncoming traffic in advance of this location.</p> <p>Swept path assessment SK06 is included in Appendix B</p>
11	N69 Right Bend Southeast of Glenameade 	<p>Loads will continue on the N69 at this location.</p> <p>Loads will occupy the entire carriageway at this location; however, no physical mitigation works are required.</p> <p>The lead escort vehicles will need to hold oncoming traffic in advance of this location.</p>

POI	Key Constraint	Details
12	N69 Bends Northwest of Knockbrack West 	<p>Loads will continue on the N69 at this location.</p> <p>The lead escort vehicles will need to hold oncoming traffic in advance of this location.</p> <p>A swept path assessment has been undertaken and loads will oversail the northern footway on entry to the bend.</p> <p>Loads will oversail the southern verge on the inside of the left bend where the bollards should be removed.</p> <p>Swept path assessment SK07 is included in Appendix B</p>
13	N69 Ferry Bridge 	<p>Loads will continue on the N69 at this location.</p> <p>A swept path assessment has been undertaken and indicates that no mitigation is required.</p> <p>The vertical profile of the road at this location is pronounced and should be reviewed during the test run stage to ascertain if tar wedges will be required to prevent grounding.</p> <p>Swept path assessment SK08 is included in Appendix B</p>
14	N69 Roundabout West of Clarina 	<p>Loads will overrun the central roundabout continue east of the N69.</p> <p>A swept path assessment has been undertaken and load will oversail the northern verge of the entry arm, however no physical works are required.</p> <p>Loads will overrun and oversail the central island where a load bearing surface should be laid. One set of chevron signs and trees should be removed.</p> <p>Loads will oversail the exit arm splitter island where two road signs should be removed.</p> <p>Loads will oversail the northern verge of the exit arm, however no works are required at this location.</p> <p>Swept path drawing SK09 is included in Appendix B.</p>
15	N69 Left Bend at Mungret Village 	<p>Loads will continue on the N69 at this location.</p> <p>Loads will occupy the entire carriageway at this location; however, no physical mitigation works are required.</p> <p>The lead escort vehicles will need to hold oncoming traffic in advance of this location.</p>

POI	Key Constraint	Details
16	<p>N69 / N18 Slip Road Roundabout 1</p> 	<p>Loads will take the third exit and will continue on the N69.</p> <p>A swept path assessment has been undertaken and loads will overrun and oversail the central island where a load bearing surface should be laid. One set of chevron signs should be removed. Tree removal will be required to accommodate the proposed works.</p> <p>Swept path drawing SK10 is included in Appendix B.</p>
17	<p>N69 / N18 Slip Road Roundabout 2</p> 	<p>Loads will take the fourth exit and will join the N18 slip road.</p> <p>A swept path assessment has been undertaken and loads will oversail the north western verge on entry where one lighting column should be removed.</p> <p>Loads will oversail the entry arm splitter island where three road signs and one lighting column should be removed. Loads will also oversail the southern verge of the central island, however no works are required.</p> <p>Loads will overrun and oversail the southern verge where a load bearing surface should be laid. Two lighting columns, three road signs, vegetation, trees and one junction box should be removed.</p> <p>Loads will continue eastbound on the N18 and M7 towards Portlaoise.</p> <p>Swept path drawing SK11 is included in Appendix B.</p>
18	<p>M7 Junction 21 / R435</p> 	<p>Loads will depart the M7 and turn onto the R435.</p> <p>A swept path assessment has been undertaken and loads will oversail the northern verge of the offslip on entry to the roundabout where three lighting columns, two road signs and a section of safety barrier should be removed.</p> <p>The blade tip will oversail the southern verge of the offslip where trees should be trimmed and two road signs should be removed.</p> <p>Loads will oversail the western edge of the roundabout and overrun the exit arm splitter island where a load bearing surface should be laid and three road signs should be removed.</p> <p>Swept path drawing SK12 is included in Appendix B.</p>

POI	Key Constraint	Details
19	R435 Mountain View Roundabout 	<p>Loads will continue straight through the roundabout.</p> <p>A swept path assessment has been undertaken and loads will oversail the southwest verge on approach to the roundabout.</p> <p>Loads will overrun and oversail the south western edge of the roundabout island where a load bearing surface should be laid and two road signs and trees should be removed.</p> <p>Loads will also oversail the edge of the exit splitter island where two road signs should be removed.</p> <p>Swept path drawing SK13 is included in Appendix B.</p>
20	R435 / R445 Roundabout 	<p>Loads will turn left at the roundabout.</p> <p>A swept path assessment has been undertaken and loads will oversail and overrun the approach and exit road splitter islands where a load bearing surface should be laid and five road signs should be removed.</p> <p>Loads will overrun and oversail the inside of the left turn where a load bearing surface should be laid and existing utilities should be protected. One road sign and two lighting columns should be removed.</p> <p>Loads will overrun and oversail the northern edge of the R445 where a load bearing surface should be laid and two lighting columns should be removed.</p> <p>Swept path drawing SK14 is included in Appendix B.</p>
21	R445 / Dublin Road Roundabout 	<p>Loads will turn right at the roundabout and then left onto Dublin Road.</p> <p>A swept path assessment has been undertaken and loads will overrun and oversail the approach and exit road splitter islands where a load bearing surface should be laid and four road signs should be removed.</p> <p>Loads will overrun and oversail the inside of the right turn where a load bearing surface should be laid and one lighting column and two road signs should be removed. A section of fence and trees should be removed.</p> <p>Loads will oversail the inside of the left turn onto Dublin Road where one lighting column should be removed and the proximity to the utility pole and stay wire should be confirmed during the test run.</p> <p>The blade tip will oversail the outside of the left turn where one road sign should be removed.</p> <p>Swept path drawing SK15 is included in Appendix B.</p>

POI	Key Constraint	Details
<p>22, 23</p>	<p>Dublin Road / N62 Junction</p> 	<p>Loads will turn right and continue through the roundabout on the N62.</p> <p>A swept path assessment has been undertaken and loads will oversail into land to the south of the road on approach to the junction where one utility column and two road signs should be removed. The blade tip will oversail the wall and vegetation and the fence should be removed.</p> <p>Loads will oversail the footway on the inside of the right turn where two road signs and a number of planters should be removed.</p> <p>Loads will overrun and oversail the approach and exit road splitter islands and the roundabout where load bearing surfaces should be laid and six road signs and two bollards should be removed.</p> <p>Swept path drawing SK16 is included in Appendix B.</p>
<p>24</p>	<p>Dublin Road Roscrea</p> 	<p>Loads will continue through the left / right bends.</p> <p>A swept path assessment has been undertaken and loads will overrun and oversail into land on the inside of the left bend where a load bearing surface should be laid and the wall lowered to allow oversail. Trees and vegetation should be removed.</p> <p>Loads will overrun and oversail the northern footway where a load bearing surface should be laid and parking should be suspended. This area must be kept clear at all times as it is an entrance to a fire station.</p> <p>Swept path drawing SK17 is included in Appendix B.</p>
<p>25</p>	<p>N62 Right Bend North of Gloster House</p> 	<p>Loads will continue north through the right bend.</p> <p>Loads will occupy the entire carriageway width through the bend and oversail the verge on the inside of the bend where vegetation should be trimmed.</p>

POI	Key Constraint	Details
<p>26</p>	<p>N62 / R492 Junction</p> 	<p>Loads will utilise a new offline track to make the left turn onto the R492.</p> <p>The existing junction is not suitable for the proposed loads. As such it is suggested that a new offline track is constructed in advance of the junction to provide the required turn radii for loads to access the R492.</p> <p>Full detailed design will be required for the proposed track and land negotiations will need to be completed.</p> <p>An indicative track alignment has been provided for illustration only.</p> <p>Vertical constraints have been identified within the section from this point to the site entrance. Remedial mitigation will be contained within the highway boundary.</p> <p>Swept path drawing SK18 is included in Appendix B.</p>
<p>27</p>	<p>Proposed Site Entrance</p> 	<p>Loads will turn into the proposed site entrance.</p> <p>Full detailed design will be required to confirm the works required to construct the site entrance. The junction should be constructed to meet turbine manufacturer and local road authority standards.</p> <p>Swept path drawing SK19 is included in Appendix B.</p>

3.4 Swept Path Assessment Results and Summary

The detailed Swept Path Assessment (SPA) drawings for the locations assessed are provided in Appendix B for review. The drawings illustrate tracking undertaken for the worst-case loads at each location.

The colours illustrated on the swept paths are:

- Grey / Black – Ordnance Survey (OS) / topographical base mapping;
- Cyan – Indicative road edge;
- Green – Vehicle body swept path envelope;
- Red – Wheel swept path envelope;
- Magenta – Load swept path envelope.

Where mitigation works are required, the extents of the overrun and oversail areas are illustrated and fully detailed on the SPA drawings. Additional land areas to those indicated in the SPA 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 the mitigation works highlighted within this study and the detailed design of said mitigation works is beyond the scope of this study and should be confirmed on detailed topographical survey data.

Please note that where SPA have been undertaken using OSI base mapping, AutoCAD based aerial mapping and historic topographical data, there can be errors in these data sources.

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 OSI base mapping, aerial mapping, historic topographical surveys or client supplied data. Where applicable, mapping has been augmented with aerial imagery for illustration only. The accuracy of this mapping cannot be confirmed by PF.

Please note that turbine supplier guidance suggests that the minimum road width for the safe transport of ALL components is 4.5 m. All public roads and onsite access tracks should comply with this standard unless a relaxation has been agreed with suppliers.

The need to widen public roads will require engagement with the relevant road authority and may constitute permanent or temporary surfacing.

3.5 Third Party Land and Land Ownership

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. PF accept 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.

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

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

3.6 Access Junction Considerations

The access junction into the site would need to be built to accommodate the proposed physical size of loads and the number of trips predicted during the construction phase.

The design and form of the junction would need to be discussed with the local road authority. The design of the junctions should take into account the requirement for provision of visibility splays which should be confirmed with the road authority.

The junctions would also need to be built in accordance with the turbine supplier design criteria.

3.7 Summary Issues

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

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

4 Summary

4.1 Summary of Access Review

Pell Frischmann has been commissioned by RWE to prepare a desktop Route Survey Report to examine the issues associated with the transport of AIL turbine components to the Offaly development area.

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

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

4.2 Further Actions

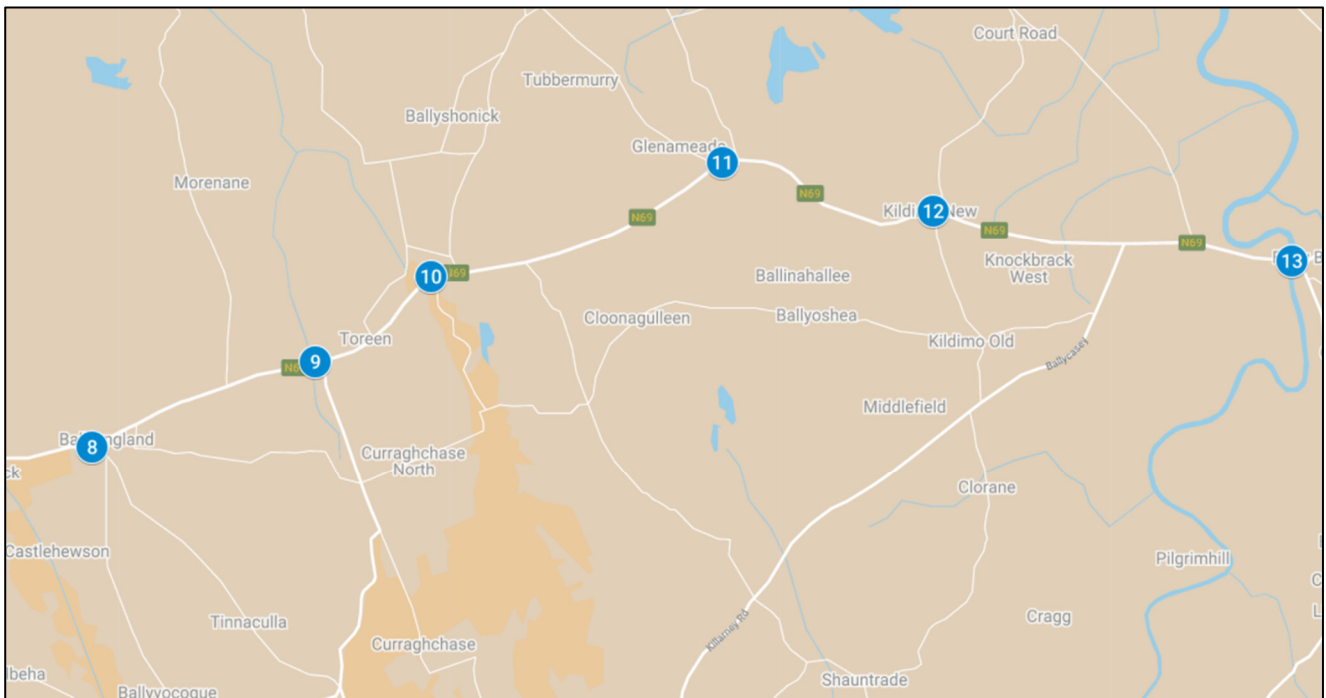
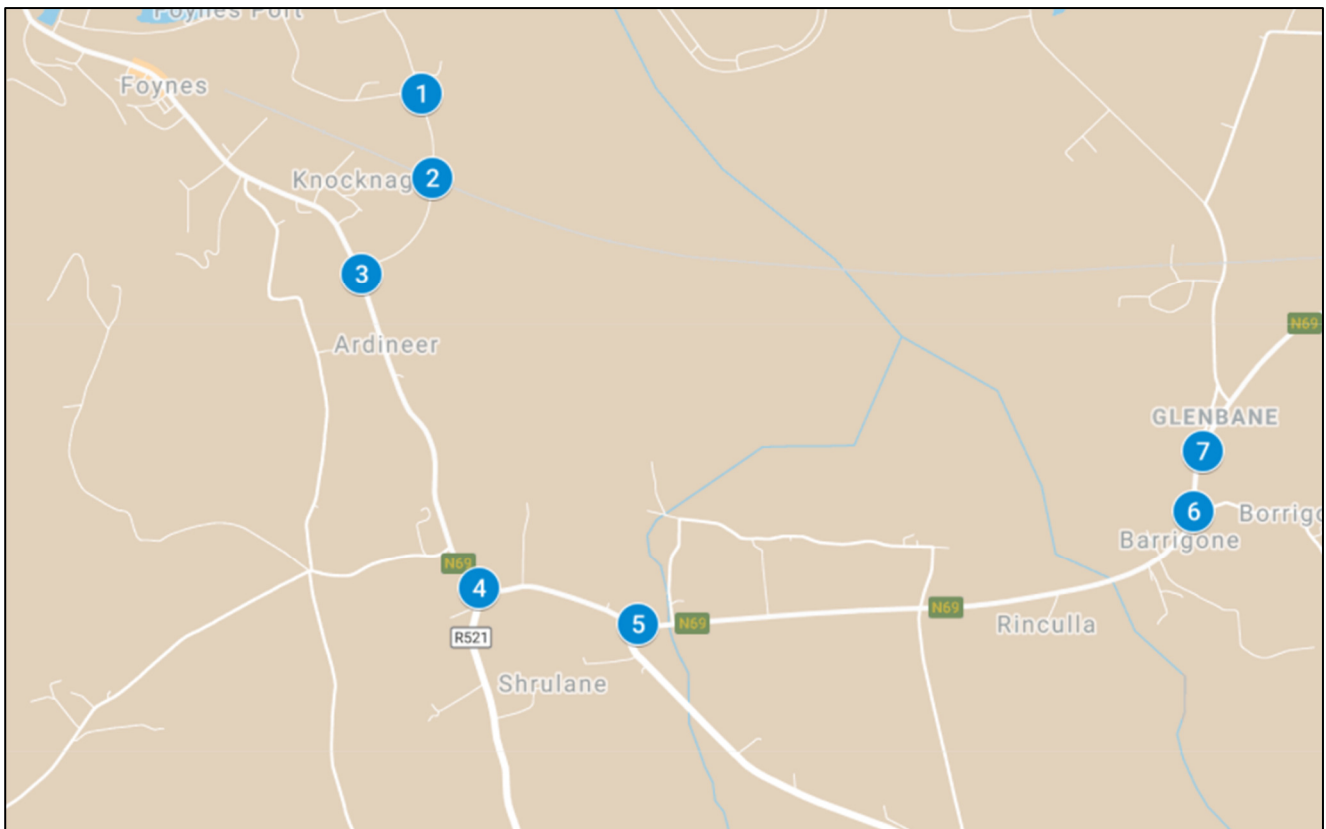
The following actions are recommended to pursue the transport and access issues further:

