Clune Wind Farm

Technical Appendix 10.1

Transport Assessment

Author	Pell Frischmann
Date	January 2025
Ref	108064

Contents

1 Introduction

1.1 Purpose of the Report

1.1.1 Pell Frischmann (PF) has been commissioned by Renewable Energy Systems Ltd. (RES) (the Applicant) to undertake a Transport Assessment (TA) for the proposed Clune Wind Farm (the 'Proposed Development'). The Proposed Development is located in The Highland Council (THC) administrative area near the village of Tomatin on land located approximately 27 kilometres (km) south-east of Inverness and approximately 13km north-west of Aviemore (the area defined by the red line boundary on Figure 1.2 of the EIAR shall be referred to as 'the Site'), Scottish Highlands.

1.1.2 The report identifies the key transport and access issues associated with the Proposed Development, including route for abnormal loads. The TA 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. The findings of this report have informed the assessment of traffic and transport related effects in Environmental Impact Assessment (EIA) Report **Chapter 10: Transport and Access.**

1.1.3

1.2 Report Structure

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

- Chapter Two describes the Proposed Development;
- Chapter Three reviews the relevant transport and planning policies;
- Chapter Four sets out the methodology used within this assessment;
- Chapter Five describes the baseline transport conditions;
- Chapter Six describes the trip generation and distribution of traffic in the study area;
- Chapter Seven summarises the traffic impact assessment;

- Chapter Eight considers mitigation proposals for development related traffic within the study network; and
- Chapter Nine summarises the findings of the TA and outlines the key conclusions.

2 Site Background

2.1 Site Location

2.1.1 The Proposed Development is located approximately 27km southeast of Inverness and approximately 3km south of the village of Tomatin.

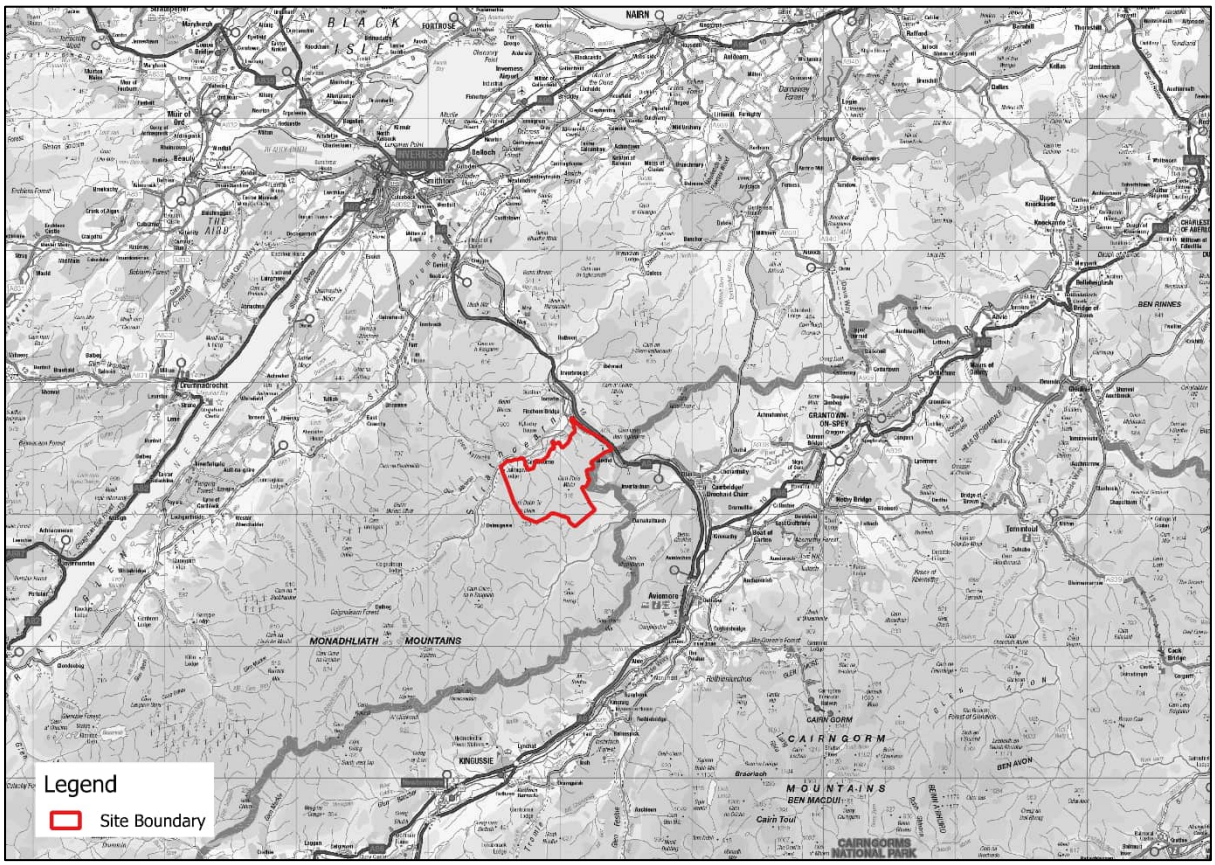
2.1.2 The Site comprises predominately managed upland grouse moorland with agricultural fields and mixed woodland in lower altitude areas. Clune Burn and Allt Lathach traverse the Site along with other smaller tributaries running into the River Findhorn that lies to the northwest, out with the Site boundary.

2.1.3 The Site inclines generally in a north-east to south-west direction, reaching the highest point of the Site, 750 metres (m), at Carn Dubh'Ic an Deoir. The northern edge is bounded by the River Findhorn and the northeastern boundary by the A9. The Site can be approximately divided by four main watercourses that flow north into the River Findhorn: Allt Phris, Clune Burn, Allt Lathach, and Wester Strathnoon Burn.

2.1.4 The Site is mainly used as a grouse moor, managed by grazing livestock such as sheep, and regular burning of mature heather to provide new growth. The Site also consists of small patches of grassland along the northern boundary used by grazing livestock, a block of conifer plantation in the north-east, and an area of ancient deciduous woodland on the banks of the Allt Phris.

2.1.5 The location of the Proposed Development is presented in **Figure 1**.

Figure 1 Site Location



2.2 Proposed Development

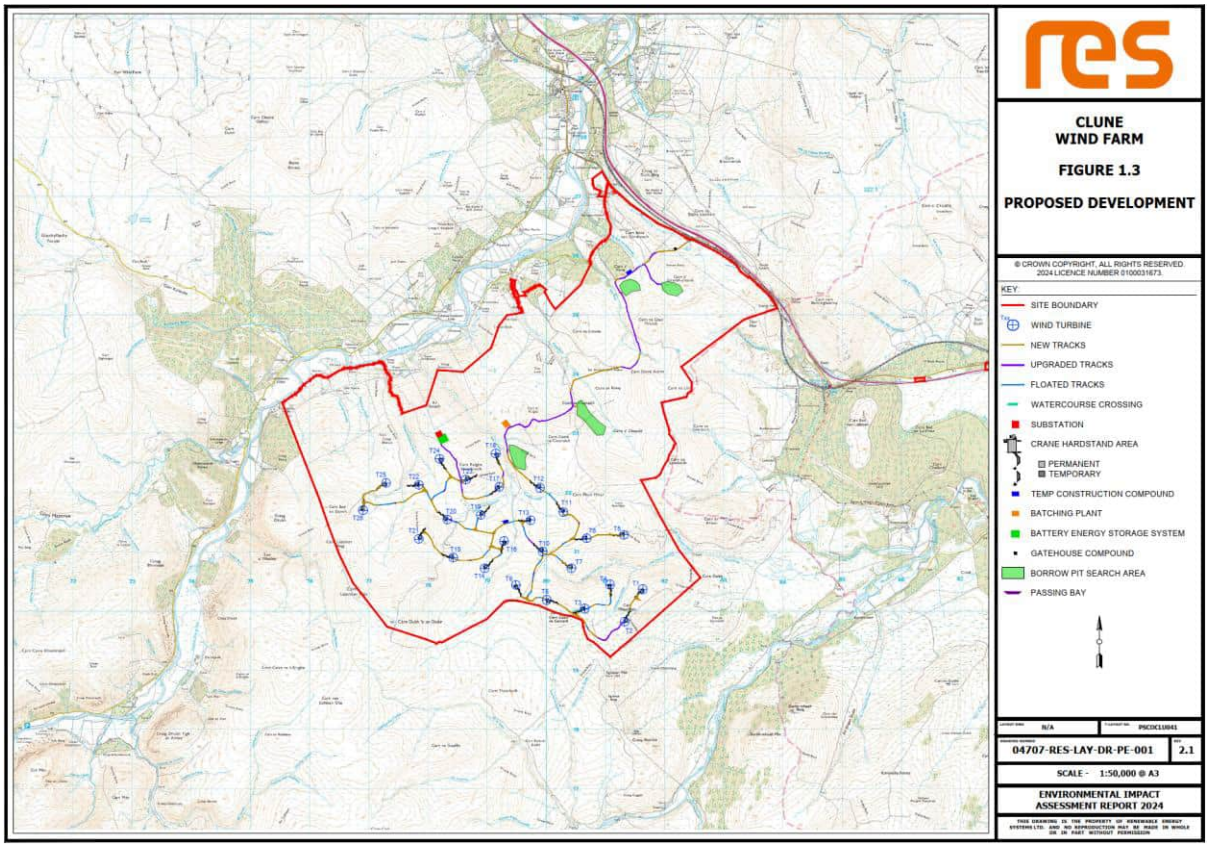
2.2.1 The Proposed Development will comprise the following:

- up to 26 three-bladed horizontal axis wind turbines of up to 200m tip height. The turbines would be nominally rated at 7.2MW;
- permanent wind turbine foundations;
- associated low to medium voltage transformers and related switch gear would be located at each wind turbine;
- hardstand areas for erection of cranes at each wind turbine location;
- a network of onsite tracks including an access track, Site entrance from the public road network, water crossings, passing places and turning heads;
- a substation compound containing electrical infrastructure, control building, welfare facilities and a communications mast;
- a possible Battery Energy Storage System (BESS) compound;

- a network of buried electrical and communication cables to be routed alongside the access tracks;
- borrow pits (dependent on availability of stone within the Site); and temporary construction compound(s).

2.2.2 The Proposed Development is shown in **Figure 2.**

Figure 2 Proposed Development Layout (Courtesy of the Applicant)



2.2.3 A complete description of the Proposed Development for the purposes of the Environmental Impact Assessment (EIA) regulations is provided in EIA Report Volume 1: **Chapter 3: Proposed Development Description.**

2.3 Access Arrangements

2.3.1 Construction traffic access for the Proposed Development will be directly from the U2856 (Slochd – Tomatin road) from a new priority access junction. A Figure showing the proposed new Site access junction is provided in **Annex A** as drawing 04707-RES-ACC-DR-PT-002 (courtesy of

the Applicant). Loads will then proceed to the proposed turbine locations using a combination of upgraded and new access tracks.

2.3.2 Abnormal Indivisible Loads (AIL) for turbine components will access the Site via the U2856 and A9.

2.3.3 As part of the wider development proposals, a new bridge is proposed between the Proposed Development Site and the A9, on the U2856 road, across the Highland Main Line. This is to replace the existing bridge, which is substandard and not suitable to accommodate the predicted loads. The works in relation to the new bridge will form part of a separate planning application and will be done in full consultation with THC, TS and Network Rail.

2.4 Candidate Turbine

2.4.1 The Applicant has indicated that they wish to consider Vestas V162 turbines with a tip height 200m for the purposes of this assessment. The details of the components have been provided by Vestas and are detailed in **Table 1**. Note these are indicative component dimensions at this time and are subject to change.

Table 1 Turbine Component Summary

Component	Length (m)	Width (m)	Height / Min Diameter (m)	Weight (t)
Vestas V162 Blade	79.967	4.460	3.800	34.961
Base Tower	12.070	4.760	4.740	81.000
Mid Tower 1	18.760	4.740	4.687	86.000
Mid Tower 2	25.480	4.687	4.676	82.000
Mid Tower 3	29.960	4.676	4.421	76.000
Top Tower	30.000	4.421	3.978	60.000

2.4.2 A detailed Route Survey Report (RSR) has been prepared and appends this TA as **Annex B**. Note the RSR has been undertaken for a different turbine to that highlighted above, namely a Siemens Gamesa SG170, which has larger component dimensions for the biggest loads. As such this allows for a suitably robust assessment of the route to be undertaken.