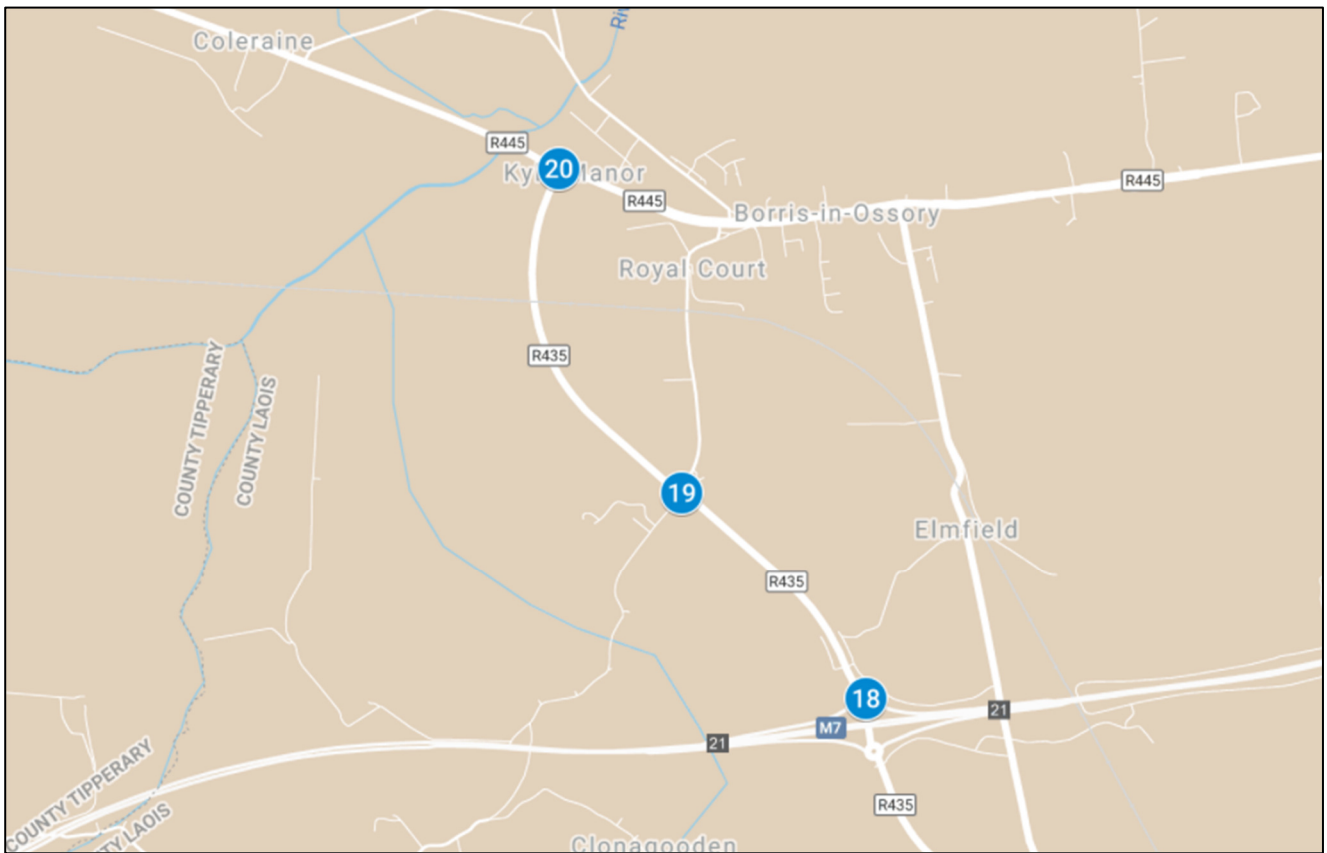
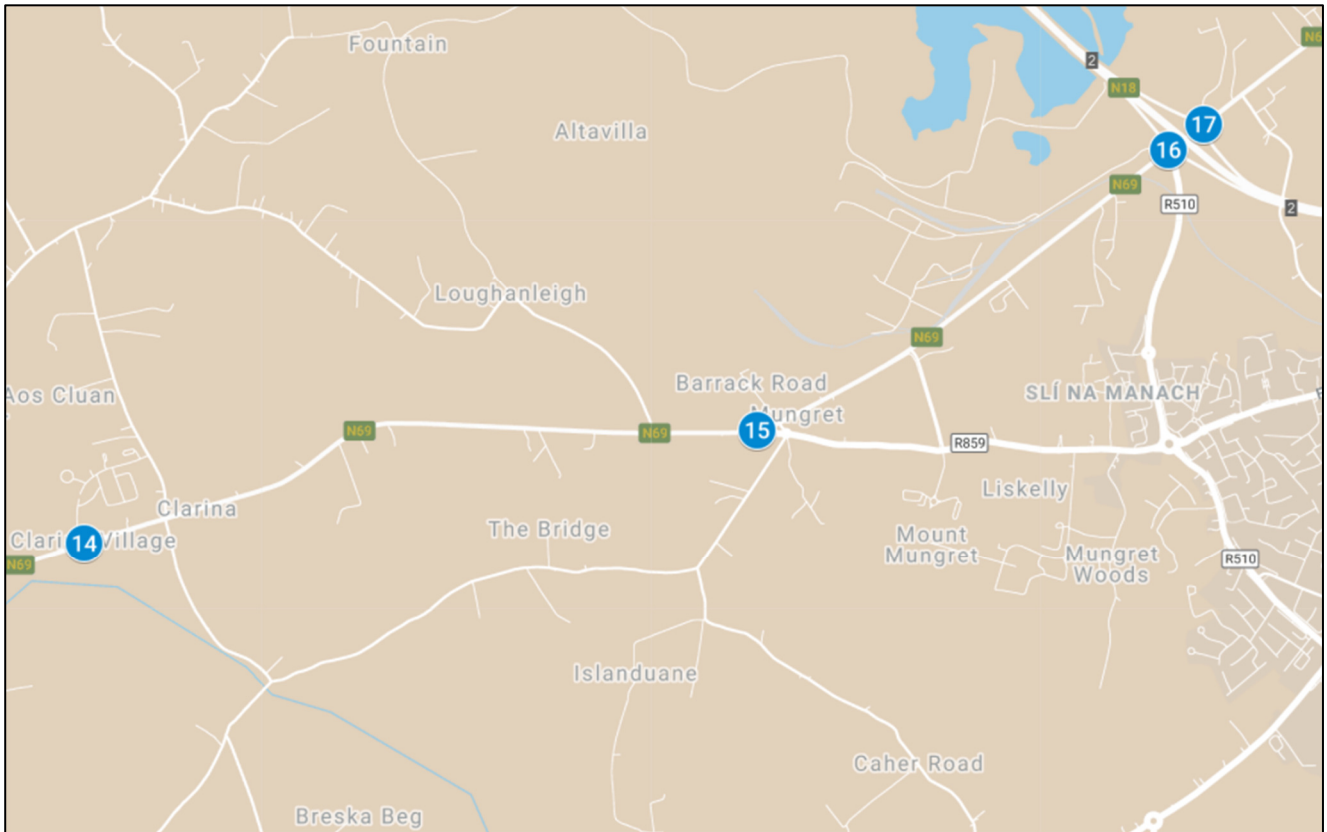
- Undertake a full site visit and update the route survey report for the proposed site;
- Prepare detailed mitigation design proposals to help inform the land option / consultee discussions;
- Obtain the necessary land options;
- Undertake discussion with the affected utility providers and roads agencies;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

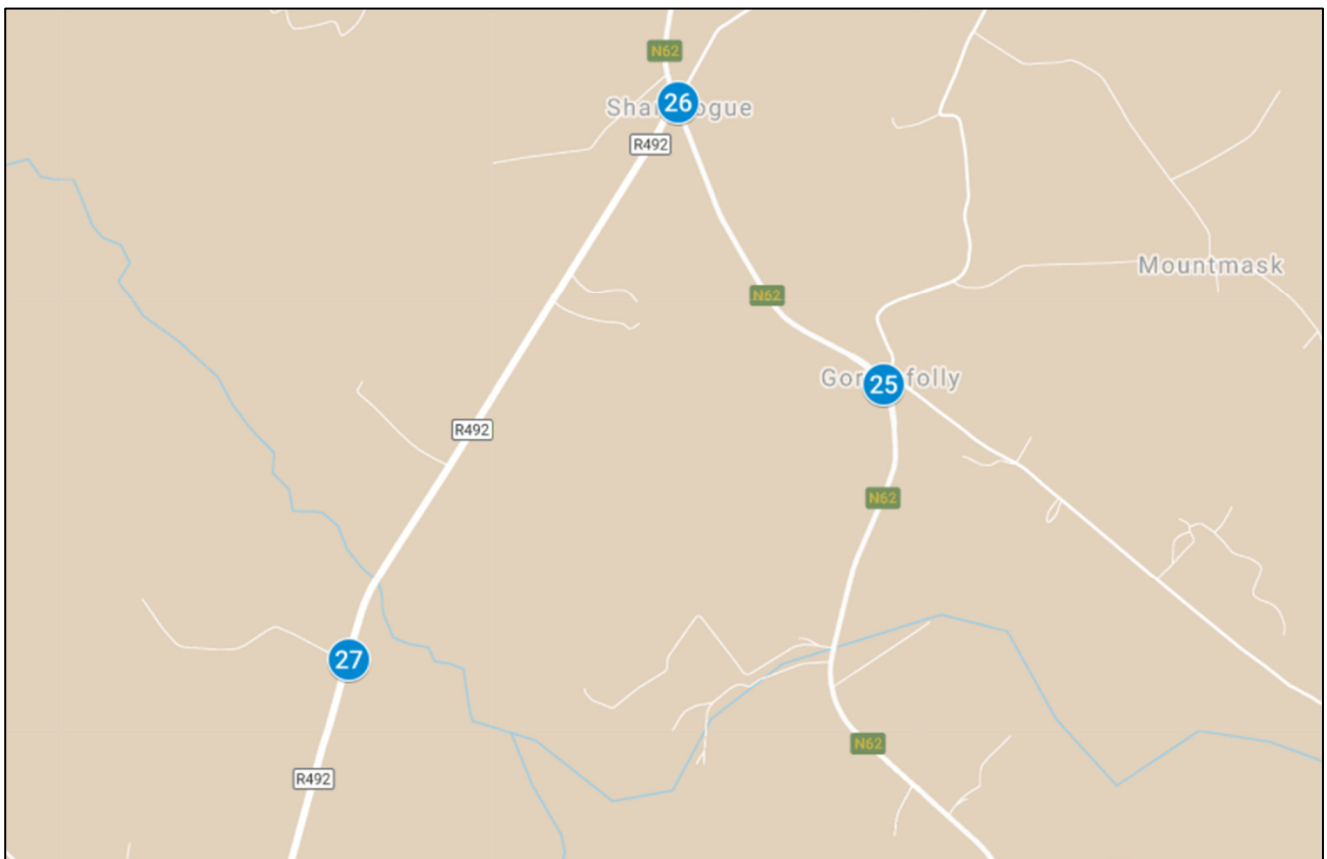
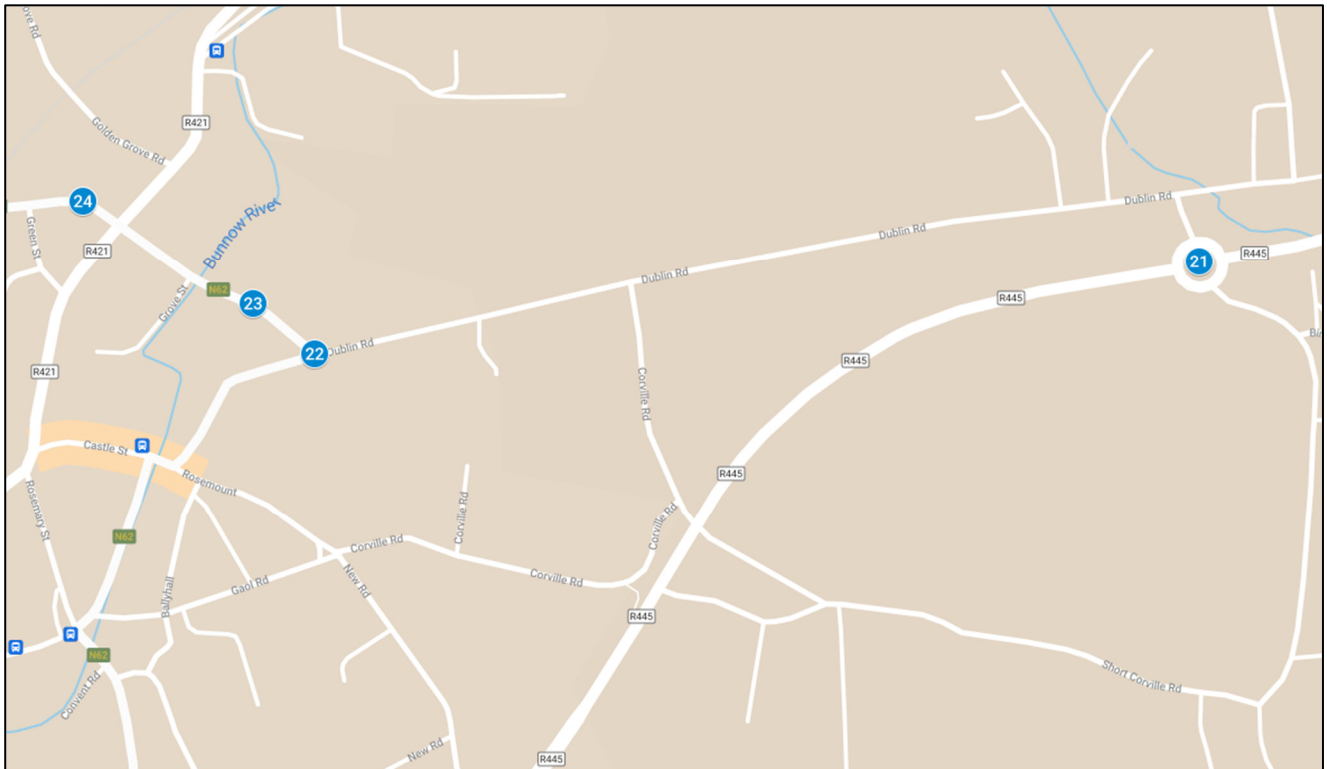
Appendix A Points of Interest

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

<https://www.google.com/maps/d/edit?mid=1Xt2wuFbJke81vk9TUXob7GTCqrJMO0sN&usp=sharing>

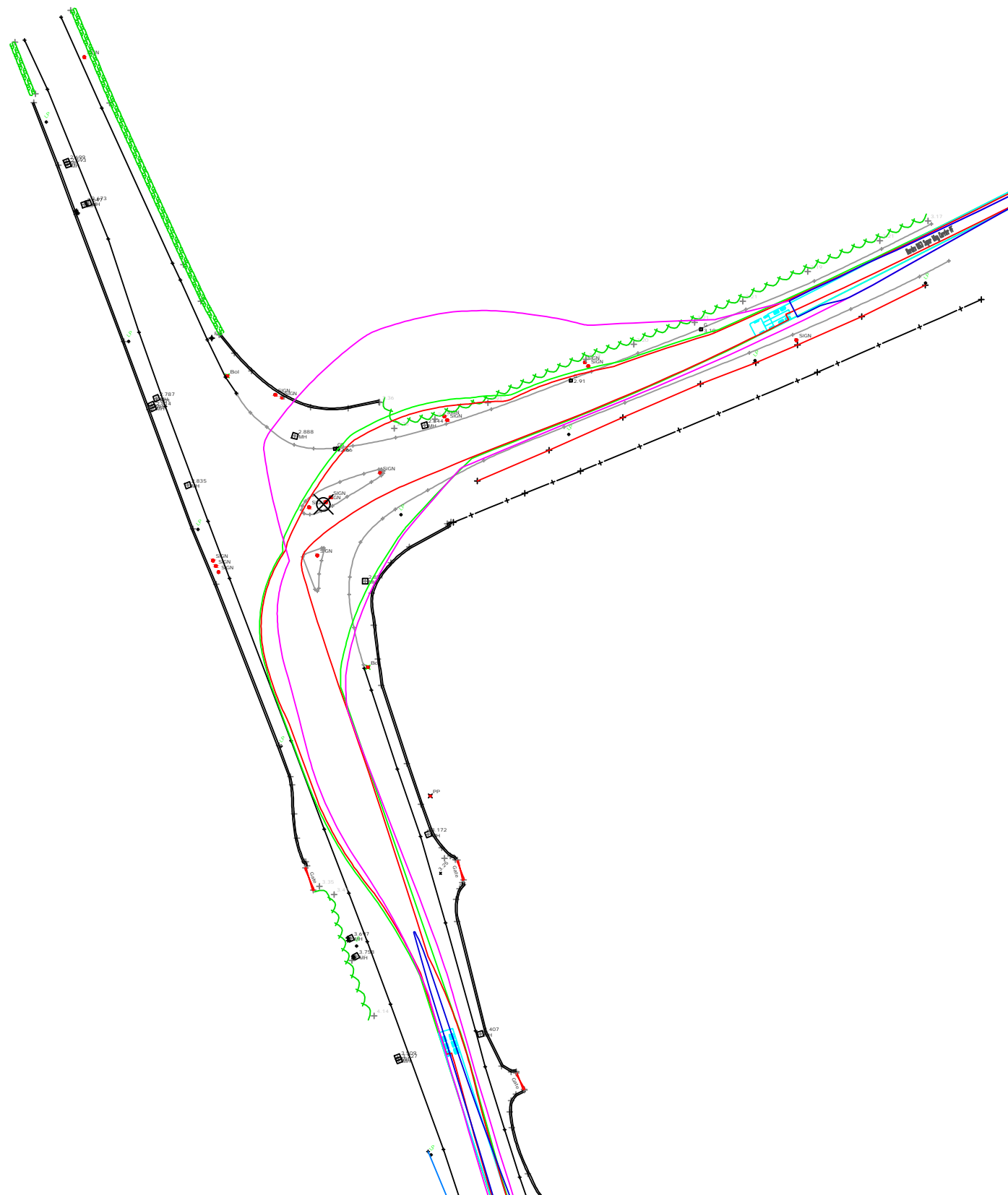




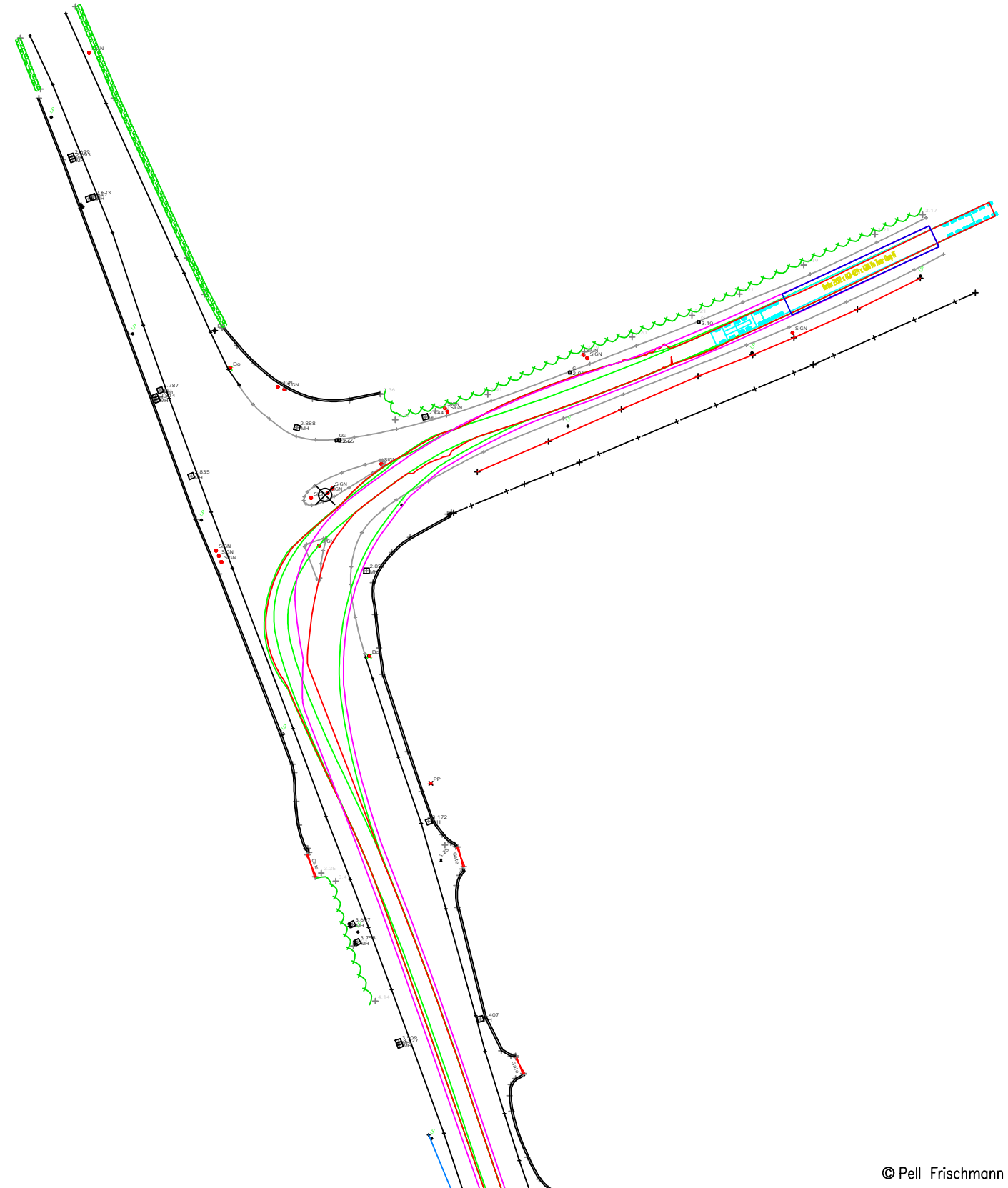


Appendix B Swept Path Assessments

Blade



Tower



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Client **RWE**

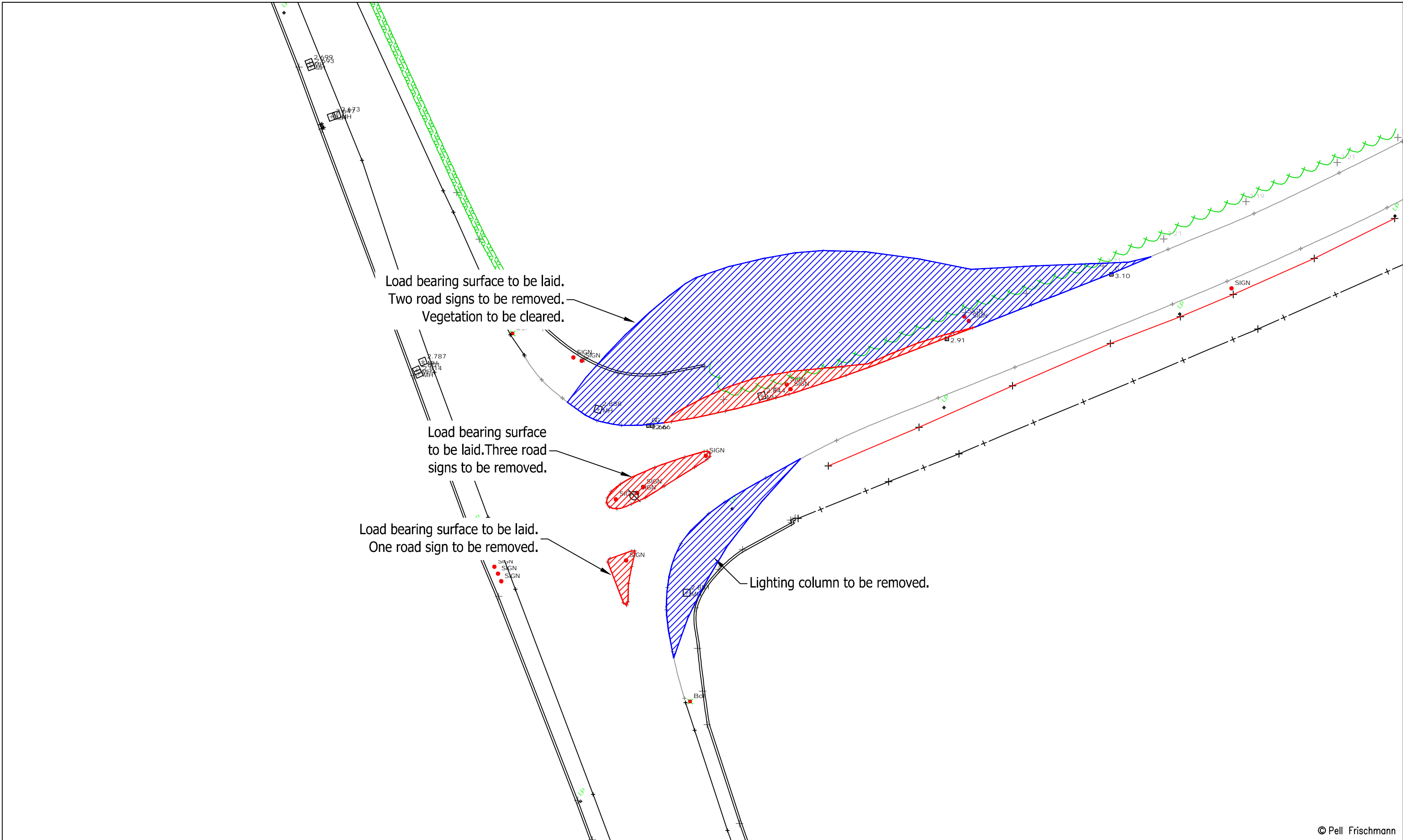
Key						
	Wheel SPA	Body SPA	Load SPA	Indicative	Over-run	Over-sail

Project
Ballincor Wind Farm

Drawing Title
Nordex N163 Blade and Tower

SPA Location
N69 Junction

	Name	Date	Scale
Drawn	JS	06/11/2025	1:1000 @ A3
Designed	TL	06/11/2025	File No. 301025 Ballincor N163 Final.dwg
Checked	GB	06/11/2025	
Point of Interest			Drawing Status
3			Draft
Drawing No.	Notes:		Revision
SK01	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.		1



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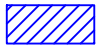
Pell Frischmann 93 GEORGE STREET, EDINBURGH, EH2 3ES Tel: +44 (0)131 240 1270 Email: ptedinburgh@pellfrischmann.com www.pellfrischmann.com	Project	Ballincor Wind Farm	Name	JS	Date	06/11/2025	Scale	1:500 @ A3	
	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	N69 Junction	Checked	GB	06/11/2025	Point of Interest	3	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	1

Blade

Tower



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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key  Wheel SPA  Body SPA  Load SPA  Indicative  Over-run  Over-sail	SPA Location	N69 Left Bend at Shrylane	Checked	GB	06/11/2025	Drawing Status	Draft	Revision	1
				Point of Interest	4	Drawing No.	SK02	Notes:	1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.



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	Client	RWE		Drawing Title	Nordex N163 Blade and Tower		Designed	TL	06/11/2025	File No.
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	N69 Left Bend at Shrylane		Checked	GB	06/11/2025	Point of Interest	4	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

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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key  Wheel SPA  Body SPA  Load SPA  Indicative  Over-run  Over-sail	SPA Location	N69 Left Bend South West of Robertstown Creek	Checked	GB	06/11/2025	Drawing Status	Draft	Revision	1
				Point of Interest	5	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.	