2.4.3 With regards to the equipment used to transport the turbine components, to provide a robust assessment scenario based upon the known issues along the access routes and constraints in moving larger loads, it has been assumed that all blades would be carried on a Blade Dolly trailer to reduce the need for mitigation in constrained sections of the route.

2.4.4 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.

2.4.5 Examples of the vehicles and trailers that are likely to transport loads are shown in **Figure 3** to **5**.

Figure 3 Blade Dolly Trailer

Figure 4 Step Frame Trailer

Figure 5 Clamp Tower Trailer

3 Policy Context

3.1 Introduction

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

3.2 National Policy

National Planning Framework 4 (2023)

3.2.1 The National Planning Framework 4 (NPF4) was approved by Scottish Parliament on 11 January 2023 and was adopted by Scottish Ministers on 13 February 2023. 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.

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

3.2.3 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."*

3.2.4 The assessment undertaken as part of this TA and the associated EIA Report Chapter 10 has taken cognisance of this and provided appropriate mitigation where necessary.

Planning Advice Note (PAN) 75

3.2.5 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."

Transport Assessment Guidance (2012)

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

3.2.7 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.

Onshore Wind Turbines: Online Renewables Planning Advice (2014)

3.2.8 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.

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

3.3 Local Policy & Guidance

Highland-wide Local Development Plan (2012)

3.3.1 The Highland-wide Local Development Plan (LDP) was adopted by The Highland Council (THC) in April 2012 and is the established planning policy for the Highlands. It sets out a settlement strategy and spatial framework for how THC foresees development occurring in the forthcoming twenty-year period.

3.3.2 The LDP does not contain any specific policy guidance for the Proposed Development. However, Policy 56 is relevant with regards general transport policy. The relevant transport elements from this policy are:

"Development proposals that involve travel generation must include sufficient information with the application to enable the Council to consider any likely on- and offsite transport implications of the development and should:

- *incorporate appropriate mitigation onsite and/or offsite, provided through developer contributions where necessary, which might include improvements and enhancements to the walking/cycling network and public transport services, road improvements and new roads; and*

- *incorporate an appropriate level of parking provision, having regard to the travel modes and services which will be available and key travel desire lines and to the maximum parking standards laid out in Scottish Planning Policy or those set by the Council.*

When development proposals are under consideration, the Council's Local Development Strategy will be treated as a material consideration.

The Council will seek the implementation and monitoring of Green Travel Plans in support of significant travel generating developments."

The Inner Moray Firth Local Development Plan 2 (2024)

3.3.3 The Inner Moray Firth Local Development Plan 2 (IMFLDP2) was adopted in June 2024 and replaced the previous plan, which was adopted in 2015. The plan seeks to deliver defined outcomes for communities, employment, connectivity and the environment but with particular emphasis on post-pandemic economic recovery and addressing the Climate and Ecological Emergency. The Plan makes policy, placemaking priority and development site choices that best balance both environmental sustainability and economic viability for both the public and private sector.

3.3.4 This Plan supports the area to maximise local and Scotland-wide benefits from investment in renewable energy and place the Highlands at the heart of the drive towards net-zero.

Onshore Wind Energy Supplementary Guidance (2016)

3.3.5 The Onshore Wind Energy Supplementary Guidance was adopted by THC in 2016. In relation to traffic and transport interests, the guidance document notes that:

"All proposals should seek to avoid significant adverse effects on the public road network individually and cumulatively with other built and permitted proposals as well as valid planning applications not yet determined (the weight apportioned to each will reflect their position in the planning process).

The proposals for the use of the public roads and mitigation works will require the approval of the Roads Authority. Developers will be required to enter into a Section 96 (Roads Scotland Act) agreement with the Council to cover damage to the public roads by construction traffic and may be required to provide a bond as surety.

Developers will be required to undertake a Transport Assessment to establish the transport impacts of the construction traffic associated with the development, the suitability of the existing road network, the impact on existing road users and adjacent communities, and the requirement for any mitigation works.".

Roads and Transport Guidelines for New Developments (2013)

3.3.6 THC document outlines the guidance and standards for the provision of infrastructure within the council area, which includes the design and construction of all new roads associated with development proposals.

3.3.7 THC's Roads and Transport Guidelines for New Developments document provides guidance in relation to transport implications of onshore wind farm developments. The document notes that:

"For wind farm proposals, a developer should be aware that the Council will require a Transportation Assessment (TA) to be submitted that must consider the existing road network, transportation constraints and potentially sensitive routes or communities.

A wind farm vehicular Site access must provide appropriate visibility splays and suitable surface water drainage. Within the Site, the wind turbines are likely to be located some distance from the nearest public road, requiring internal access tracks to be constructed. As the access tracks need to accommodate abnormal loads, they have to be of a suitable width. These tracks are normally constructed from hard-core material and the developer will usually be encouraged/allowed to use material obtained from borrow pits within the Site area, to reduce construction traffic. Onsite concrete batching should also be considered, as this can also result in a reduction of associated vehicles on the local road network.

A suitable turning area must be constructed within the Site, to accommodate abnormal load delivery vehicles, construction vehicles and future maintenance vehicles. During the construction period, a wheel-wash system shall be provided."

Guidance on the Preparation of Transport Assessments (2014)

3.3.8 THC has prepared guidance on how TA should be prepared for development sites within The Highlands. The guidance was published by THC in November 2014.

3.3.9 This TA has noted the guidelines and has provided the required assessment.

3.4 Policy Summary

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

4 Study Methodology

4.1 Introduction

4.1.1 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

4.2.1 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 sensitive receptors. Construction plant, bulk materials and wind turbine components will be transported to Site, potentially resulting in a significant increase in traffic on the study network.

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

4.2.3 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.

4.2.4 It should be noted, however, that construction effects are short lived and transitory in nature, whilst the operational phase assessment has been assumed to be based on typical operating conditions with occasional operational and maintenance traffic.

4.3 Scoping Discussions

4.3.1 The Applicant submitted a scoping report to the Energy Consents Unit (ECU) in respect of the EIA which included a section considering traffic and transport. A full review of that scoping opinion and other correspondence

relating to the scope of the study including pre-application advice is provided in the EIA Report **Chapter 10: Transport and Access**.

5 Baseline Conditions

5.1 Study Area Determination

5.1.1 The study area includes local roads that are likely to experience increased traffic flows resulting from the Proposed Development. The geographic scope was determined through a review of Ordnance Survey (OS) plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials.

5.1.2 Locally sourced material will be used where feasible and traffic will avoid impacting on local communities as far as is possible.

5.1.3 Strategic access to the Site will be taken from the A9 which forms part of the trunk road network. Access for construction materials would be predominantly from the north and south via the A9 (depending on what materials are being delivered). This can be accessed from the Site via the U2856.

5.1.4 The likely Port of Entry (POE) used for the discharging of wind turbine components will be Inverness Harbour. AILs would likely route to the Site via Longman Drive / Stadium Road, A9 and the U2856 through to the Site access junction. Full details of the AIL route are provided later in the report and within **Annex B**.

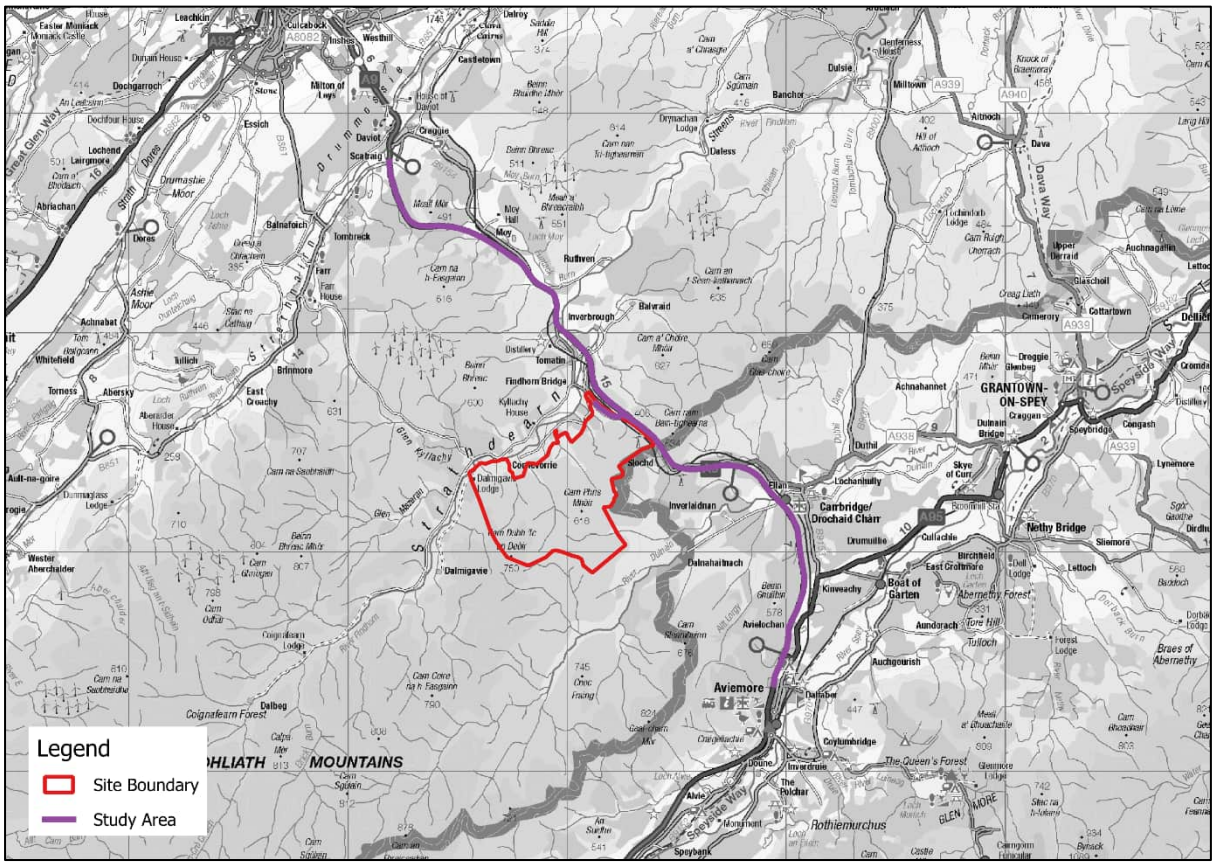
5.1.5 Based on the above, the study area for this assessment is as follows:

- The U2856 from its junction with the A9 to the Site access;
- The A9 from its junction with U2856 to Slochd;
- The A9 from Slochd to Aviemore; and
- The A9 from its junction with U2856 to Scatraig.

5.1.6 Effects associated with construction traffic generated by the Proposed Development would 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 would 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. The study area is shown in **Figure 6**.

Figure 6 Study Area



5.2 Pedestrian and Cyclist Networks

5.2.1 There are no dedicated pedestrian facilities in the immediate vicinity of the Site, reflecting its rural setting. Further away from the Proposed Development in the wider study area, there are pedestrian facilities within the larger settlements like Inverness and Carrbridge, and some of the smaller settlements, including Tomatin and Moy.