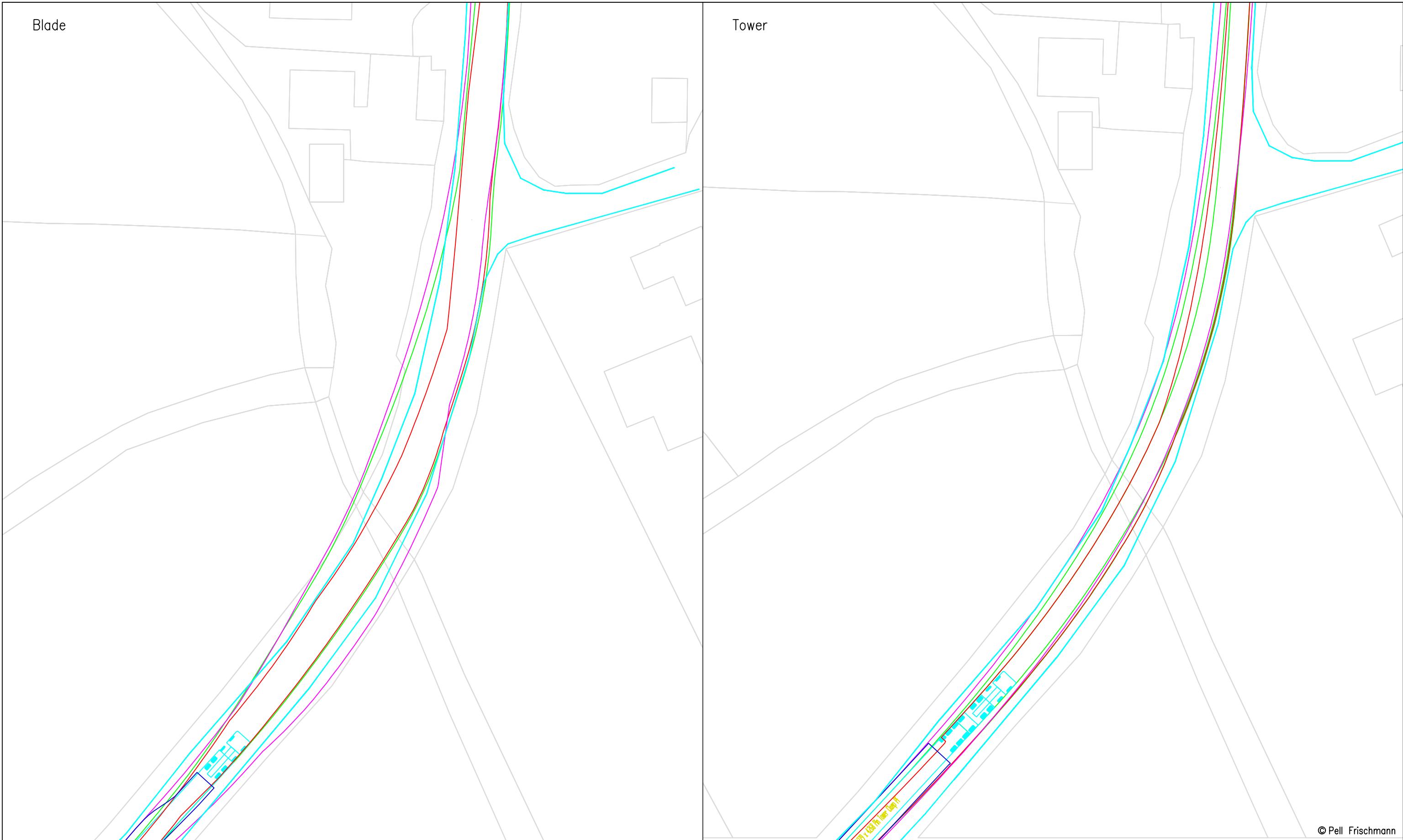


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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Drawn	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key  Wheel SPA  Body SPA  Load SPA  Indicative  Over-run  Over-sail	SPA Location	N69 Left Bend South West of Robertstown Creek	Checked	GB	06/11/2025	Point of Interest	5	Drawing Status	Draft
				Drawing No.	SK03A	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

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Client **RWE**

Key	—	—	—	—		
	Wheel SPA	Body SPA	Load SPA	Indicative	Over-run	Over-sail

Project
Ballincor Wind Farm

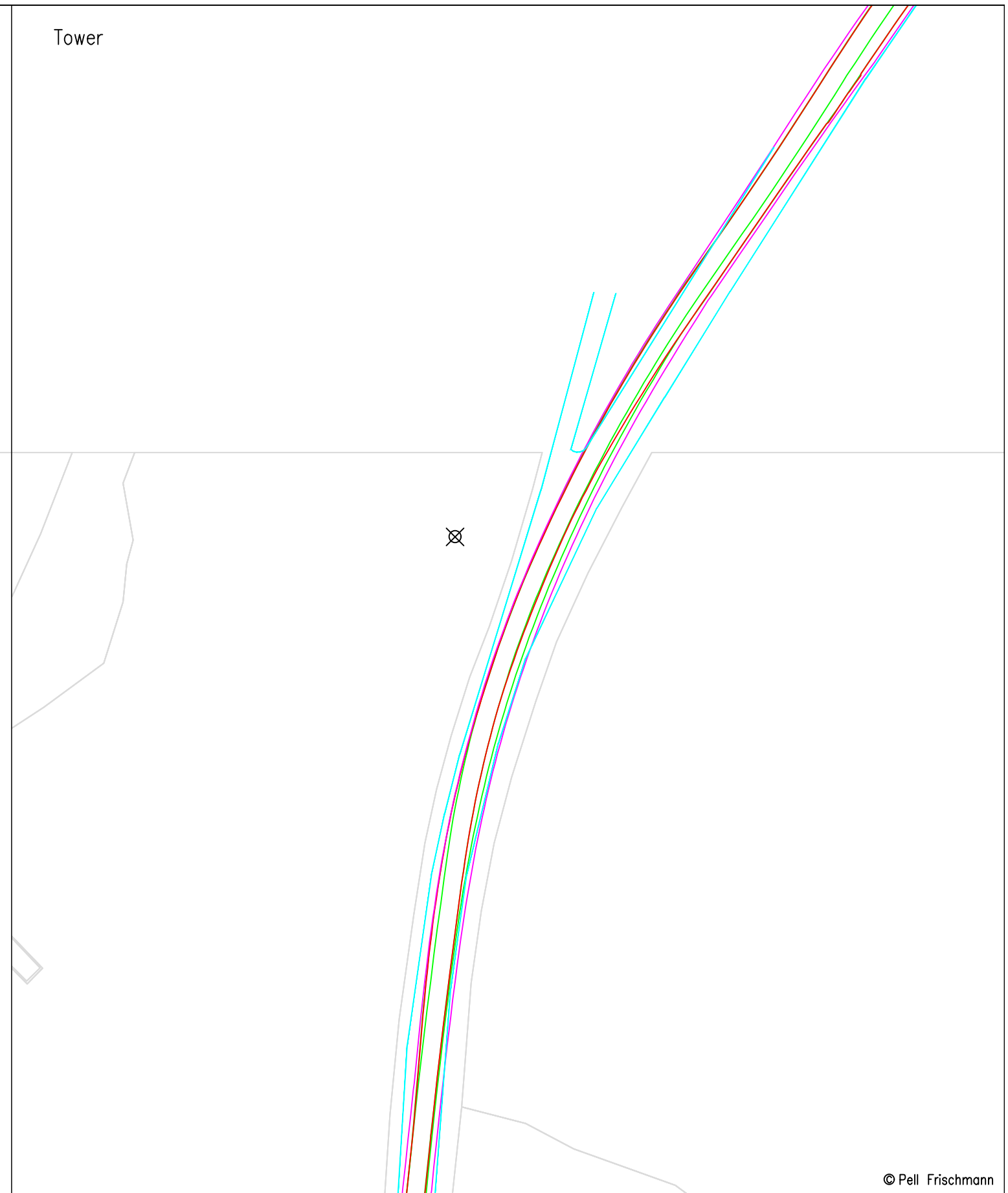
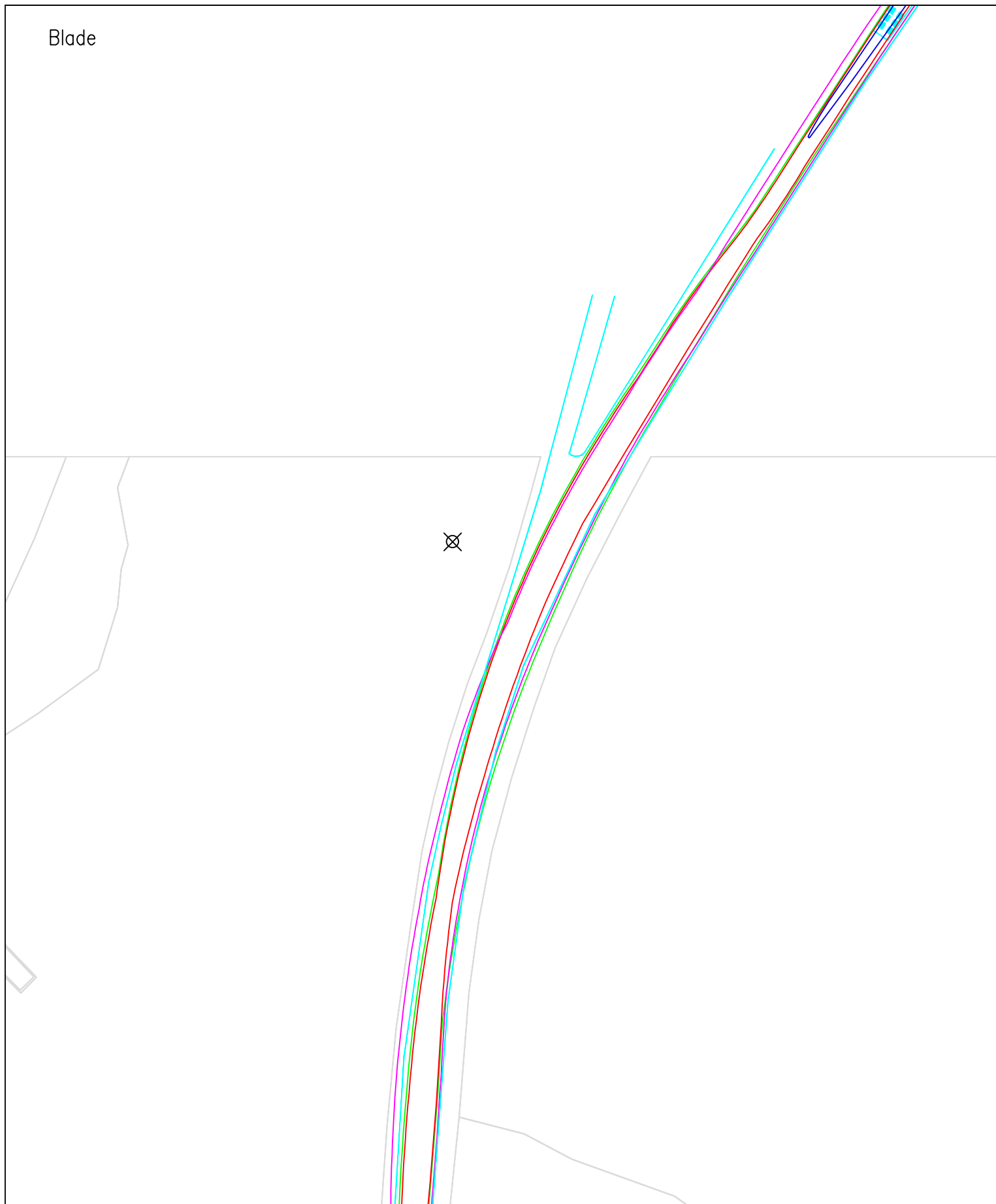
Drawing Title
Nordex N163 Blade and Tower

SPA Location
N69 Left Bend West of Borrignone

	Name	Date	Scale	1:500 @ A3		
Drawn	JS	06/11/2025	File No.	301025 Ballincor N163 Final.dwg		
Designed	TL	06/11/2025		Drawing Status	Draft	
Checked	GB	06/11/2025			Point of Interest	6
Drawing No.	SK04		Notes:	2		
			1. All mitigation is subject to confirmation through a test run.			
			2. This is not a construction drawing and is intended for illustration purposes only.			

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Project

Ballincor Wind Farm

Drawn	Name	Date	Scale
Designed	TL	06/11/2025	1:750 @ A3
Checked	GB	06/11/2025	File No. 301025 Ballincor N163 Final.dwg
Point of Interest	7	Drawing Status	Draft

Client **RWE**

Drawing Title

Nordex N163 Blade and Tower

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

SPA Location

N69 Right Bend West of Borrignone

Drawing No.	Notes:	Revision
SK05	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.	1



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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key — Wheel SPA — Body SPA — Load SPA — Indicative Over-run Over-sail	SPA Location	N69 Right Bend West of Borrigone	Checked	GB	06/11/2025	Drawing Status	Draft		
			Point of Interest	7		Drawing No.	SK05A	Notes:	Revision
							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.		1

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	Client	RWE		Drawn	TL	Designed	06/11/2025	File No.	301025 Ballincor N163 Final.dwg	
Key — Wheel SPA — Body SPA — Load SPA — Indicative Over-run Over-sail	Drawing Title	Nordex N163 Blade and Tower		Checked	GB	06/11/2025	Drawing Status	Draft		
	SPA Location	N69 Right Bend Northeast of Toren		Point of Interest	10		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	1	

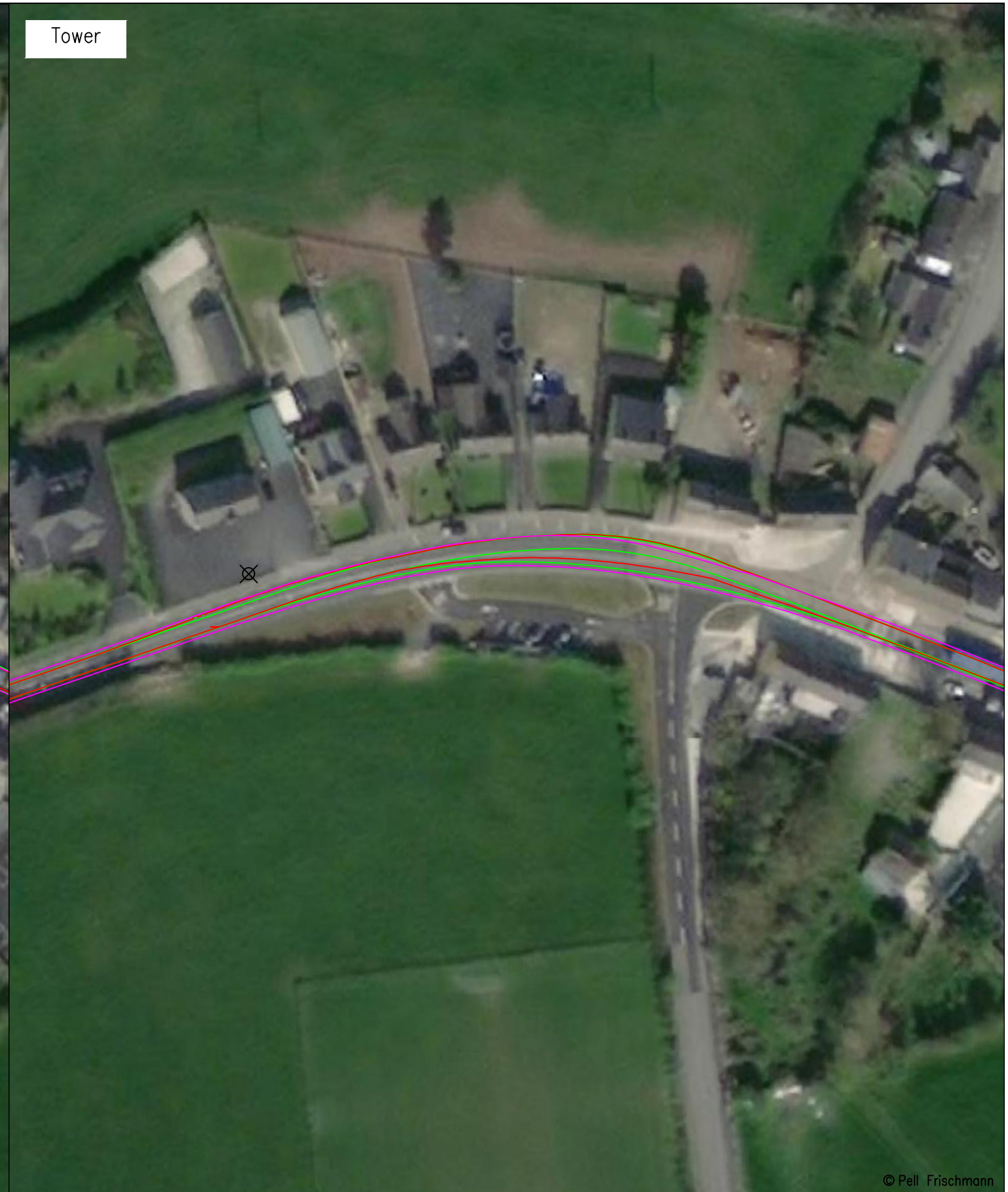


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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	N69 Right Bend Northeast of Toreen	Checked	GB	06/11/2025	Drawing Status	Draft	Revision	1
			Drawing No.	SK06A	Point of Interest	10	Notes: 1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.		

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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	N69 Bends Northwest of Knockbrack West	Checked	GB	06/11/2025	Drawing Status	Draft	Revision	1
			Drawing No.	SK07	Point of Interest	12	Notes: 1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.		