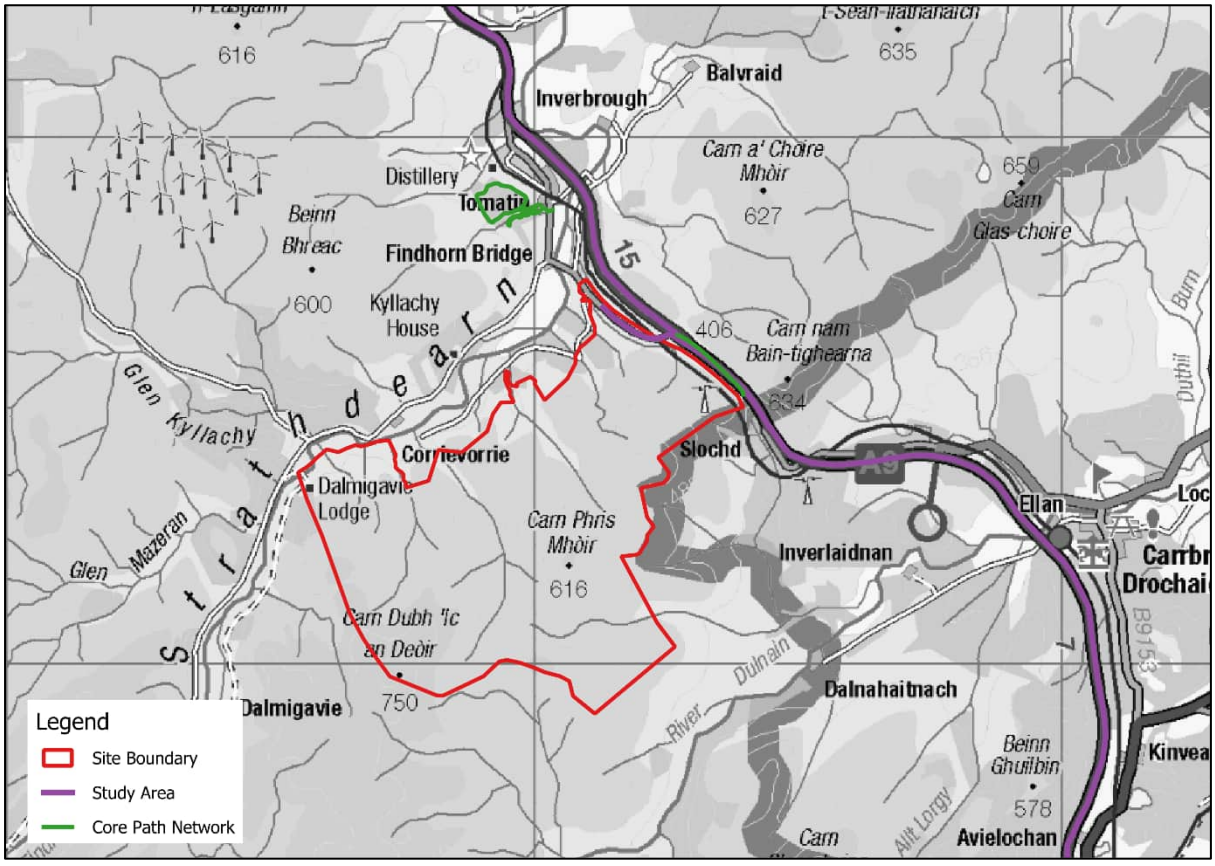
5.2.2 The level of pedestrian infrastructure in the immediate vicinity of the Site is commensurate with the scale of the local settlements and their rural setting.

5.2.3 A review of THC Core Path Map[1] indicates a small number of Core Paths in the vicinity of the Site, which are provided below:

- Core Path IN27.01 (part of the National Cycle Network (NCN) Route 7), 1.64km in length. The path connects with Core Path LBS114 which falls within the Cairngorms National Park;
- Core Path IN27.03 (Allt Neacrath loop), 1.90km in length located in the Morilemore area of Tomatin; and
- Core Path IN27.02 (Distillery Wood), 3.06km in length located to the south of the Tomatin Distillery Visitor Centre.

5.2.4 The Core Path Network within the vicinity of the Site can be seen in **Figure 7**.

Figure 7 Core Path Network



[1] https://map-highland.opendata.arcgis.com/datasets/4ff063a3130b4914bec21d1e90434b5c/explore?location=57.176906%2C-4.394959%2C8.33 [Accessed September 2024]

5.2.5 A review of the Sustrans National Cycle Network map[2] indicates that NCN Route 7 follows Core Path IN27.01 and LBS114 which run parallel to the A9, before continuing on-road along the U2856, past the proposed Site access location towards Tomatin and beyond to Inverness.

5.2.6 NCN Route 7 forms the northern section of the long-distance Lochs and Glens Way route in the north of Scotland and links Inverness and Carrbridge in the Cairngorms National Park. Connecting to NCN Route 1 alongside the River Nairn, it passes the battlefield at Culloden and the Tomatin Distillery Visitor Centre.

5.3 Road Access

U2856

5.3.1 The U2856 Slochd to Findhorn Bridge Road is a single carriageway road with one lane operating in each direction, linking the A9 with Findhorn Bridge to the south of Tomatin. There is a 30 miles per hour (mph) speed limit in place on the initial section where it meets the A9, with the national speed limit (60mph) in place for the remainder of the road. The road is maintained by THC and appears to be in good condition.

A9

5.3.2 The A9 is the main trunk road in the area which links Perth to Scrabster. The road is operated by BEAR Scotland on behalf of Transport Scotland. The road is subject to a speed limit of 60mph within the study area, however, sections of dual carriageway are signed as 70mph.

5.3.3 Dualling of the A9 between Tomatin and Moy is scheduled to commence in Spring 2025, with the road expected to be completed by Spring 2028.

Road Suitability

5.3.4 The Agreed Timber Route Map[3] has been developed by The Timber Transport Forum who are a partnership of the forestry and timber

[2] https://www.sustrans.org.uk/national-cycle-network [Accessed September 2024]
[3] https://timbertransportforum.org.uk/ [Accessed September 2024]

industries, local government, national government agencies, timber hauliers and road and freight associations. One of the key aims of the forum is to minimise the impact of timber transport on the public road network, on local communities and the environment and a way of achieving this is to categorise the roads leading to forest areas in terms of their capacity to sustain the likely level of timber haulage vehicles i.e. HGVs. The routes are categorised into four groups, namely; 'Agreed Routes', 'Consultation Routes', 'Severely Restricted Routes' and 'Excluded Routes'.

5.3.5 'Agreed Routes' are categorised as routes used for timber haulage without restriction as regulated by the Road Traffic Act 1988. A-roads are classified as 'Agreed Routes' by default unless covered by one of the other road classifications. Those links classed as 'Consultation Routes' are categorised as a route which is key to timber extraction, but which are not up to 'Agreed Route' standard. Consultation with the local authority is required, and it may be necessary to agree limits of timing, allowable tonnage etc. before the route can be used. B-roads are classified as 'Consultation Routes' by default unless covered by one of the other classifications. 'Severely Restricted Routes' are not normally to be used for timber transport in their present condition. These routes are close to being Excluded Routes. Consultation with the local authority is required prior to use. Finally, 'Excluded Routes' should not be used for timber transport in their present condition. These routes are either formally restricted, or are close to being formally restricted, to protect the network from damaging loads.

5.3.6 Roads within the study area form part of the route network used for the extraction of timber and are therefore regularly used by HGV traffic. This includes the A9 which is an 'Agreed Route' and the U2856 which is a 'Consultation Route'.

5.4 Existing Traffic Conditions

5.4.1 In order to assess the impact of development traffic on the study area, an Automatic Traffic Counter (ATC) was deployed along the U2856, in the vicinity of the proposed Site access over a 7-day period in June 2024, in

order to collect vehicle volumes, composition and speed per direction per hour.

5.4.2 To compliment the ATC survey, existing traffic count data was obtained from the Traffic Scotland (TS) database, with 2024 data utilised.

5.4.3 The traffic count sites used are as follows:

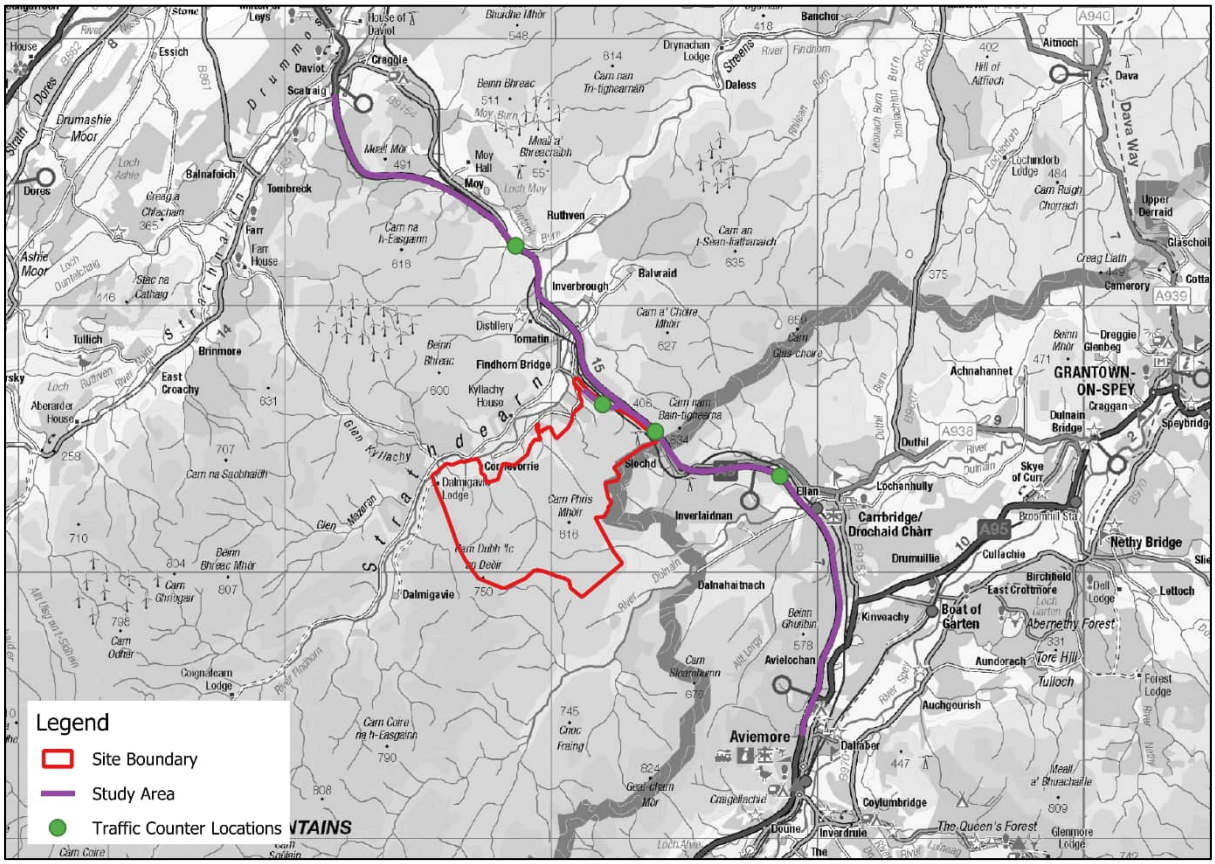
- U2856, between the A9 and Findhorn Bridge (Commissioned ATC Survey);
- A9, between the U2856 junction and Slochd (TS Counter: JTC00314);
- A9, between Slochd and Aviemore (TS Counter: ATC01005); and
- A9, between the U2856 junction and Scatraig (TS Counter: 104480).

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

5.4.5 These sites were identified as being areas where sensitive receptors on the access route would be located. A full receptor sensitivity and effect review is prepared in EIA Report **Chapter 10**.

5.4.6 The locations of the traffic sites are illustrated in **Figure 8.**

Figure 8 Traffic Count Locations



5.4.7 The 24-hour two-way average traffic flows for each of the traffic count locations are presented in **Table 2.**

Table 2 24-Hour Two Way Average Traffic Data (2024)

Site ID	Survey Location	Count Source	Cars & LGVs	HGVs	Total
1	U2856	ATC Survey	125	52	178
2	A9, between the U2856 junction and Slochd	Traffic Scotland	7,495	2,259	9,754
3	A9, between Slochd and Aviemore	Traffic Scotland	6,440	2,048	8,488
4	A9, between the U2856 junction and Scatraig	Traffic Scotland	9,383	1,534	10,917

5.4.8 The ATC and TS survey locations which provided traffic volume data 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

Site ID	Survey Location	Count Source	Mean Speed (mph)	85%ile (mph)	Speed Limit (mph)
1	U2856	ATC Survey	40.0	49.6	60
2	A9, between the U2856 junction and Slochd	Traffic Scotland*	53.0	59.6	60
3	A9, between Slochd and Aviemore	Traffic Scotland*	54.4	59.6	60
4	A9, between the U2856 junction and Scatraig	Traffic Scotland*	52.3	58.1	60

* Speed data obtained October 2024

5.4.9 Speed information from the **Table 3**, suggests that the recorded speeds are being adhered to within the study area.

5.5 Accident Review

5.5.1 Personal Injury Accident (PIA) data for the five and a half year period covering January 2019 to September 2024 for the A9, approximately 19km north and 16km south of the junction between the A9 and U2856, was obtained from TS in line with the requirement set out in the EIA Scoping Opinion for the trunk road network within the study area.

5.5.2 For all other locations (the U2856), PIA data for the five-year period commencing 01 January 2018 through to the 31 December 2022 was obtained from the online resource CrashMap[4] which uses data collected by the police about road traffic crashes occurring on British roads, where someone is injured.

5.5.3 Transport Assessment (TA) Guidance[5] requires an analysis of the accident data on the road network in the vicinity of any development to be undertaken for at least the most recent three-year period, or preferably a five-year period, particularly if the Site has been identified as being within a high accident area.

[4] https://www.crashmap.co.uk [Accessed December 2024]

[5] https://www.transport.gov.scot/media/4589/planning_reform_-_dpmtag_-_development_management__dpmtag_ref__17__-_transport_assessment_guidance_final_-_june_2012.pdf

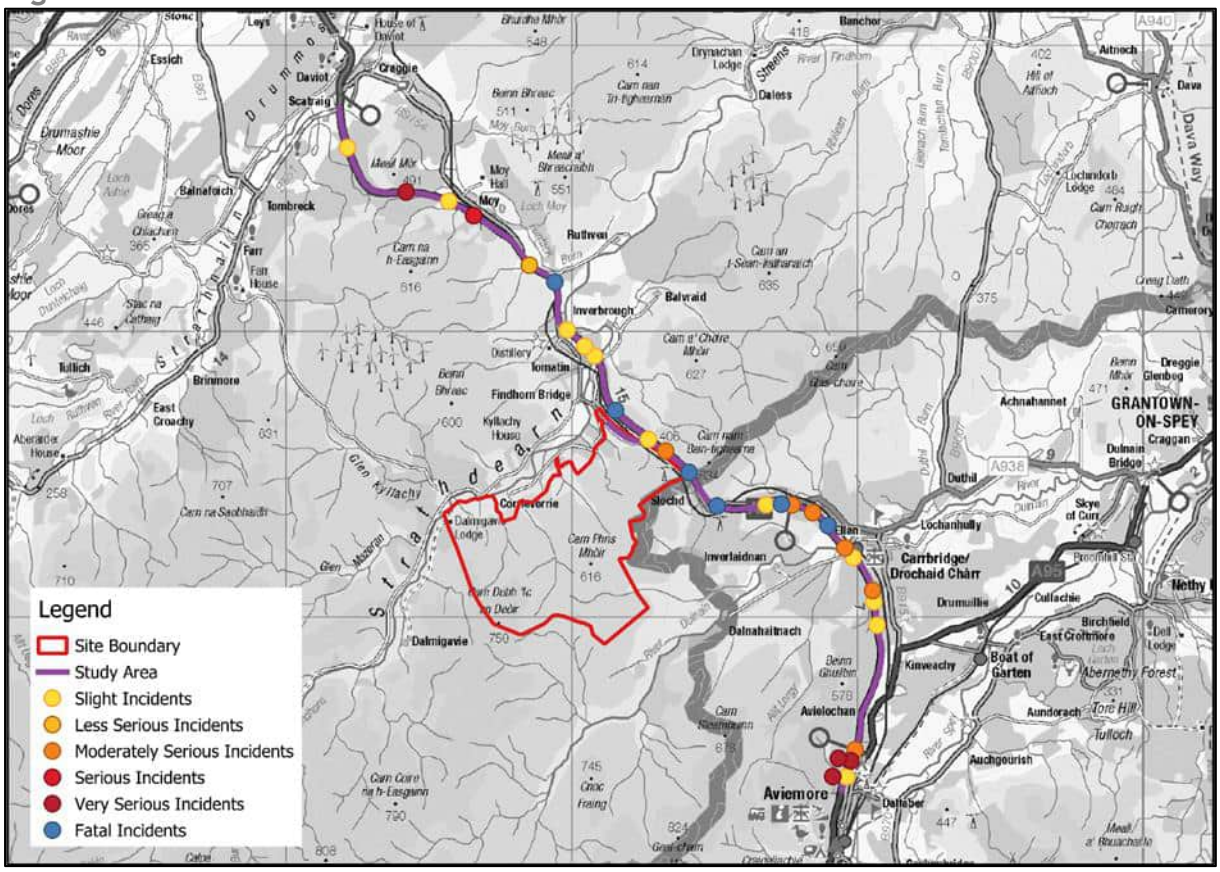
5.5.4 PIA statistics from CrashMap are categorised into three categories, namely "Slight", for damage only incidents, "Serious", for injury accidents and "Fatal", for those accidents that result in a death. TS however allow for four categories within the "Serious" classification, namely "Less Serious", "Moderately Serious", "Serious" and "Very Serious".

5.5.5 The locations and severity of the recorded accidents within the study area are summarised in **Table 4**, while **Figure 9** shows their locations.

Table 4 Personal Injury Accident Summary

Road Link	Slight	Less Serious	Moderately Serious	Serious	Very Serious	Fatal	HGV
U2856	0	0	0	0	0	0	0
A9, between the U2856 junction and Slochd	1	0	1	0	0	2	1
A9, between Slochd and Aviemore	5	0	5	0	3	2	7
A9, between the U2856 junction and Scatraig	5	1	0	1	1	2	4
Total	11	1	6	1	4	6	12

Figure 9 PIA Locations



5.5.6 A general summary of the incidents is provided below:

U2856

- There have been no PIAs recorded on the U2856 within the study area, within the most recent five-year period.

A9, between the U2856 junction and Slochd

- There were four incidents recorded on this section of road within the most recent five and a half year period, one categorised as “Slight”, one “Moderately Serious”, and two “Fatal”.
- The “Slight” incident was a single vehicle accident involving a car and resulting in one casualty. The accident occurred at night with no street lighting present and the road conditions were wet.
- The “Moderately Serious” incident involved a car, van and HGV, and resulted in one casualty. The accident occurred during wet weather conditions, with snow present on the carriageway.

- One of the incidents, which resulted in a fatality, involved a car and a bus and resulted in a total of 15 casualties. This incident occurred on a bend at night with no street lighting present.
- The second incident which included a fatality occurred on a straight section of road and involved three vehicles. This incident resulted in five casualties.
- There were no cyclists, pedestrians or motorcycles involved in incidents within this section of the study area.

A9, between Slochd and Aviemore

- There were a total of 15 incidents recorded on this section of the A9 within the most recent five and half year period. Five of these incidents were categorised as “Slight”, five were categorised as “Moderately Serious”, three were “Very Serious” and two were “Fatal”.
- Seven of the recorded incidents involved an HGV, one of which resulted in a fatality. The incident involved two HGVs, resulting in two casualties and occurred on approach to a junction. The road conditions were wet and the incident occurred during the hours of darkness.
- The other incident resulting in a fatality involved two cars in the vicinity of a junction, resulting in a total of five casualties. The road and weather conditions were recorded as dry, and it occurred during the hours of darkness.
- There was a cluster of five incidents close to Aviemore at the T-junction connecting the A9 and the A95, three of which were categorised as “Very Serious”, one as “Moderately Serious”, and one as “Slight”.
- There were no cyclists, pedestrians or motorcycles involved in incidents within this section of the study area.

A9, between the U2856 junction and Scatraig

- There were ten incidents recorded on this section of the A9 within the most recent five and half year period, five categorised as “Slight”, one as “Less Serious”, one as Moderately Serious”, one as “Very Serious” and two as “Fatal”.

- Four of the recorded incidents involved an HGV, with two recorded as "Slight" and two resulting in fatalities.
- One incident which resulted in a fatality occurred on a left hand bend and involved an HGV and car, resulting in one casualty. Weather and road conditions were recorded and fine / dry.
- The second incident resulting in a fatality occurred on a straight section of road and involved an HGV and car, resulting in one casualty. Weather conditions were recorded and fine, while the road condition was recorded as wet.
- There were no cyclists, pedestrians or motorcycles involved in incidents within this section of the study area.

PIA Summary

5.5.7 The analysis indicates that there were a total of 29 PIA incidents within the most recent five and a half year period. Most recorded accidents are categorised as being within the combined "Serious" accident category, representing approximately 41% of all accidents. "Slight" accidents represent approximately 38% of all accidents, while and 21% of accidents involved a fatality.

5.5.8 There was a cluster of PIAs at a one location within the assessed area, namely the junction between the A9 and A95 at Aviemore, however this was not close to the Site access and was to the south of the Proposed Development. Construction traffic will predominantly approach the Proposed Development from the north on the A9.

5.5.9 There were no pedestrian, cyclist or motorbike casualties recorded within the study area within the most recent five and half year period.

5.5.10 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.

5.6 Future Baseline Traffic Conditions

5.6.1 Construction of the Proposed Development is anticipated to commence in 2028 if planning permission is granted and is expected to last up to 23 months depending on weather conditions and ecological considerations.

5.6.2 To assess the likely effects during the construction phase, base year traffic flows were determined by applying an NRTF low growth factor to the surveyed traffic flows. The NRTF low growth factor for 2024 to 2028 is 1.029. This factor was applied to the 2024 traffic data presented in **Table 2** to estimate the 2028 Base traffic flows presented in **Table 5**.

Table 5 Future Baseline Daily Two-Way Traffic (2028)

Site ID	Survey Location	Cars & LGVs	HGVs	Total
1	U2856	129	54	183
2	A9, between the U2856 junction and Slochd	7,710	2,324	10,034
3	A9, between Slochd and Aviemore	6,625	2,107	8,731
4	A9, between the U2856 junction and Scatraig	9,652	1,578	11,230

Please note minor variances due to rounding may occur.

5.7 Committed Developments

Onshore Wind Farm and Energy Related Planning Applications

5.7.1 A review of THC's online planning portal[6] and Scottish Governments ECU portal[7] was undertaken to identify any consented developments within the vicinity of the Proposed Development which would generate significant traffic within the same study area and should be included within the assessment.

5.7.2 TA Guidance advises that only those projects with extant planning permission or local development plan allocations within an adopted or

[6] https://www.highland.gov.uk/info/180/planning_-_applications_warrants_and_certificates/143/planning_permission/4 [Accessed September 2024]
[7] https://www.energyconsents.scot/ApplicationSearch.aspx?T=1 [Accessed September 2024]

approved plan require to be included in any assessment. Those projects in scoping or at the application stage should not be included in cumulative assessments as they have yet to be determined. When considering traffic impacts specifically in relation to the construction phase of a project, the potential traffic impact is highly speculative and as such, cannot be included in the assessment.

5.7.3 The review found that Corriegarth 2 Wind Farm (planning reference: 21/00101/S36 / ECU reference ECU00002175) received planning consent for 16 turbines with 149.9m blade tip height in December 2023. Corriegarth 2 Wind Farm is located 19.2km from the nearest turbine within the Proposed Development and is expected to commence construction in 2025 with commissioning and operation planned for 2026. The construction periods of Corriegarth 2 and the Proposed Development and therefore not expected to overlap.

5.7.4 Cloich Wind Farm (planning reference: 20/01796/S36 / ECU reference ECU00002054) received planning consent in November 2023 for up to 29 turbines of 149.9m blade tip height. Cloich Wind Farm is located 26.4km from the nearest turbine within the Proposed Development and construction is due to commence for Cloich in 2024 and last for 36 months. A review of the EIA associated with Cloich Wind Farm found that construction traffic routing for Cloich is not expected to overlap into the study area for the Proposed Development. In addition, the construction phases for Cloich Wind and the Proposed Development are not expected to overlap.

5.7.5 The review did not identify any other wind farms or related planning applications that should be considered as a committed development and included within any cumulative assessment.

5.7.6 Based on the above, there are no current consented onshore wind farms or other energy related planning schemes that would share common access routes during their respective construction phases, that would require consideration as a committed development within the assessment.

Other Planning Applications

5.7.7 A review of the THC online planning portal was also undertaken for 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 30%).

5.7.8 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.

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

6 Trip Generation and Distribution

6.1 Construction Phase

Trip Derivation

6.1.1 During the 23-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 concrete materials and crushed rock;
- Components relating to the BESS element, substation components and associated infrastructure; and
- AILs consisting of the wind turbine sections and heavy lift cranes.

6.1.2 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. It should be noted that there may be variations in the following calculations due to rounding, which are not considered significant.

Construction Staff

6.1.3 Staff will arrive in non-HGV vehicles and where possible will be encouraged to car share. The workforce onsite will depend on the activities undertaken, but, based on previous wind farm construction Site experience for a project of this scale which suggests three staff per turbine during the short peak period of construction is likely, the maximum number of staff expected onsite could be around 78 per day.

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

6.1.5 Based on these assumptions, staff transport cars and light vehicles would account for a maximum of 102 vehicle trips (51 inbound and 51 outbound) per day during the peak period of construction.