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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	N69 Ferry Bridge	Checked	GB	06/11/2025	Drawing Status	Draft	
			Point of Interest	13		Drawing No.	SK08	Notes:
		NO MITIGATION REQUIRED		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.		1		

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Project

Ballincor Wind Farm

Drawn	JS	06/11/2025	Scale	1:1000 @ A3
Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Checked	GB	06/11/2025	Drawing Status	Draft
Point of Interest	14		Revision	1

Client RWE

Drawing Title

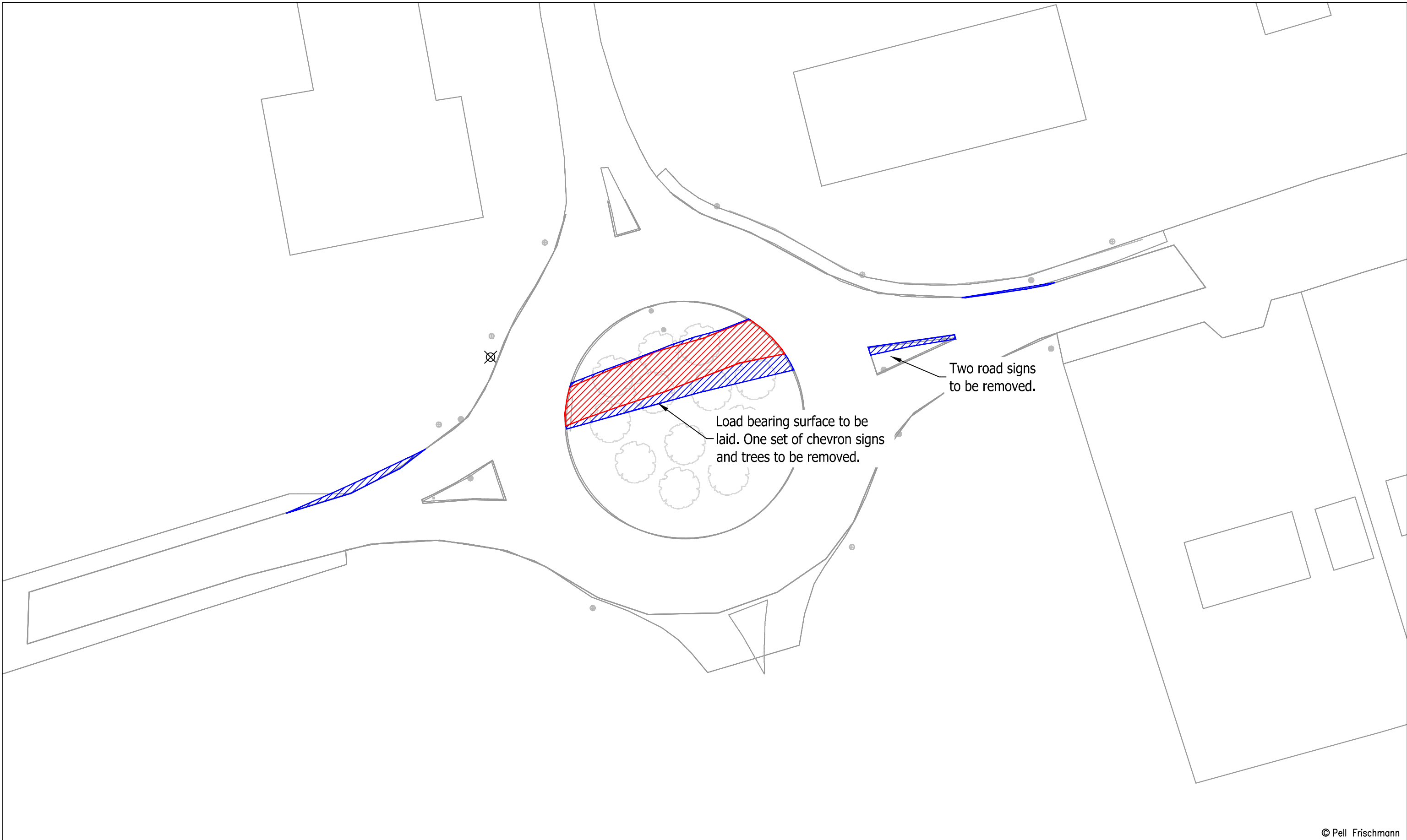
Nordex N163 Blade and Tower

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

SPA Location

N69 Roundabout West of Clarina

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.

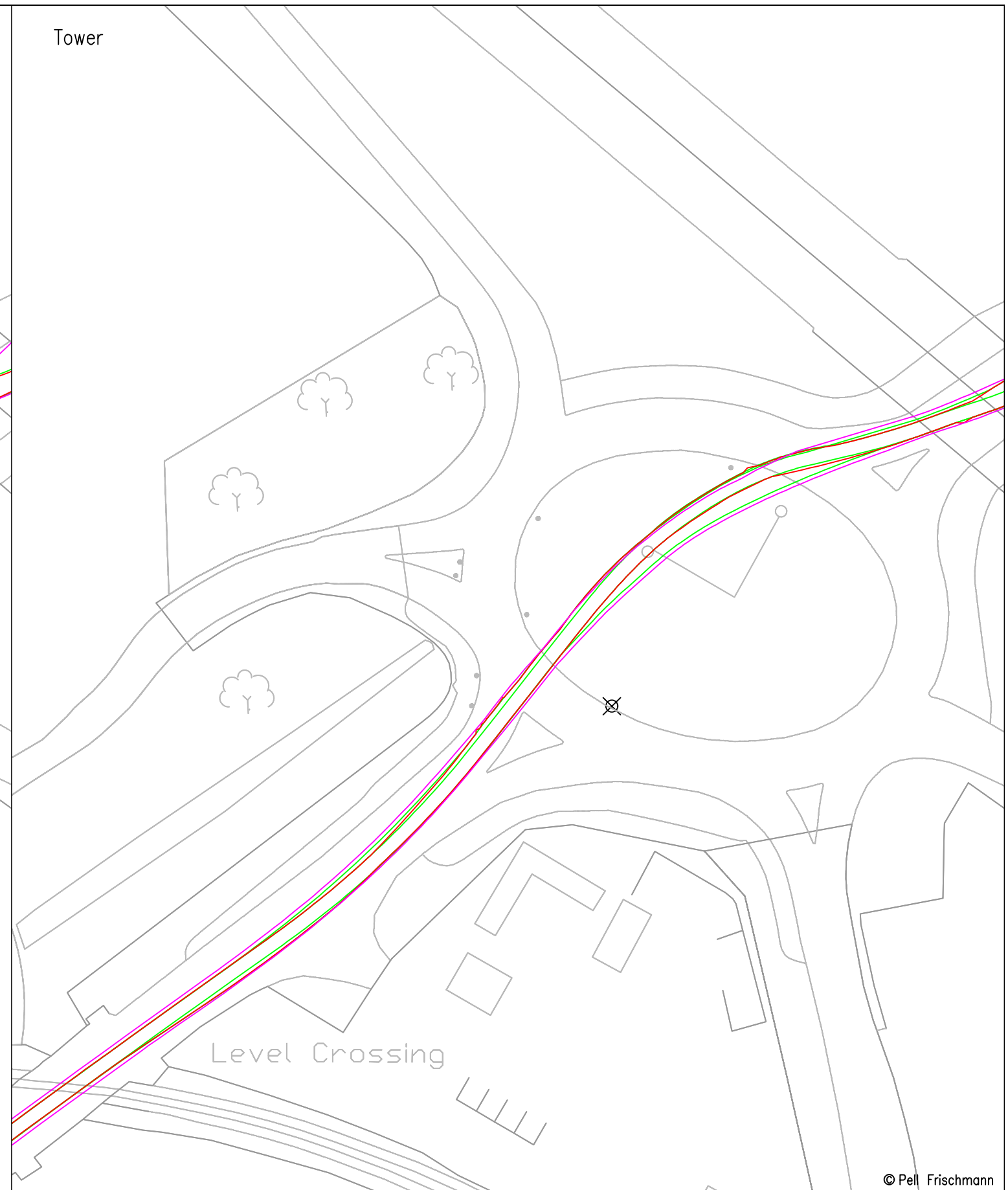


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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Drawn	TL	06/11/2025	File No.
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	N69 Roundabout West of Clarina	Checked	GB	06/11/2025	Drawing Status	Draft	Revision
			Point of Interest	14	Drawing No.	SK09A	Notes:	1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.

Blade

Tower



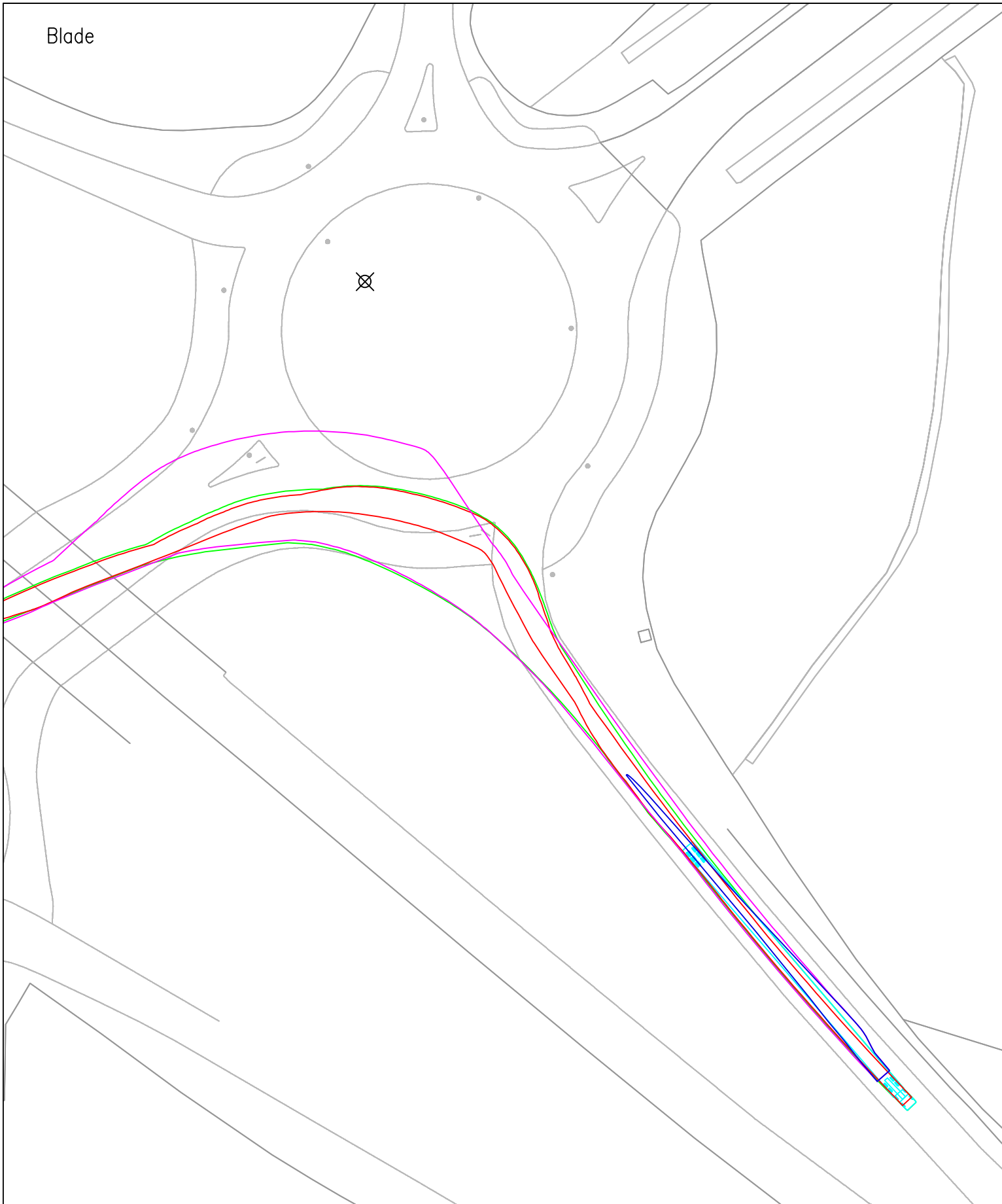
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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg	
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	N69 / N18 Slip Road Roundabout 1	Checked	GB	06/11/2025	Drawing Status	Draft		Revision	1
			Point of Interest	16	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.		



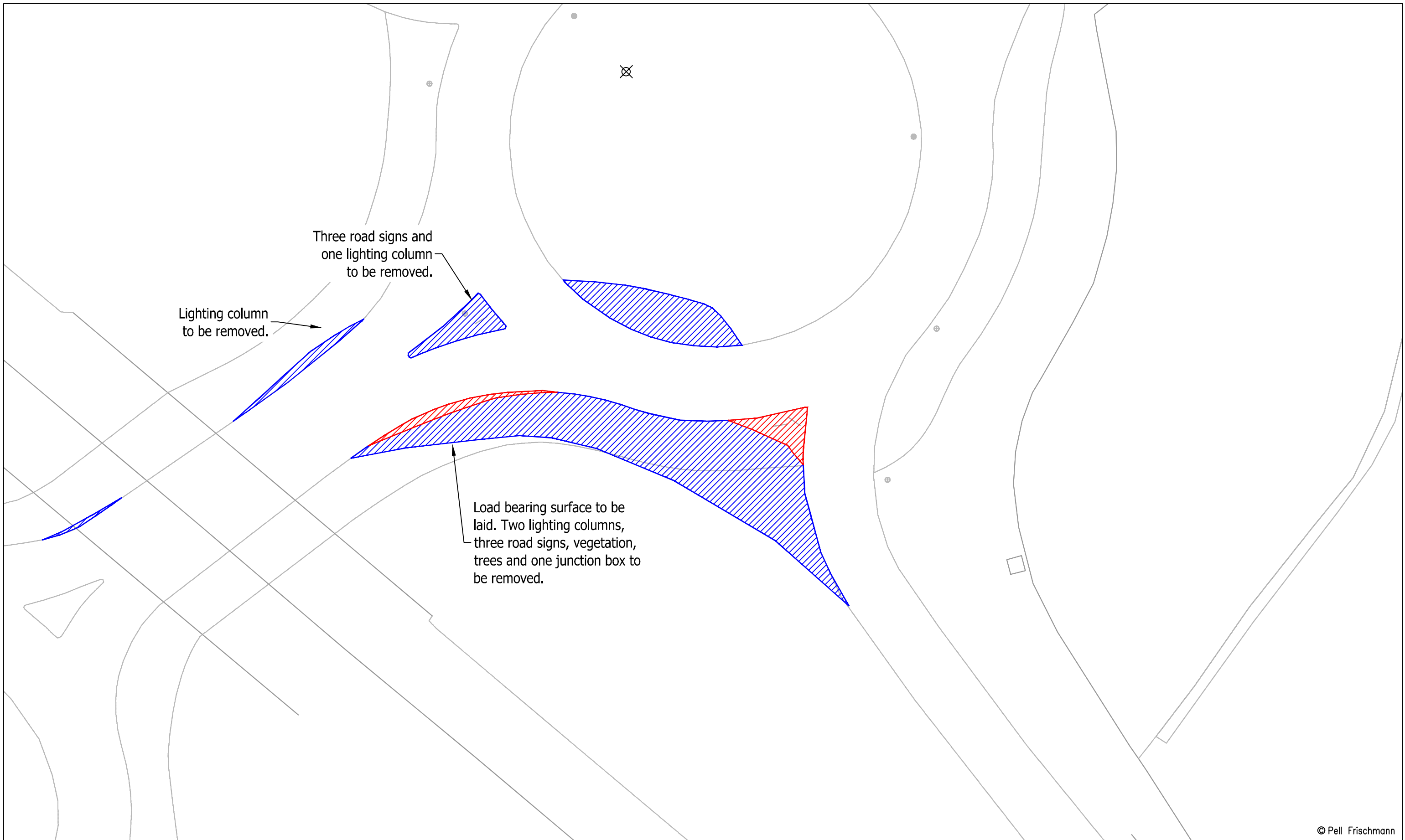
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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	N69 / N18 Slip Road Roundabout 1	Checked	GB	06/11/2025	Drawing Status	Draft		
			Point of Interest	16	Drawing No.	SK10A	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