Abnormal Indivisible Loads

6.1.6 The turbines are broken down into components for transport to the Site. The nacelle, blade and tower sections are classified as Abnormal Indivisible Loads (AIL) due to their weight, length, width and height when loaded. For the purposes of the report, the 'worst case' numbers of components requiring transport are illustrated in **Table 6**.

Table 6 Turbine Components

Component	Number of Components per Turbine
Rotor Blades	3
Tower Sections	5
Nacelle	1
Hub	1
Drive Train	1
Nose Cone	1
Transformer	1
Ancillary	1
Site Parts	0.2

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

6.1.8 Escort vehicles would accompany the AIL convoys to support the traffic management measures. Up to three vehicles would be deployed and it is assumed that three AIL turbine component loads would be delivered per convoy. This would result in 96 convoys on the network (excluding cranes), with a total of approximately 576 escort vehicle movements (288 inbound trips and 288 outbound trips).

6.1.9 Wind turbine components that do not classify as AILs, would be delivered in addition to these, resulting in a further approximate 166 movements (83

inbound trips and 83 outbound trips). All of these deliveries are expected to occur over a period of approximately two months.

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

General Deliveries

6.1.11 Throughout the construction phase, general deliveries will be made to the Site by HGV. These would include fuel, Site office supplies and staff welfare. At height of construction, it is assumed that up to 40 journeys to Site are made (20 in and 20 out) per month.

Material Deliveries

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

6.1.13 The Site is large enough to warrant onsite batching of concrete. All turbine and substation foundation concrete will be mixed on site, with deliveries of cement powder and water being delivered by HGV tankers. Sand and aggregate will be delivered by tipper HGV and is expected to originate from the north using quarries located close to the A9.

6.1.14 The total volume of concrete required on Site is 20,130m^3. The individual deliveries associated with the raw materials have been estimated and result in inbound trips of 44 cement tankers, 638 sand & aggregate tippers and 256 water tankers. This equates to a total of 1,876 HGV movements (938 inbound trips and 938 outbound trips).

6.1.15 Reinforcement steel required in the foundations across the Site are detailed in **Table 7** below.

Table 7 Steel Reinforcement Deliveries

Element	Weight / Installation (t)	Total Weight (t)	Lorry Capacity (t)	Inbound Trips	Total Journeys
Turbine Foundation	60	1,560	30	52	104
Substation / Control Building Foundation	20	20	30	1	2

6.1.16 The onsite access tracks will be constructed from crushed rock and the material would be won from the Site via the borrow pit or when creating the cuttings and other earthworks. Material will need to be imported to the Site to create the infrastructure to access the borrow pit. This material would also be used to help create the crane pads.

6.1.17 The access tracks would generally be up to 5m in width and would be designed to accommodate 13 tonne axle loads. In addition to the roads, crane pads will be constructed to enable the turbine erection process. The tracks, crane pads and compounds will require geotextile in the foundations.

6.1.18 To provide a robust assessment of potential traffic impact, it has been assumed that 100% of the material for tracks, hardstandings and compound areas will be imported to the Site. This represents an overestimate, with the expectation that some or all of the material requirements will be sourced from the borrow pit. The assessment is therefore an overestimate and is considered suitably robust.

6.1.19 The estimate of imported material is detailed in **Table 8**.

Table 8 Imported Aggregate Material Deliveries

Element	Volume / Installation (m^3)	Total Weight (t)	Lorry Capacity (m^3)	Inbound Trips	Total Journeys
Stone / aggregate	68,549	150,806	20	7,542	15,084

6.1.20 Geotextile will be delivered to Site in rolls. A total of 751 large rolls may be required at Site and would be delivered by HGV. This would equate to 76 HGV vehicle movements (38 inbound trips and 38 outbound trips).

6.1.21 Cables will connect each turbine to the internal substation and control building. Trip estimates for the cable materials are provided below in **Table 9** and **Table 10**. Five cables are to be provided within each cable trench and would be backfilled with cable sand. The cable materials would be likely sourced from Inverness via the A9.

Table 9 Cable Trip Estimate

Element	Total Cable Length (m)	Length per Drum (m)	Number of Drums	Inbound Trips	Total Journeys
Cables	170,000	500	340	38	76

Table 10 Cable Sand Trip Estimate

Element	Volume / Installation (m^3)	Lorry Capacity (m^3)	Inbound Trips	Total Journeys
Cable Sand	11,475	20	918	1,836

6.1.22 One substation building will be constructed on the Site. This will require deliveries of building materials and structural elements and will result in 240 vehicle movements (120 inbound trips in and 120 outbound trips).

6.1.23 Battery storage deliveries will result in a further 64 HGV vehicle movements for battery, invertor and cabin / building deliveries etc (32 inbound trips in and 32 outbound trips). The resulting traffic generation estimates have been plotted onto the indicative construction programme to illustrate the peak journeys on the network. **Table 11** illustrates the trip generation throughout the construction programme for each month, showing two-way construction vehicle movements, i.e. an inbound and outbound trip.

Table 11 Construction Traffic Profile (Two-Way Trips)

Activity	Class	Month																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Ground Clearance and Preparation	HGV	24	24																					
Mobilisation & Enabling Works	HGV	60	40																				60	40
General Deliveries	HGV	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Site Compounds	HGV	694	694	694	694																			
Access Tracks	HGV		756	756	756	756	756	756	756	756														
Concrete Deliveries (Cement & Water)	HGV								75	75	75	75	75	75	75	75								
Concrete Deliveries (Aggregate & Sand)	HGV								159	159	159	159	159	159	159	159								
Reinforcement Deliveries	HGV								27	27		27	27											
Crane Hardstanding	HGV											787	787	787	787	787	787	787						
Substation, Control Building & Met Masts	HGV												189	189	189	189								
Cabling & Ducting Deliveries	HGV														35	35		35	35		35	35		
Cabling Sand	HGV													262	262	262	262	262	262	262				
Geotextile Deliveries	HGV						19		19		19		19											
Cranage	HGV																		30			30		
Turbine Deliveries	HGV																		185	185	185	185		
AIL Escorts	LGV																		144	144	144	144		
Battery Storage	HGV																	21	21	21				
Commissioning & Restoration	LGV																					88	88	88
Staff	LGV	1,144	1,144	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	1,144	1,144
Total HGV		818	1,554	1,490	1,490	796	815	796	1,076	1,057	293	1,087	1,295	1,512	1,548	1,548	1,089	1,146	574	508	260	290	100	80
Total Cars / LGV		1,144	1,144	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,244	2,388	2,388	2,388	2,476	1,232	1,232
Total Movements		1,962	2,698	3,734	3,734	3,040	3,059	3,040	3,320	3,301	2,537	3,331	3,539	3,756	3,792	3,792	3,333	3,390	2,962	2,896	2,648	2,766	1,332	1,312
Total HGV per Day		37	71	68	68	36	37	36	49	48	13	49	59	69	70	70	49	52	26	23	12	13	5	4
Total Cars / LGV per Day		52	52	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	109	109	109	113	56	56
Total per Day		89	123	170	170	138	139	138	151	150	115	151	161	171	172	172	151	154	135	132	120	126	61	60

Please note minor variances due to rounding may occur.
Calculations assume that there are 22 working days per month.

6.1.24 The peak of construction occurs in months 14 and 15 when there will be a total of 172 vehicle movements per day, comprising 70 two-way HGV movements and 102 car / LGV movements.

6.1.25 This would equate to approximately 14 two-way total movements or approximately six two-way HGV movements per hour, across a typical 12-hour day, assuming a flat traffic profile, where traffic arrived and departed the Site equally throughout the working day.

Distribution of Construction Trips

6.1.26 The distribution of development 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:

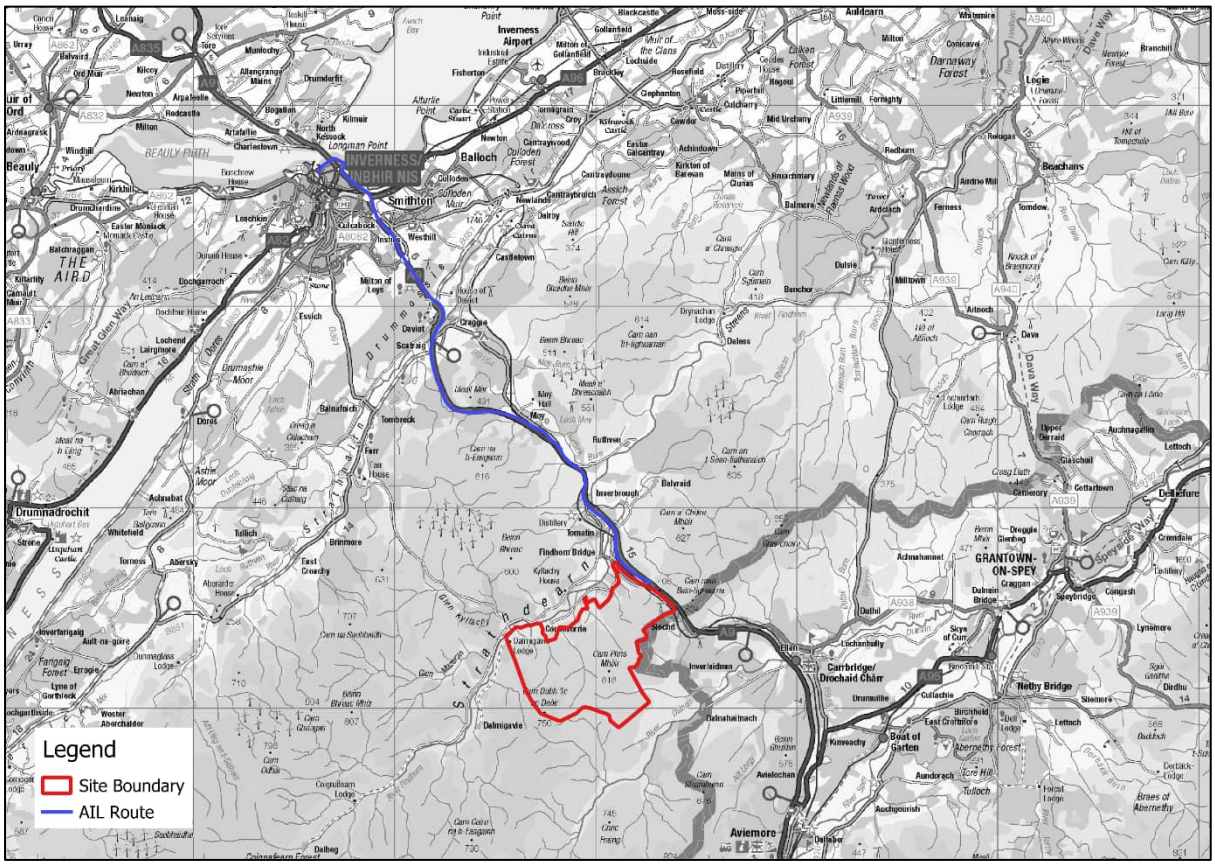
- All construction traffic enters the Site via the proposed Site access junction on U2856;
- Deliveries associated with concrete materials, such as cement powder and water, will be sourced from concrete suppliers, which for the purpose of this assessment will originate from the north on the A9;
- Sand and aggregates will be sourced from local quarries. For the purposes of the assessment, it is assumed that all material will be sourced from the quarries located along the A9, from the north of the Site. The Balance of Plant (BoP) contractor will confirm final quarry and material sourcing with THC in the Construction Traffic Management Plan (CTMP);
- HGV deliveries associated with the HV electrical installation, control buildings, batteries, etc will arrive from the north via the A9;
- Staff working at the Site are likely to be based locally. It is assumed that 80% will come from Inverness while 20% will arrive from the south of Aviemore; and
- General Site deliveries will be via the A9 from the north and south. These are generally smaller rigid HGV vehicles.

6.1.27 Loads relating to the turbine components would be delivered from Inverness Port. The proposed access route would be as follows:

- Loads will turn left on exiting the harbour onto Longman Drive / Stadium Road;
- Loads will take the first exit at the roundabout and join the A9 heading south;
- Loads will depart the A9 at the Tomatin South junction and will proceed north on the U2856; and
- Once on the U2856 the loads will head north westbound before turning left in to the Site via the proposed access junction.

6.1.28 The proposed AIL access route is illustrated in **Figure 10** and has been considered, within the AIL RSR, provided in **Annex B**.

Figure 10 Proposed AIL Access Route



Peak Construction Traffic

6.1.29 Following the distribution and assignment of traffic flows to the study area network, the resultant daily traffic during the peak of construction are summarised in Table 12.