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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg	
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	N69 / N18 Slip Road Roundabout 2	Checked	GB	06/11/2025	Drawing Status	Draft		Drawing No.	SK11
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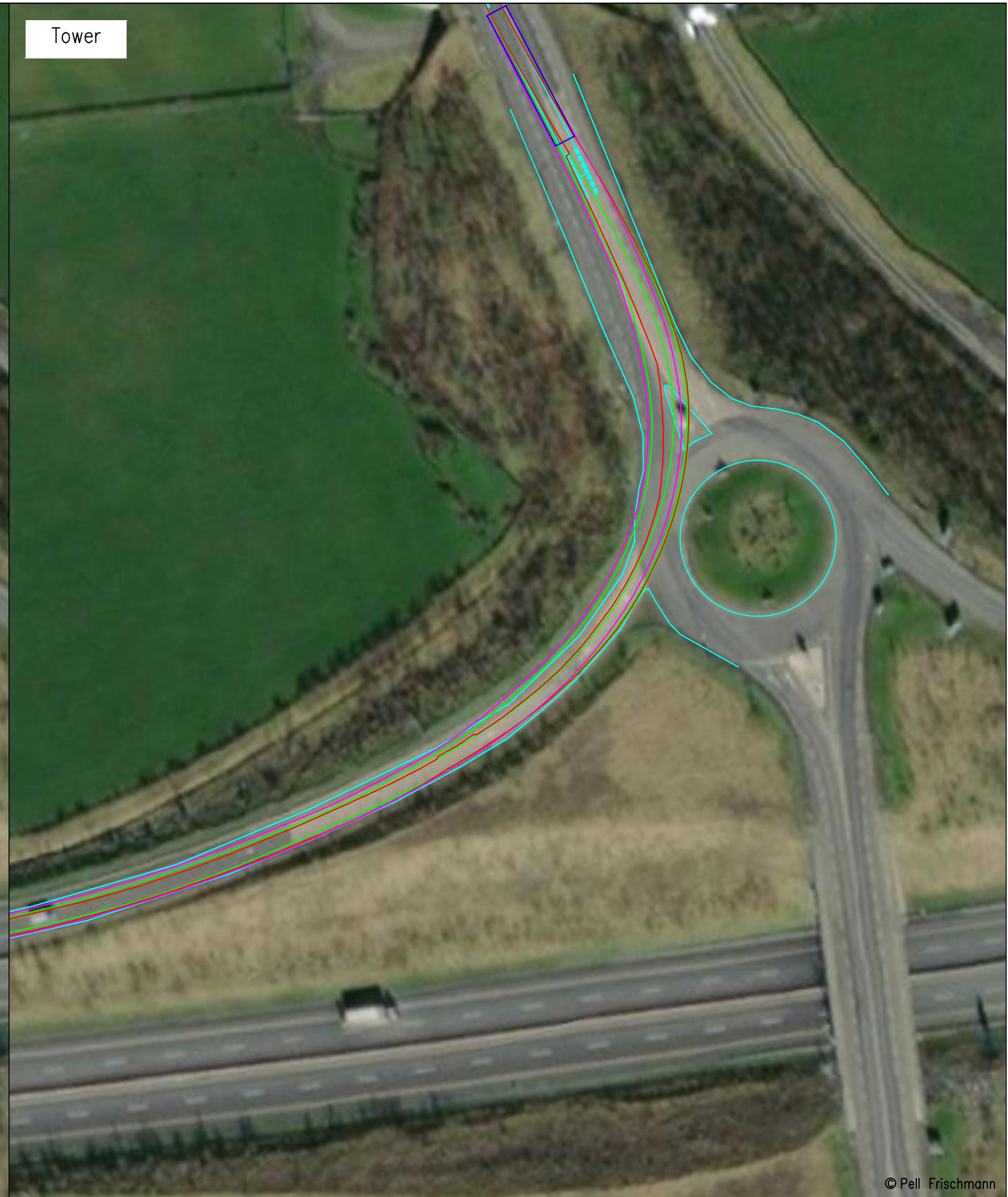


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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	N69 / N18 Slip Road Roundabout 2	Checked	GB	06/11/2025	Drawing Status	Draft	Revision	1
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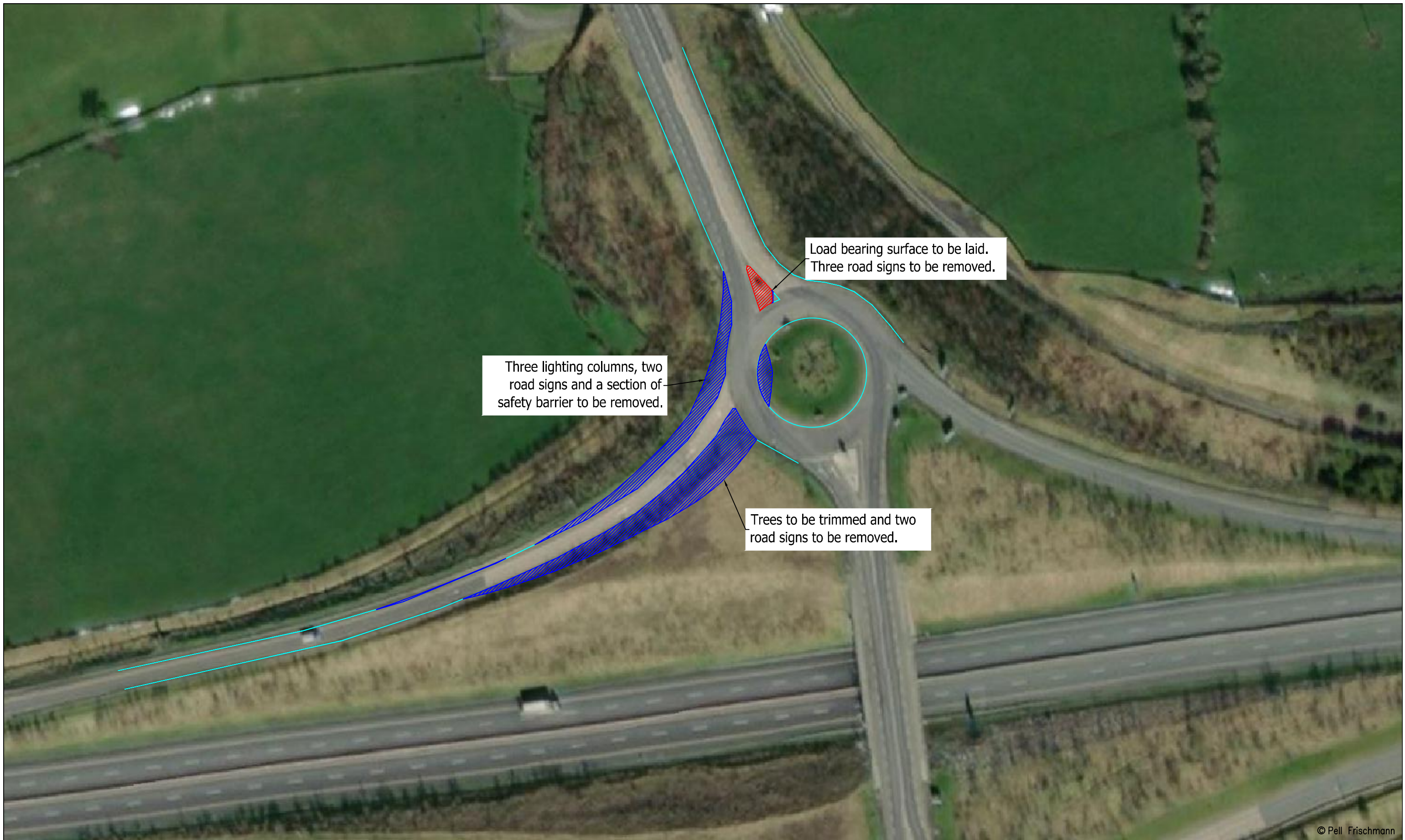
Blade

Tower



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	Client	RWE		Drawn	TL	Designed	06/11/2025	File No.	301025 Ballincor N163 Final.dwg		
Key — Wheel SPA — Body SPA — Load SPA — Indicative Over-run Over-sail	Drawing Title	Nordex N163 Blade and Tower		Checked	GB	Date	06/11/2025	Drawing Status	Draft		
	SPA Location	M7 Junction 21 / R435		Point of Interest	18		Drawing No.	SK12		Revision	1
					Notes:		1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.				

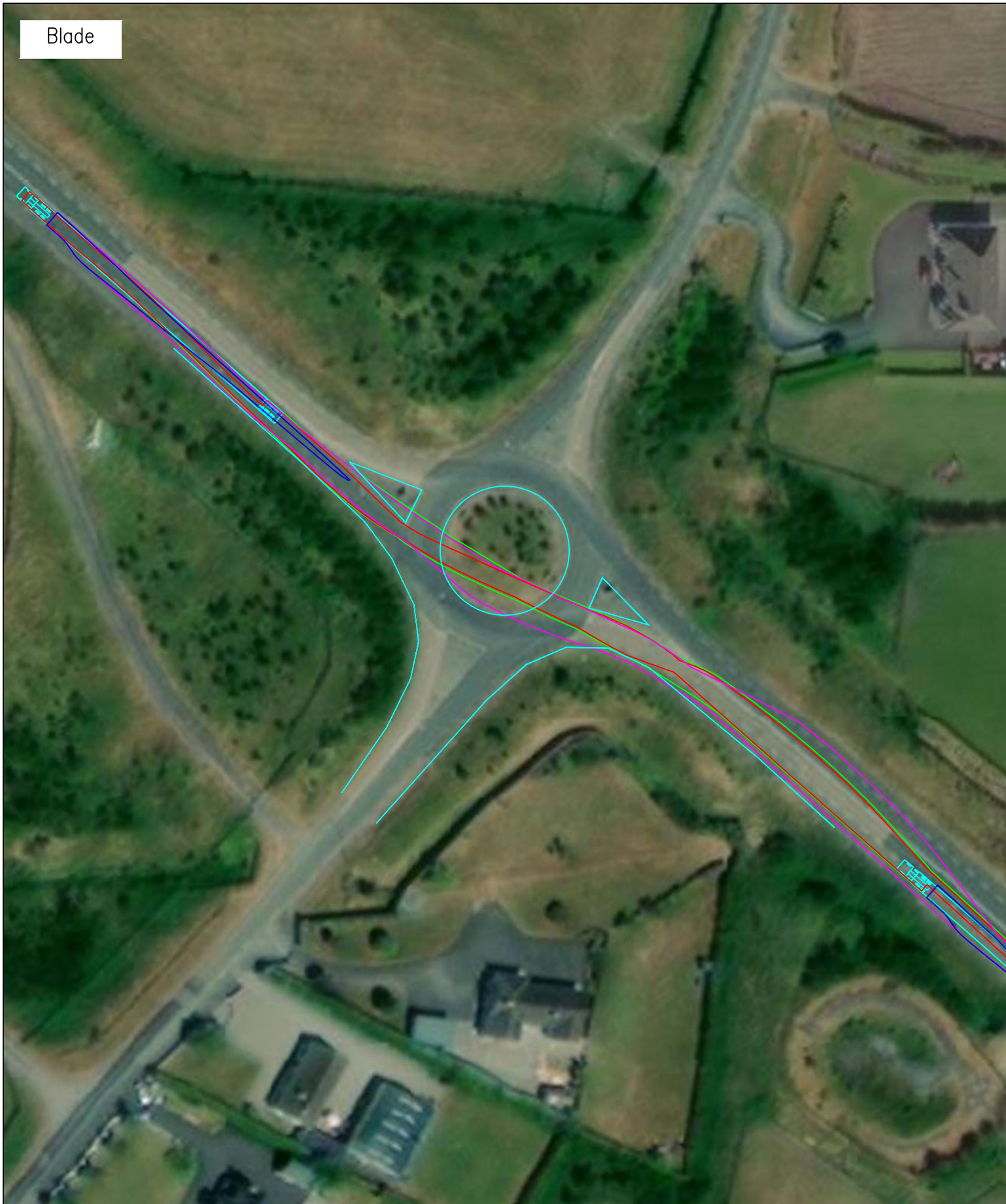


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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	M7 Junction 21 / R435	Checked	GB	06/11/2025	Point of Interest	18	Drawing Status	Draft
			Drawing No.	SK12A	Notes: 1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.			Revision	1

Blade

Tower



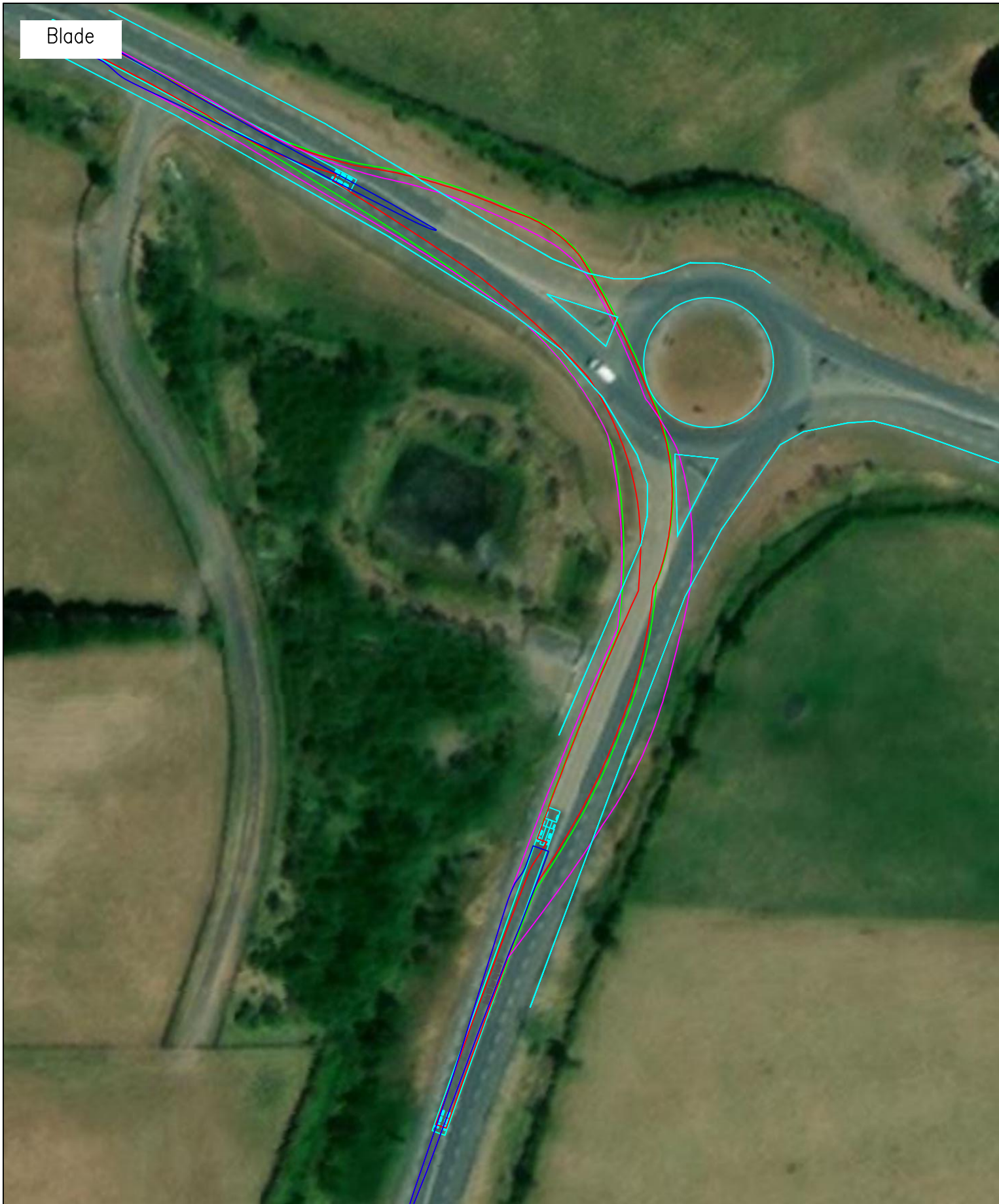
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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	R435 Mountain View Roundabout	Checked	GB	06/11/2025	Drawing Status	Draft	Revision	1
			Point of Interest	19		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.	