Table 12 Peak Daily Construction Traffic

Site ID	Survey Location	Cars & LGVs	HGVs	Total
1	U2856	102	70	172
2	A9, between the U2856 junction and Slochd	20	2	22
3	A9, between Slochd and Aviemore	20	2	22
4	A9, between the U2856 junction and Scatraig	82	68	150

Please note minor variances due to rounding may occur

6.2 Operational Phase

6.2.1 In the operational phase, it is envisaged that the level of traffic associated with the Proposed Development will equate to on average two vehicle trips per week which is considered negligible and therefore no detailed assessment of the operational phase of the development is proposed.

6.3 Decommissioning Phase

6.3.1 Prior to decommissioning of the Site, a traffic assessment would be undertaken, and appropriate traffic management procedures followed.

6.3.2 The decommissioning phase would result in fewer trips on the road network than the construction or operational phase as it is considered likely that elements of infrastructure such as access tracks would 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

7.1.1 The peak month (months 14 and 15) traffic data was combined with the future year (2028) 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 13.

Table 13 Peak Daily Construction Network Impact

Site ID	Survey Location	Cars & LGVs	HGVs	Total	Cars / LGVs % Increase	HGV % Increase	Total % Increase
1	U2856	231	124	355	79.11%	130.94%	94.4%
2	A9, between the U2856 junction and Slochd	7,730	2,325	10,056	0.26%	0.07%	0.22%
3	A9, between Slochd and Aviemore	6,645	2,108	8,753	0.31%	0.08%	0.25%
4	A9, between the U2856 junction and Scatraig	9,734	1,647	11,380	0.85%	4.35%	1.34%

Please note minor variances may occur due to rounding

7.1.2 The total traffic movements are predicated to increase by more than 94% on the U2856, which is where the proposed Site access junction is located and as such all construction traffic will use. On the rest of the study area, the highest total traffic increase is 1.34%, which occurs on the A9 to the north of its junction with the U2856.

7.1.3 **Table 13** shows that highest HGV traffic movements increase will occur on the U2856, where it is estimated to increase by 130.94%, and whilst this increase could be considered high, it is generally caused by the relatively low HGV flows on the road at this location. To put the increase into perspective, the U2856 will see an additional 70 HGV movements per day or six HGV movements per hour over the course of a typical 12-hour shift. This is not considered significant in terms of overall traffic flows.

7.1.4 The next highest HGV traffic movement increase would occur on the A9 to the north of its junction with the U2856, with a 4.35% increase. This is not considered significant in terms of overall traffic flows.

7.1.5 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.

7.1.6 A review of existing theoretical road capacity has been undertaken using The NESA Manual, formerly part of the Design Manual for Roads and Bridges, Volume 15, Part 5. 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 14**.

Table 14 Peak Traffic Flow Capacity Review

Site ID	Survey Location	2028 Baseline Traffic	2028 Baseline + Development Flows	Theoretical Capacity	Spare Road Capacity %
1	U2856	183	355	21,600	98.36%
2	A9, between the U2856 junction and Slochd	10,034	10,056	81,600	87.68%
3	A9, between Slochd and Aviemore	8,731	8,753	28,800	69.61%
4	A9, between the U2856 junction and Scatraig	11,230	11,380	28,800	60.49%

Please note minor variances may occur due to rounding

7.1.7 The results indicate there are no road capacity issues with the addition of the construction traffic associated with the Proposed Development and ample spare capacity exists within the trunk and local road network.

8 Proposed Mitigation Measures

8.1 Construction Phase

Construction Traffic Management Plan (CTMP)

8.1.1 During the construction phase, a project website, blog or Twitter feed will be regularly updated to provide the latest information relating to traffic movements associated with vehicles accessing the Site. This would be agreed with THC and TS.

8.1.2 The following measures will be implemented during the construction phase through the CTMP:

- Agree AIL route modifications and improvements with THC and TS. Works which will be required to facilitate turbine deliveries are outlined in the RSR, which is presented in **Annex B**;
- Where possible, the detailed design process will minimise the volume of material to be imported to Site to help reduce HGV numbers;
- A Staff Travel Plan, including transport modes to and from the worksite (including pick up and drop off times);
- A Transport Management Plan for AIL deliveries;
- All materials delivery lorries (dry materials) should be sheeted to reduce dust and stop spillage on public roads;
- Specific training and disciplinary measures should be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- Wheel cleaning facilities may be established at the Site entrance, depending on the views of THC;
- Normal Site working hours will be limited to between 0700 and 1900 Monday to Friday and 0700 and 1900 on Saturdays though component delivery and turbine erection may take place outside these hours i.e. depending on when police escort is available;
- Appropriate traffic management measures will be put in place on the U2856 and A9 leading through to the Site, to avoid conflict with general traffic, subject to the agreement of THC and TS. Typical measures will include HGV turning and crossing signs and / or banksmen at the Site access and warning signs;

- Provide construction updates on the project website, social media feeds and a newsletter to be distributed to residents within an agreed distance of the Site;
- Adoption of a voluntary reduced speed limits, for example on the U2856 and at other locations to be agreed with THC and if necessary, TS;
- All drivers will be required to attend an induction to include:
  - A toolbox 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 the villages); and
  - Identification of the required access routes and the controls to ensure no departure from these routes.

8.1.3 THC is likely to request that an agreement to cover the cost of abnormal wear on its network is made. Video footage of the pre-construction phase condition of the abnormal loads access route and the construction vehicles route will be recorded to provide a baseline of the condition of the road prior to any construction work commencing. This baseline will inform any change in the road condition during the construction phase. Any necessary repairs will be coordinated with THC's roads team. Any damage caused by traffic associated with the Proposed Development during the construction period that would be hazardous to public traffic will be repaired immediately.

8.1.4 Damage to road infrastructure caused directly by construction traffic will be repaired and street furniture that is removed on a temporary basis will be fully reinstated.

8.1.5 There will be a regular road review and any debris and mud will be removed from the carriageway using an onsite road sweeper to ensure road safety for all road users.

8.1.6 Before the AILs traverse the route, 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;

- Confirm there are no roadworks or closures that could affect the passage of the loads;
- Check no new or diverted underground services on the proposed route are at risk from the abnormal loads;
- Confirm the police are satisfied with the proposed movement strategy; and
- Provide a new bridge between the Proposed Development Site and the A9, on the U2856 road, across the Highland Main Line. This is to replace the existing bridge, which is substandard and not suitable to accommodate the predicted loads.

8.2 Abnormal Load Traffic

Abnormal Load Management Plan

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

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

8.2.3 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.

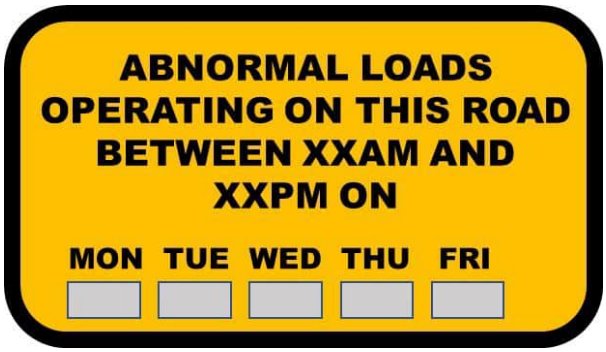
8.2.4 Potential conflicts between the abnormal loads and other road users can occur at a variety of locations and circumstances.

- On sections of single carriageway road or narrow road sections, for example on the U2856;
- At locations where there are significant changes in the horizontal alignment of the carriageway, requiring the loads to use 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.

8.2.5 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 11**. Flip up panels (shown in grey) will be used to mask over days where convoys would not be operating. When no convoys are moving, the sign will be bagged over by the Traffic Management contractor.

Figure 11 Example Information Sign



8.2.6 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).

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

8.2.8 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 including Grantown on Spey 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 committee 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 would form a means of communicating and updating on forthcoming activities and dealing with any potential issues arising.

Public Information

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

8.2.10 Information will relate to expected vehicle movements from the POE through to the Site access junction. This will assist residents in understanding the timing of the convoy movements and may help reduce any potential conflicts.

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

Convoy System

8.2.12 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.

8.2.13 The AIL convoys will be no more than three AILs vehicles 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.

8.2.14 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 transported.

8.3 Outdoor Access Management Plan (OAMP)

8.3.1 Within the Site, consideration has been given to pedestrians and cyclists alike due to potential interactions between construction traffic and users of Core Paths / paths, cycle routes and public roads. An Outdoor Access Management Plan (OAMP) will be developed and secured via a planning condition.

8.3.2 Users of the Core Paths /paths etc. will be separated from construction traffic wherever possible. Crossing points will be provided where required, with path users having right of way and temporary diversions will be provided where necessary. Appropriate Traffic Signs Manual Chapter 8[8] compliant temporary road signage will be provided to assist at these crossings for the benefit of all users.

8.3.3 The principal contractor will ensure that speed limits are always adhered to by their drivers and associated subcontractors. This is particularly important within close proximity to the forest paths and at crossing points. Advisory speed limit signage will also be installed on approaches to areas where path users may interact with construction traffic.

8.3.4 Signage will be installed on the Site exits that makes drivers aware of local speed limits and reminding drivers of the potential presence of pedestrians and cyclists in the area. This will also be emphasised in the weekly toolbox talks.

8.3.5 No scoping response has been received from The British Horse Society, however measures implemented on similar schemes will be given consideration as part of the Proposed Development. 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

[8] https://assets.publishing.service.gov.uk/media/5a74adeaed915d7ab83b5ab2/traffic-signs-manual-chapter-08-part-01.pdf

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.

8.3.6 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.

8.3.7 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.

8.4 Staff Travel Plan

8.4.1 A Staff Travel Plan will be deployed where necessary, to manage the arrival and departure profile of staff and to encourage sustainable modes of transport, especially car-sharing. A package of measures could include:

- Appointment of a Travel Plan Coordinator (TPC);
- Provision of public transport information;
- Mini-bus service for transport of Site staff;
- Promotion of a car sharing scheme;

- Car parking management; and
- Restrictions on parking, for example on the public road network and verges in the vicinity of the Site entrance.

8.5 Operational Phase Mitigation

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

9 Summary and Conclusions

9.1.1 Pell Frischmann has been commissioned by RES (the Applicant) to undertake a Transport Assessment for the proposed Clune Wind Farm, located in The Highland Council administrative area near the village of Tomatin on the Clune Estate, Scottish Highlands.

9.1.2 The Proposed Development will be accessed directly from the U2856, which is accessed off the A9 to the east. The proposed access junction will provide access to the Site for all AILs associated with the turbine deliveries, as well as access for HGVs delivering construction materials and general Site traffic.

9.1.3 Existing traffic data from TS was supplemented by new ATC surveys, with the data used to establish a base point for determining the impact during the construction phase and was factored to future levels (2028) to help determine the impact of construction traffic on the road network.

9.1.4 The peak of construction occurs in months 14 and 15 when there will be a total of 172 vehicle movements per day, comprising 70 two-way HGV movements and 102 car / LGV movements. This would equate to approximately 14 two-way total movements or approximately six two-way HGV movements per hour, across a typical 12-hour day, assuming a flat traffic profile, where traffic arrived and departed the Site equally throughout the working day.

9.1.5 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.

9.1.6 A series of mitigation measures and management plans have been proposed to help mitigate and offset the impacts of the construction phase traffic flows for both general construction traffic and abnormal loads associated with the delivery of the turbine components. It is considered that these can be secured by condition with The Highland Council.

9.1.7 The Proposed Development will lead to a temporary increase in traffic volumes within the Study Area during the construction phase only,

however this can be appropriately and effectively managed. It is therefore concluded that there are no transport related matters which would preclude the construction of the Proposed Development Site.