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	Client	RWE		Drawn	TL	Designed	06/11/2025	File No.	301025 Ballincor N163 Final.dwg	
Key — Wheel SPA — Body SPA — Load SPA — Indicative Over-run Over-sail	Drawing Title	Nordex N163 Blade and Tower		Checked	GB	06/11/2025	Drawing Status	Draft		
	SPA Location	R435 Mountain View Roundabout		Point of Interest	19		Drawing No.	SK13A	Notes:	Revision
								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.		1

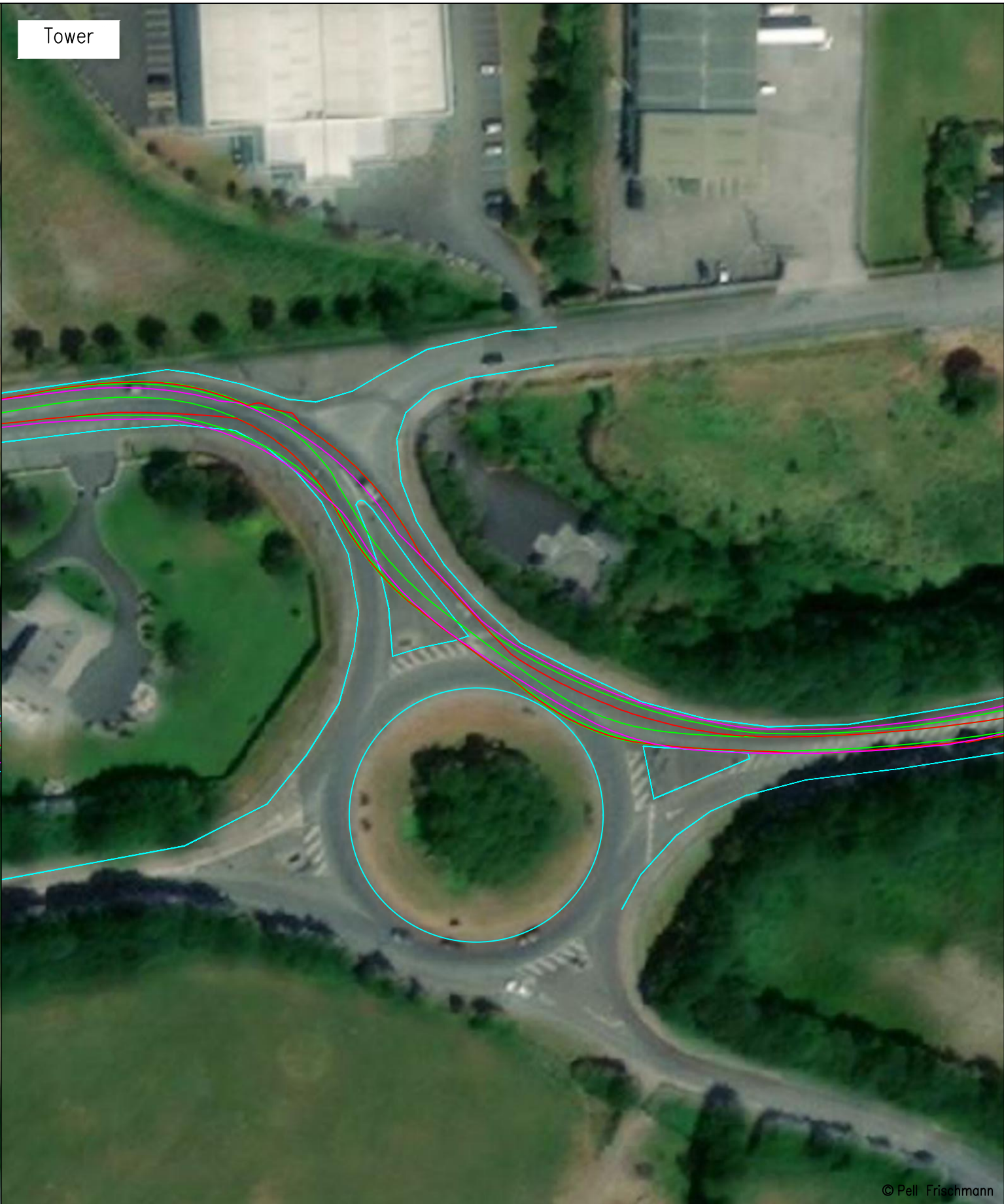


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	Client	RWE		Designed	TL	Date	06/11/2025	File No.	301025 Ballincor N163 Final.dwg	
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	Drawing Title	Nordex N163 Blade and Tower		Checked	GB	Date	06/11/2025	Drawing Status	Draft	
	SPA Location	R435 / R445 Roundabout		Point of Interest	20		Drawing No.	SK14	Notes:	Revision
								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.		1

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Project

Ballincor Wind Farm

Name

Date

Scale

1:1000 @ A3

Drawn

JS

06/11/2025

File No.

301025 Ballincor N163 Final.dwg

Designed

TL

06/11/2025

Checked

GB

06/11/2025

Drawing Status

Draft

Client

RWE

Drawing Title

Nordex N163 Blade and Tower

Point of Interest

21

Drawing No.

SK15

Notes:

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

Revision

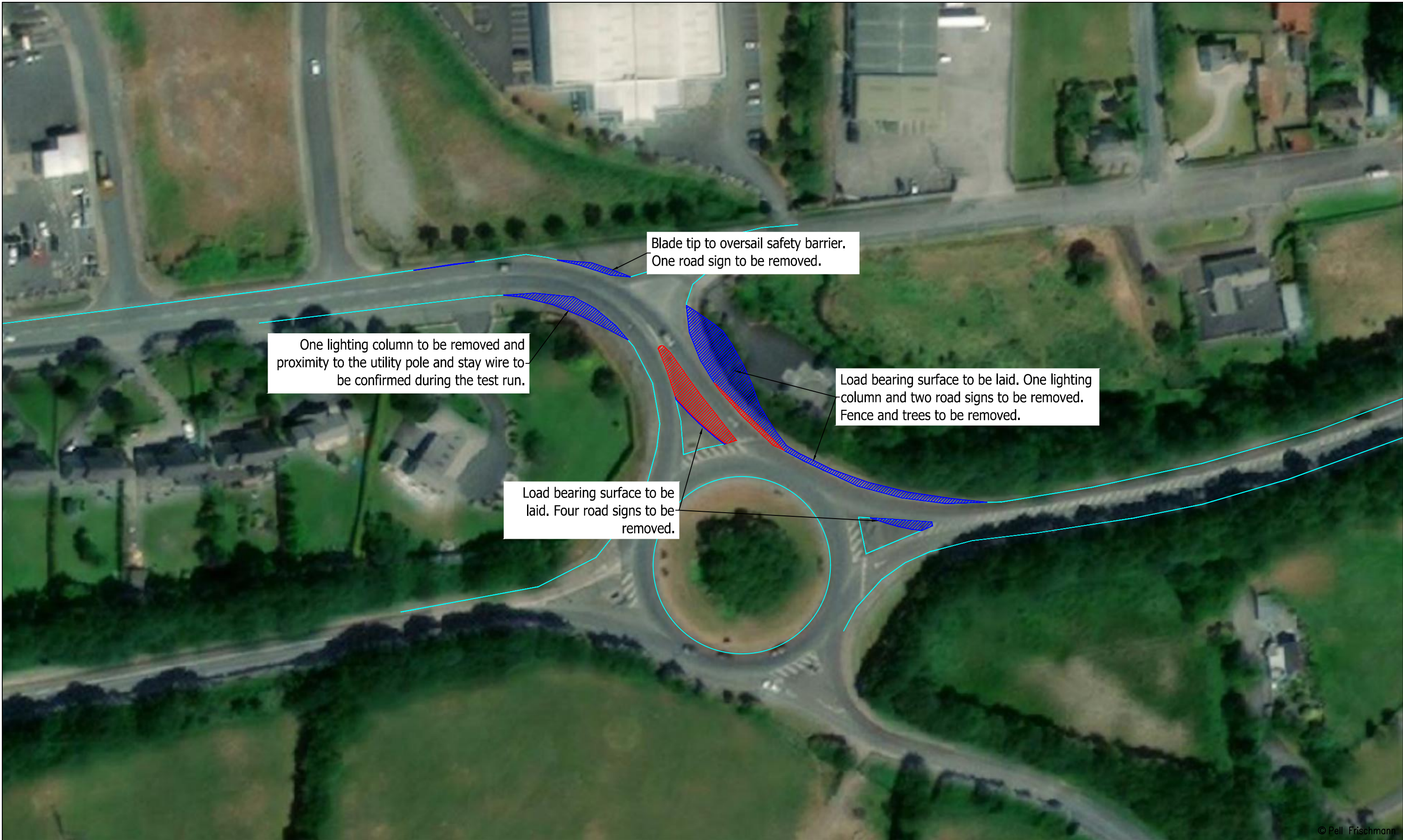
1

Key

- Wheel SPA
- Body SPA
- Load SPA
- Indicative
- Over-run
- Over-sail

SPA Location

R445 / Dublin Road Roundabout



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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key — Wheel SPA — Body SPA — Load SPA — Indicative Over-run Over-sail	SPA Location	R445 / Dublin Road Roundabout	Checked	GB	06/11/2025	Drawing Status	Draft		
			Point of Interest	21		Drawing No.	SK15A	Notes:	Revision
							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.		1

Blade

Tower



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Project

Ballincor Wind Farm

Drawn	Name	Date	Scale
Designed	TL	06/11/2025	Custom @ A3
Checked	GB	06/11/2025	File No. 301025 Ballincor N163 Final.dwg
Point of Interest	22, 23		Drawing Status
Drawing No.	SK16		Draft

Client RWE

Drawing Title

Nordex N163 Blade and Tower

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

SPA Location

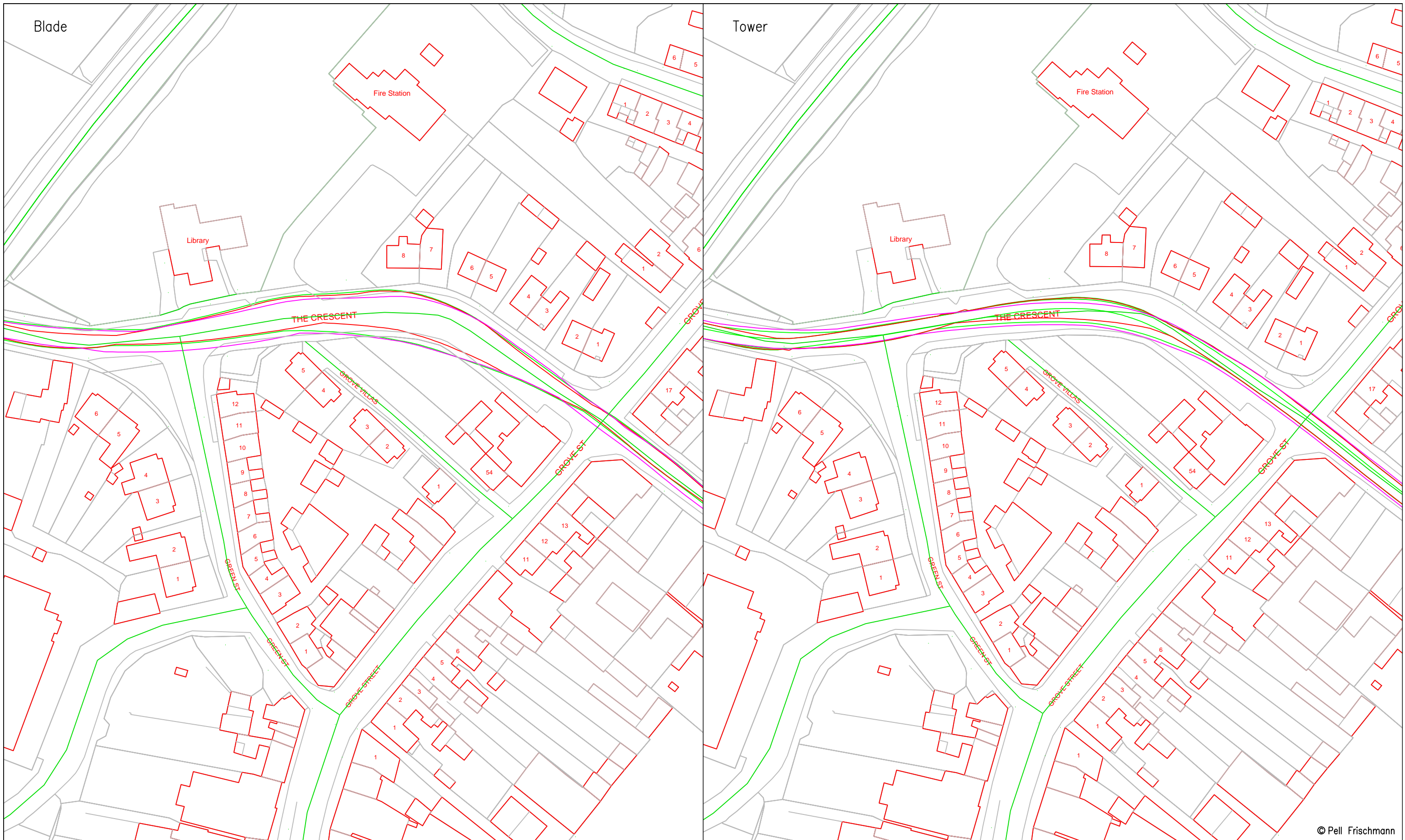
Dublin Road / N62 Junction

Notes:	Revision
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.	1



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Pell Frischmann 93 GEORGE STREET, EDINBURGH, EH2 3ES Tel: +44 (0)131 240 1270 Email: ptedinburgh@pellfrischmann.com www.pellfrischmann.com	Project	Ballincor Wind Farm	Drawn	Name	JS	Date	06/11/2025	Scale	1:500 @ A3
	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	Dublin Road / N62 Junction	Checked	GB	06/11/2025	Drawing Status	Draft	Point of Interest	22, 23
			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	1



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Client: **RWE**

Key
 Wheel SPA (Red line)
 Body SPA (Green line)
 Load SPA (Purple line)
 Indicative (Cyan line)
 Over-run (Hatched red box)
 Over-sail (Hatched blue box)

Project	Ballincor Wind Farm
Drawing Title	Nordex N163 Blade and Tower
SPA Location	Dublin Road Roscrea

Drawn	Name: JS	Date: 06/11/2025	Scale	Custom @ A3
Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Checked	GB	06/11/2025	Drawing Status	Draft
Point of Interest	24		Drawing No.	SK17
Notes:				Revision
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.				1



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Client **RWE**

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

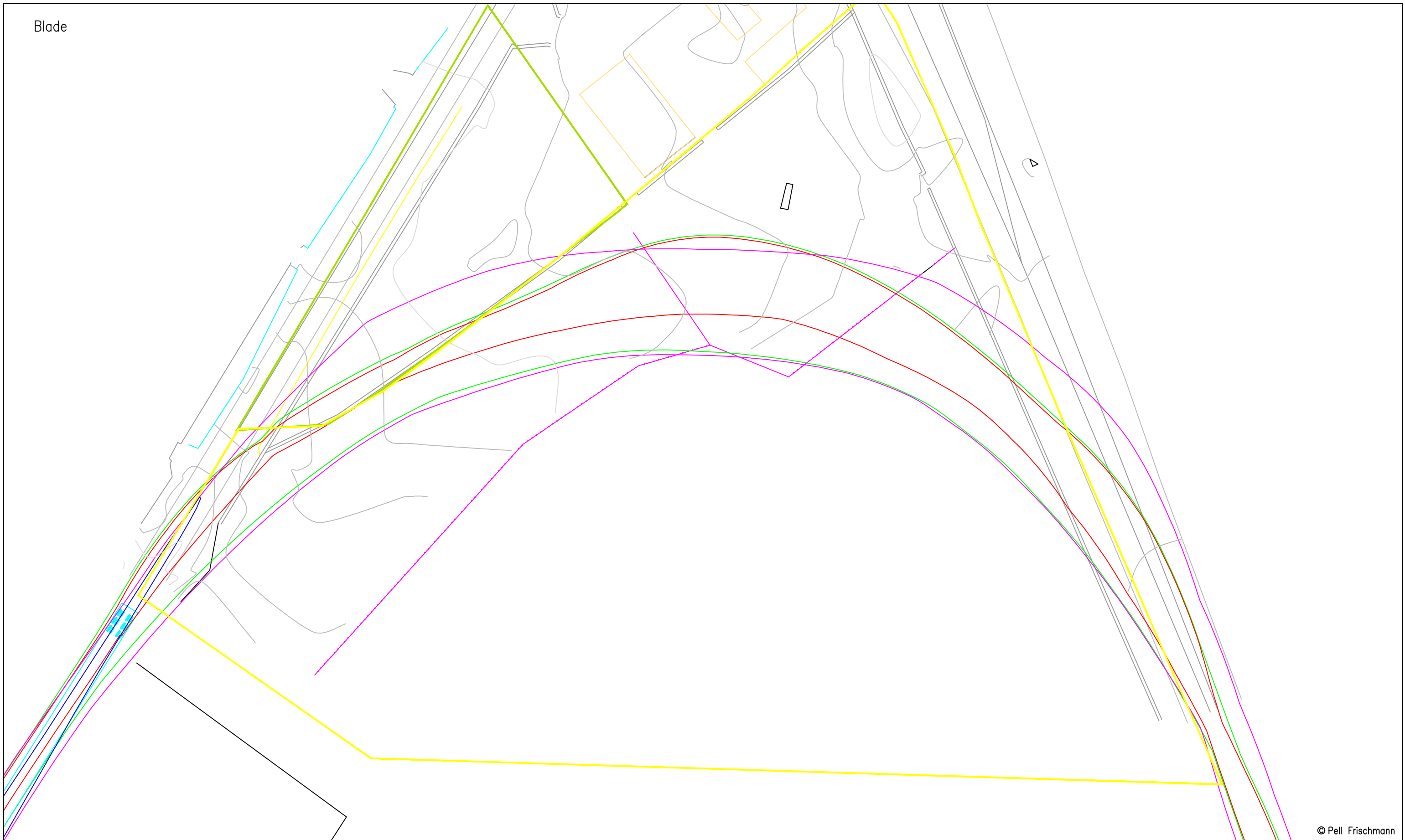
Project **Ballincor Wind Farm**

Drawing Title **Nordex N163 Blade and Tower**

SPA Location **Dublin Road Roscrea**

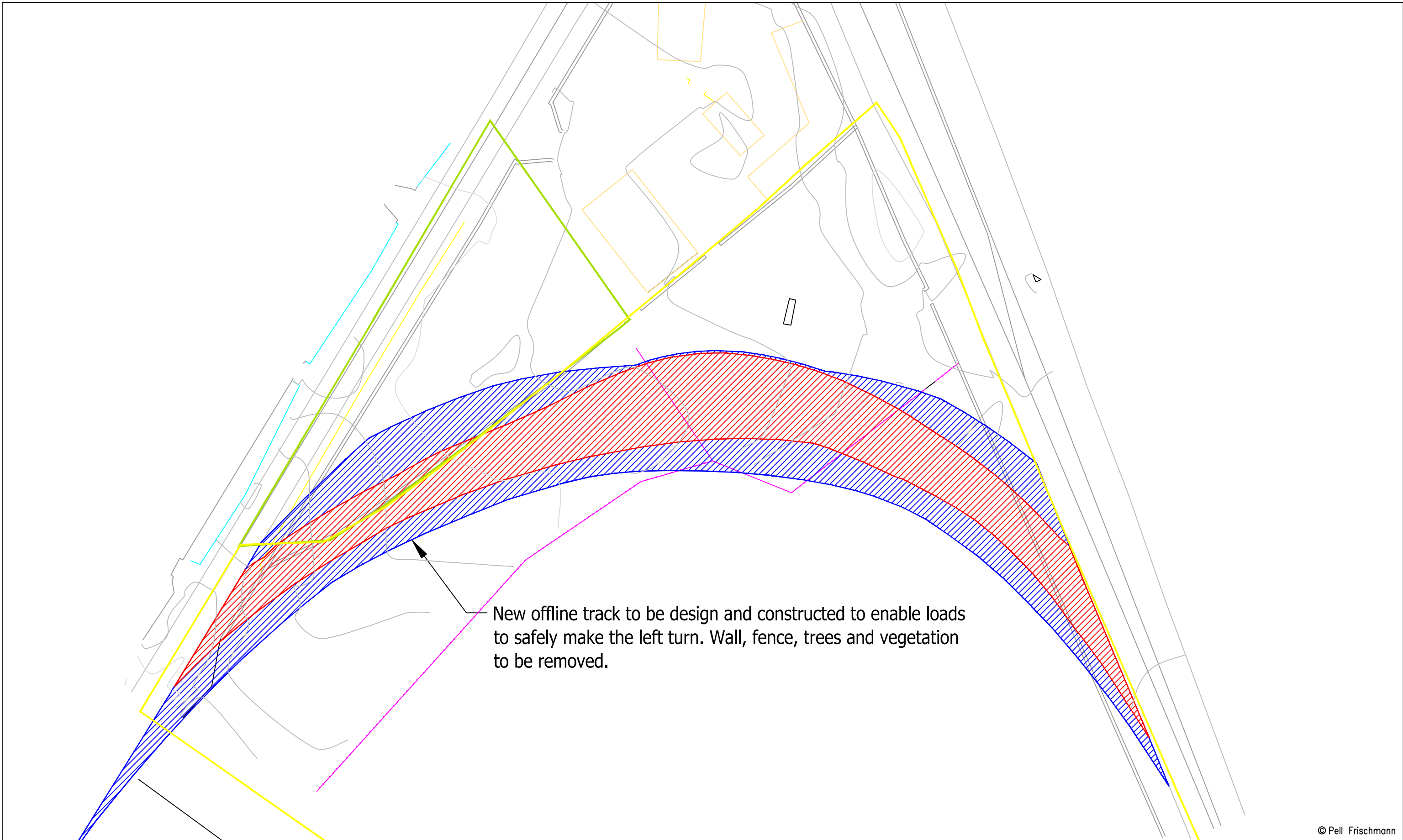
Drawn	JS	06/11/2025	Scale	1:500 @ A3
Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Checked	GB	06/11/2025	Drawing Status	Draft
Point of Interest	24		Drawing No.	SK17A
Notes:			Revision	
1. All mitigation is subject to confirmation through a test run.			1	
2. This is not a construction drawing and is intended for illustration purposes only.				

Blade



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	Client	RWE	Designed	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg	
Key — Wheel SPA — Body SPA — Load SPA — Indicative Over-run Over-sail	Drawing Title	Nordex N163 Blade and Tower	Checked	GB	06/11/2025	Drawing Status	Draft	
	SPA Location	N62 / R492 Junction	Point of Interest	26		Drawing No.	SK18	Revision
				Notes: 1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.				



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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Drawn	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key — Wheel SPA — Body SPA — Load SPA — Indicative Over-run Over-sail	SPA Location	N62 / R492 Junction	Checked	GB	06/11/2025	Drawing Status	Draft		
				Point of Interest	26		Drawing No.	SK18B	Revision
				Notes:		1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only.			



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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower	Drawn	TL	06/11/2025	File No.	301025 Ballincor N163 Final.dwg
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	Proposed Site Entrance	Checked	GB	06/11/2025	Drawing Status	Draft	Revision	1
			Point of Interest	27	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.		



Access junction to be designed to meet turbine manufacturer and local road authority standards.

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	Client	RWE	Drawing Title	Nordex N163 Blade and Tower		Drawn	TL	06/11/2025	File No.
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	SPA Location	Proposed Site Entrance		Checked	GB	06/11/2025	Drawing Status	Draft	
				Drawing No.	SK19A		Point of Interest	27	Revision
				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.		

Appendix C Vertical Assessment



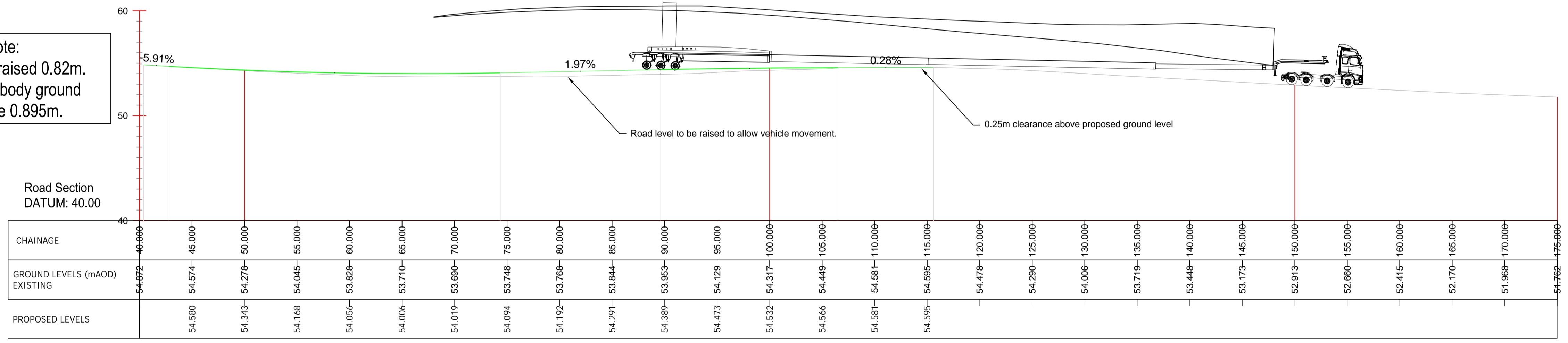
- NOTE:
1. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION FOR HIGHWAY WORKS AND THE TURBINE MANUFACTURERS STANDARDS AND ALL RELEVANT DRAWINGS WITHIN THE PROJECT DESIGN PACKAGE.
 2. ALL WORKS TO BE EXECUTED IN ACCORDANCE WITH THE DMRB, THE MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, DESIGN MANUAL FOR ROADS AND BRIDGES, AND TRAFFIC SIGNS MANUAL.
 3. ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE. ALL LEVELS ARE IN METRES AND RELATE TO ORDNANCE DATUM.
 4. DO NOT SCALE FROM ANY DRAWING. WORK TO FIGURED DIMENSIONS ONLY. ANY DISCREPANCIES IN DIMENSIONS ARE TO BE REFERRED TO THE DESIGNER BEFORE WORK IS PUT TO HAND.
 5. ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO PREPARING ANY WORKING DRAWINGS OR COMMENCING ON SITE.
 6. ALL WORKS BY THE CONTRACTOR MUST BE CARRIED OUT IN SUCH A WAY THAT ALL REQUIREMENTS UNDER THE HEALTH AND SAFETY AT WORK ACT ARE SATISFIED.
 7. ALL WORKS ARE TO BE CARRIED OUT IN COMPLIANCE WITH THE REQUIREMENT OF THE STATUTORY AUTHORITIES AND CONSTRUCTION DESIGN MANAGEMENT REGULATIONS.

KEY:

— EXISTING MAJOR CONTOUR LINE

— EXISTING MINOR CONTOUR LINE

Note:
Gooseneck raised 0.82m.
Rear trailer body ground clearance 0.895m.

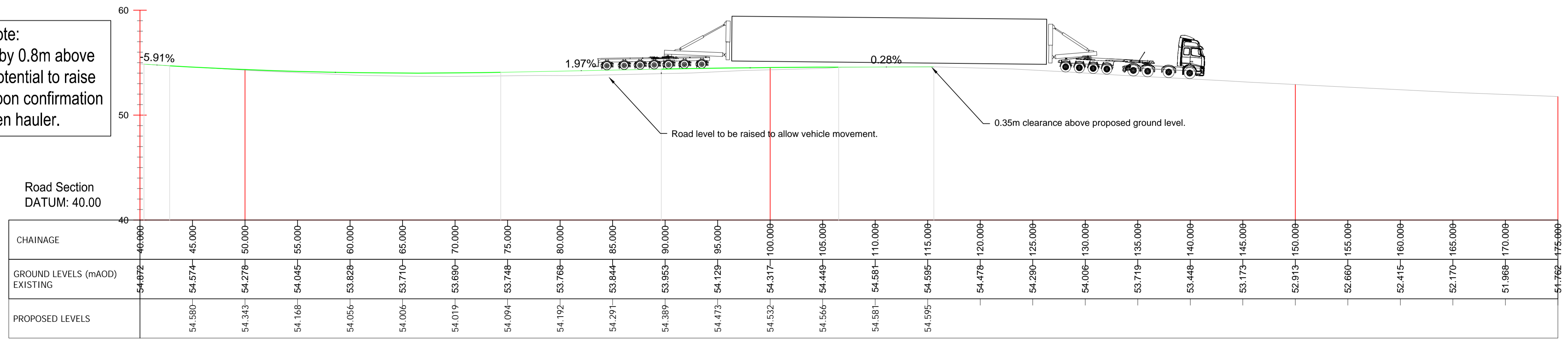


PROFILE KEY:

— EXISTING GROUND LEVELS

— PROPOSED GROUND LEVELS

Note:
Tower raised by 0.8m above flat ground. Potential to raise loads further upon confirmation by chosen hauler.



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Client
RWE

Project
Ballincor Wind Farm

Drawing Title
R491, North of Corolanty Vertical Assessment

Name	Date	Scale
Designed	JS 21.07.2025	1:250 @ A1
Checked	TL 21.07.2025	File 250721 Ballincor Vertical Assessment
Drawing Status	DRAFT	

Drawing No. **10110533_001** Revision **P1**