Annex A - Indicative Junction Layout

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

Client: RES

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

Project: Clune Wind Farm

Drawing Title: Siemens SG170 and Tower

SPA Location: Inverness Harbour Exit

	Name	Date
Drawn	JS	01/11/2024
Designed	GB	01/11/2024
Checked	GB	01/11/2024
Point of Interest		1

Scale: 1:1000 @ A3

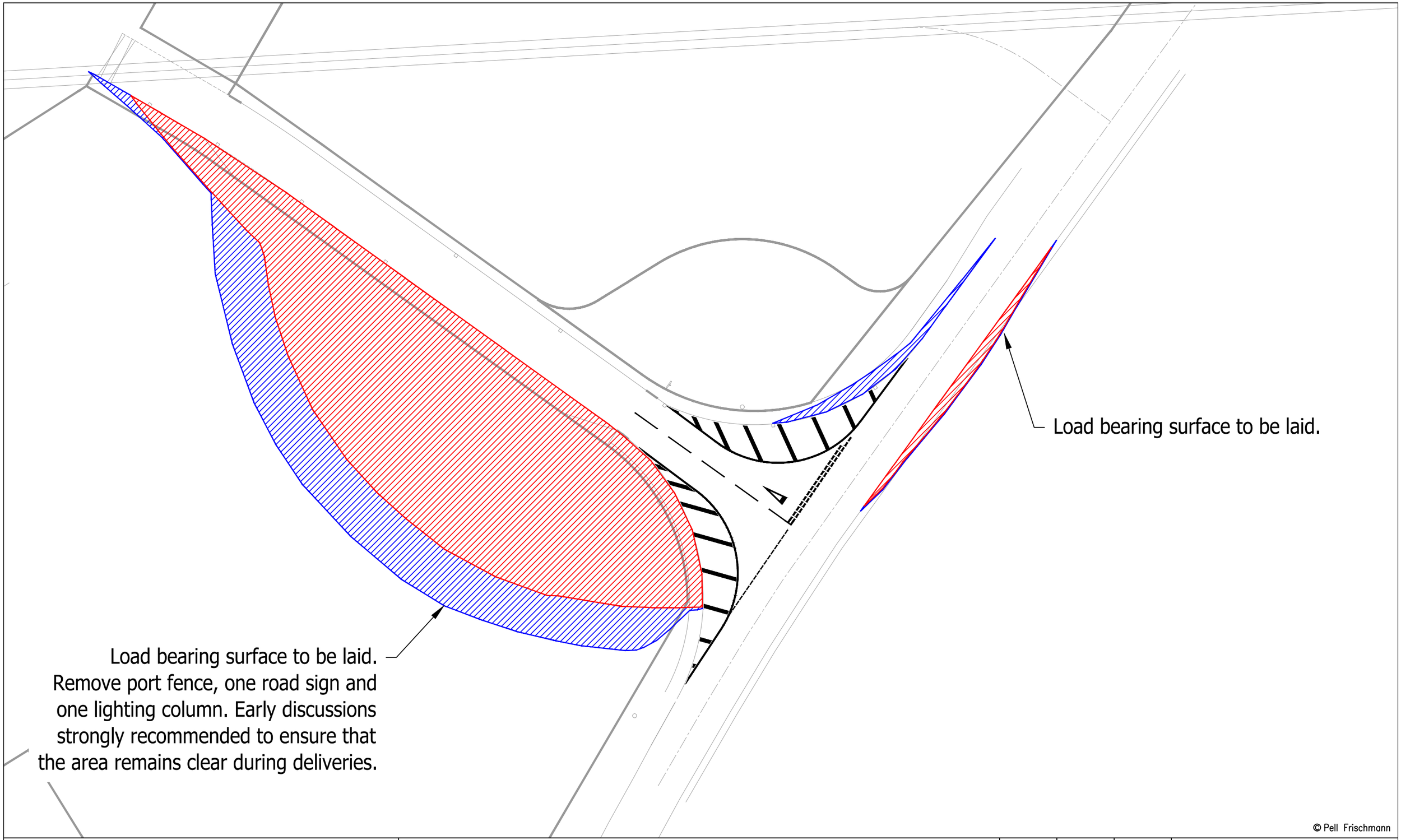
File No.: 240201 Clune SPA.dwg

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: XXX



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

Client: RES

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

Project: Clune Wind Farm

Drawing Title: Siemens SG170 and Tower

SPA Location: Inverness Harbour Exit

	Name	Date
Drawn	JS	01/11/2024
Designed	GB	01/11/2024
Checked	GB	01/11/2024
Point of Interest		1

Scale: 1:500 @ A3

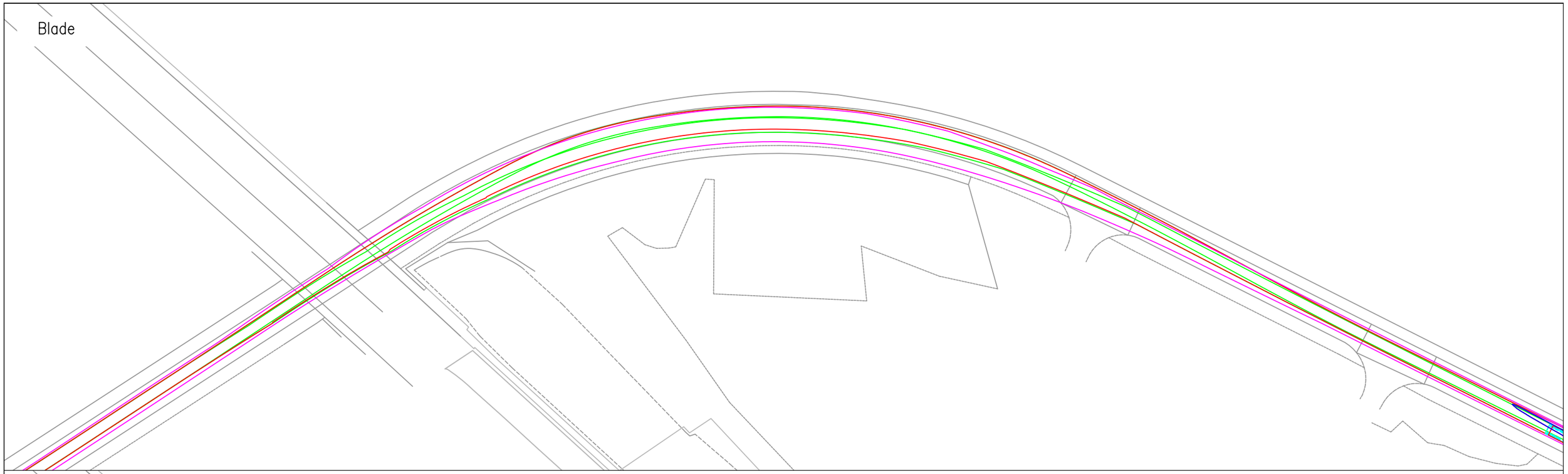
File No.: 240201 Clune SPA.dwg

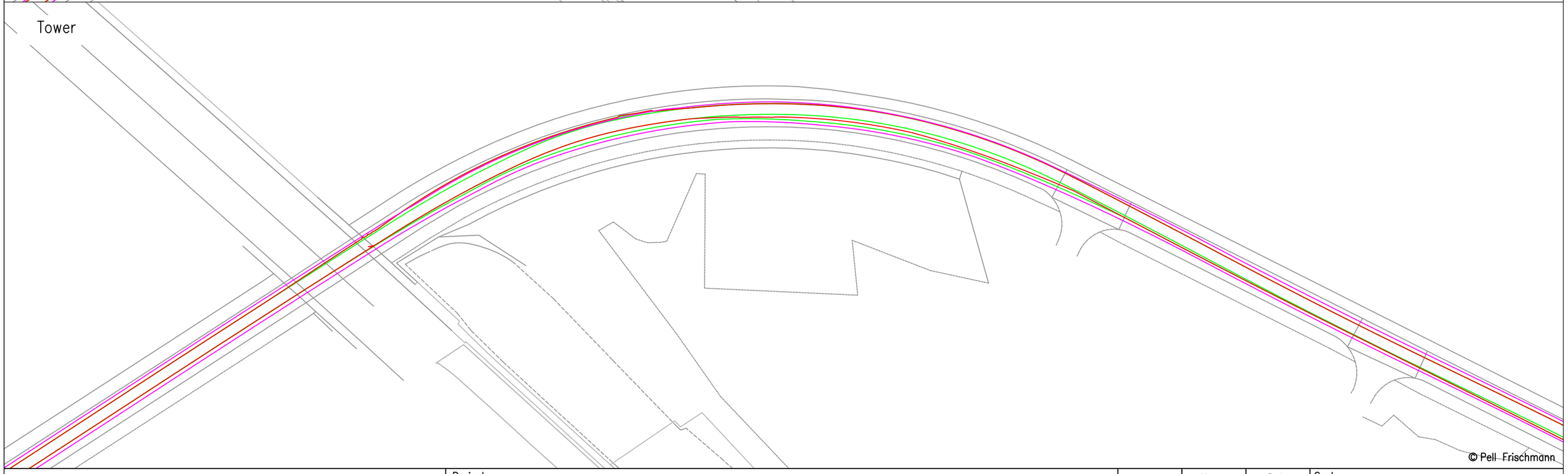
Drawing Status: Draft

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: XXX





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

Client: RES

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

Project: Clune Wind Farm

Drawing Title: Siemens SG170 and Tower

SPA Location: Stadium Road Bend 1

	Name	Date
Drawn	JS	01/11/2024
Designed	GB	01/11/2024
Checked	GB	01/11/2024
Point of Interest		2

Scale: 1:1000 @ A3

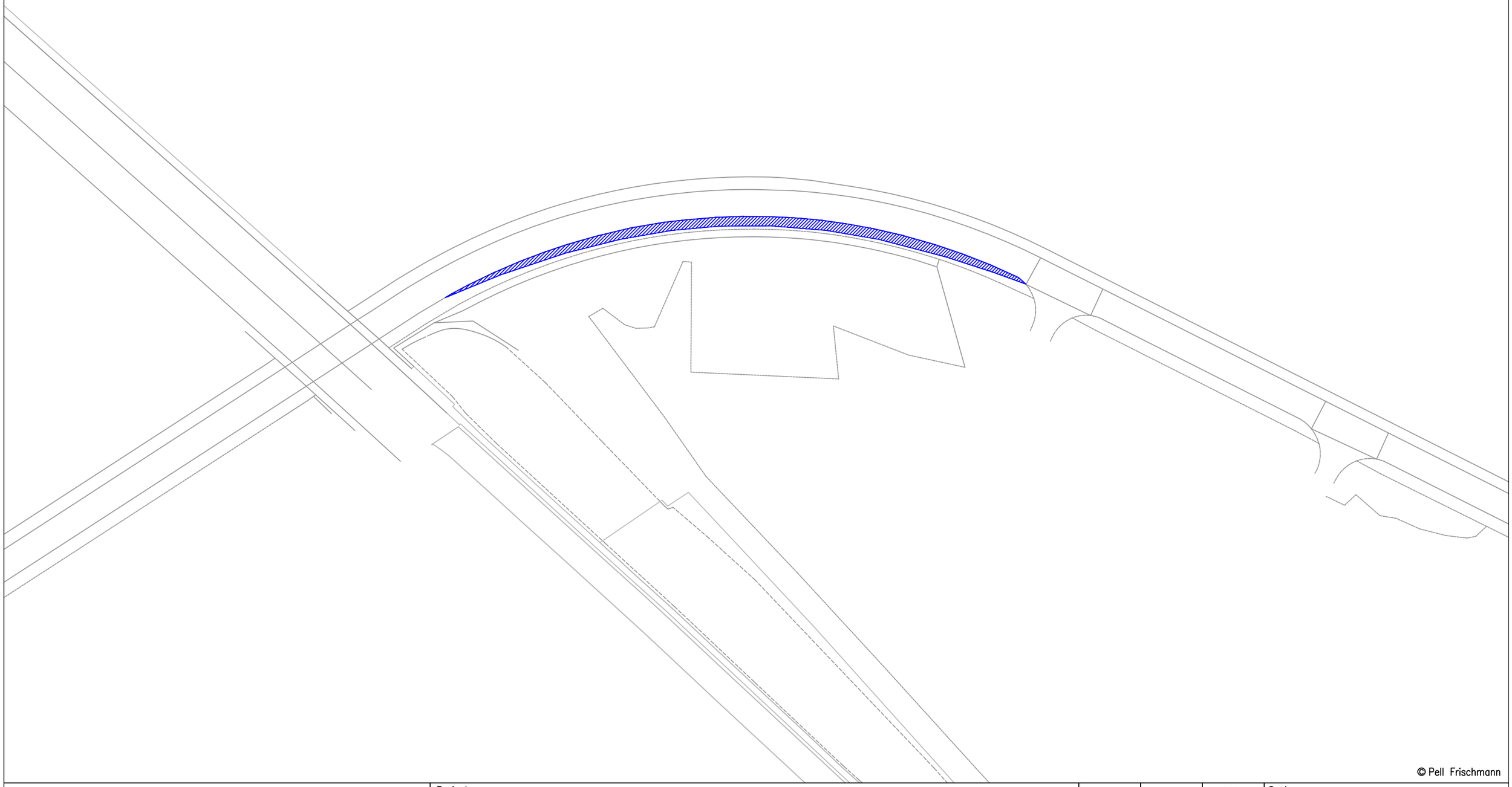
File No.: 240201 Clune SPA.dwg

Drawing Status: Draft

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.

Revision: XXX



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

Client: RES

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

Project: Clune Wind Farm

Drawing Title: Siemens SG170 and Tower

SPA Location: Stadium Road Bend 1

	Name	Date
Drawn	JS	01/11/2024
Designed	GB	01/11/2024
Checked	GB	01/11/2024
Point of Interest		2

Scale: 1:1000 @ A3

File No.: 240201 Clune SPA.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: XXX

Blade

Tower

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

Client: RES

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

Project: Clune Wind Farm

Drawing Title: Siemens SG170 and Tower

SPA Location: Stadium Road Bend 2

	Name	Date
Drawn	JS	01/11/2024
Designed	GB	01/11/2024
Checked	GB	01/11/2024
Point of Interest		3

Scale: 1:1500 @ A3

File No.: 240201 Clune SPA.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: XXX

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

Client: RES

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

Project: Clune Wind Farm

Drawing Title: Siemens SG170 and Tower

SPA Location: Stadium Road Bend 2

	Name	Date
Drawn	JS	01/11/2024
Designed	GB	01/11/2024
Checked	GB	01/11/2024
Point of Interest		3

Scale: 1:1500 @ A3

File No.: 240201 Clune SPA.dwg

Drawing Status: Draft

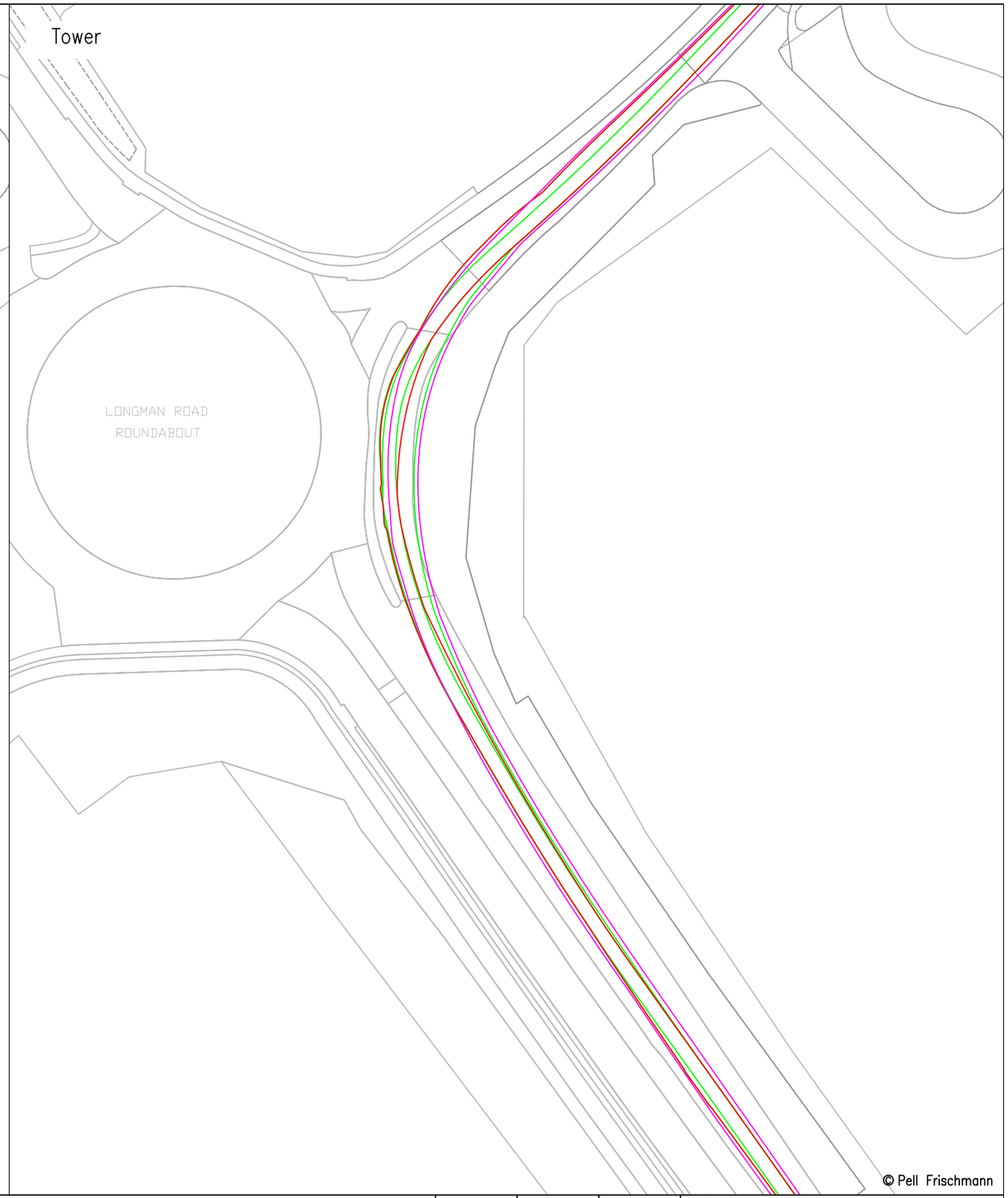
Drawing No.: SK03A

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: XXX

Blade

Tower



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

Client: RES

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

Project: Clune Wind Farm

Drawing Title: Siemens SG170 and Tower

SPA Location: Longman Roundabout

	Name	Date
Drawn	JS	01/11/2024
Designed	GB	01/11/2024
Checked	GB	01/11/2024
Point of Interest		4

Scale: 1:1000 @ A3

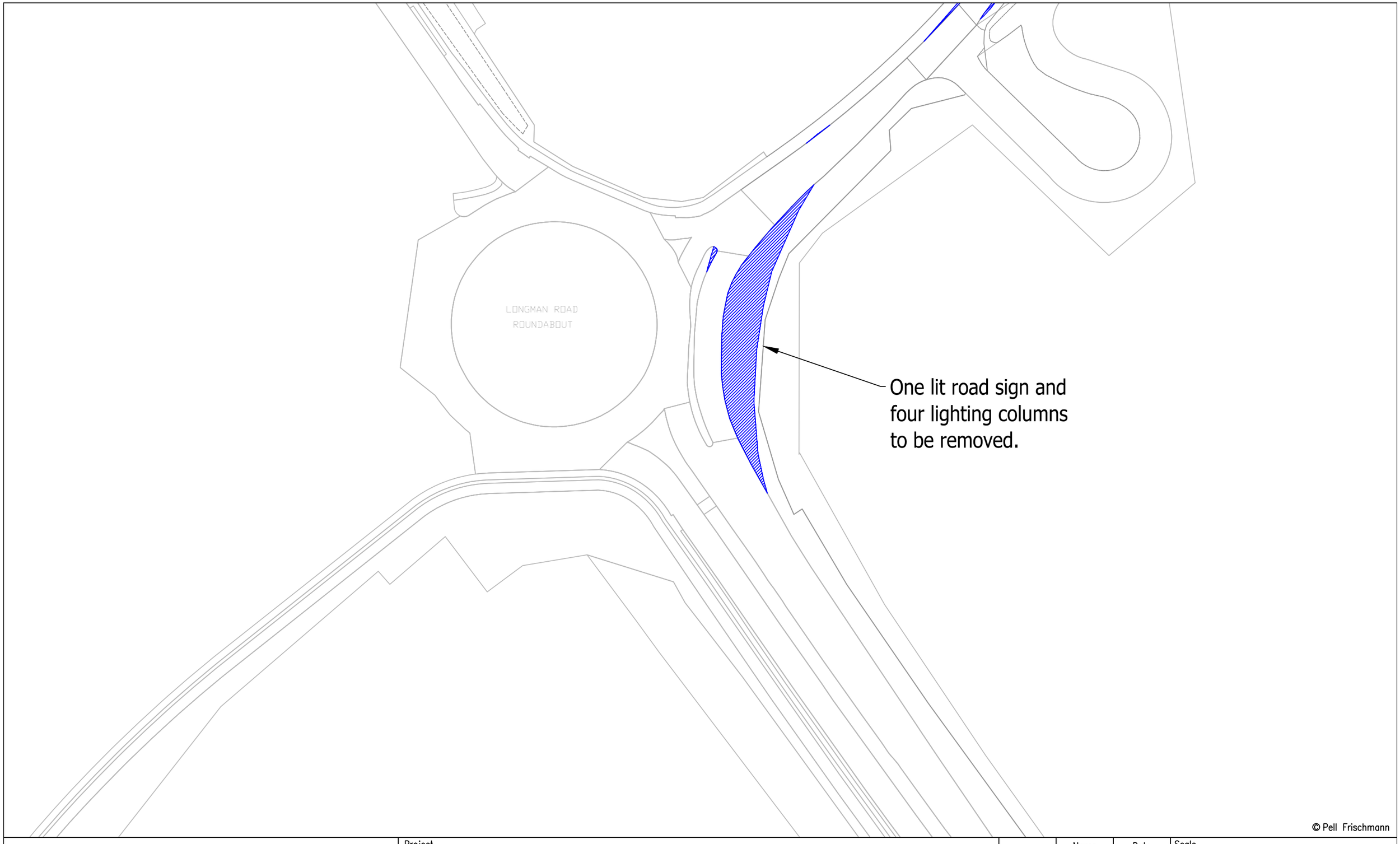
File No.: 240201 Clune SPA.dwg

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: XXX



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

Client: RES

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

Project: Clune Wind Farm

Drawing Title: Siemens SG170 and Tower

SPA Location: Longman Roundabout

	Name	Date
Drawn	JS	01/11/2024
Designed	GB	01/11/2024
Checked	GB	01/11/2024
Point of Interest		4

Scale: 1:1000 @ A3

File No.: 240201 Clune SPA.dwg

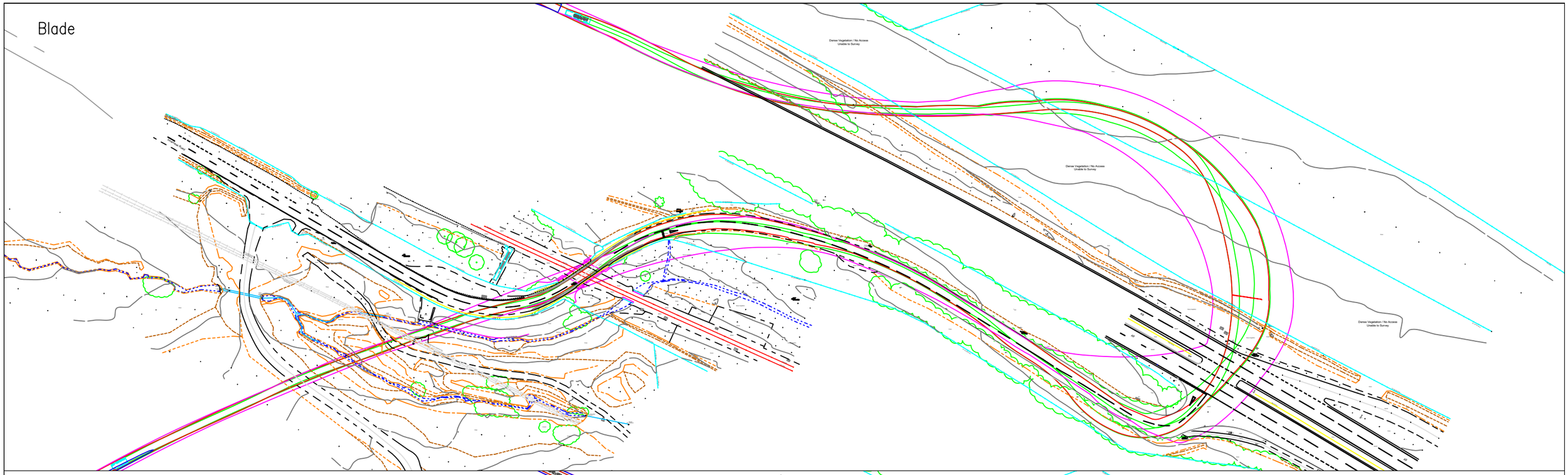
Drawing Status: Draft

Drawing No.: SK04A

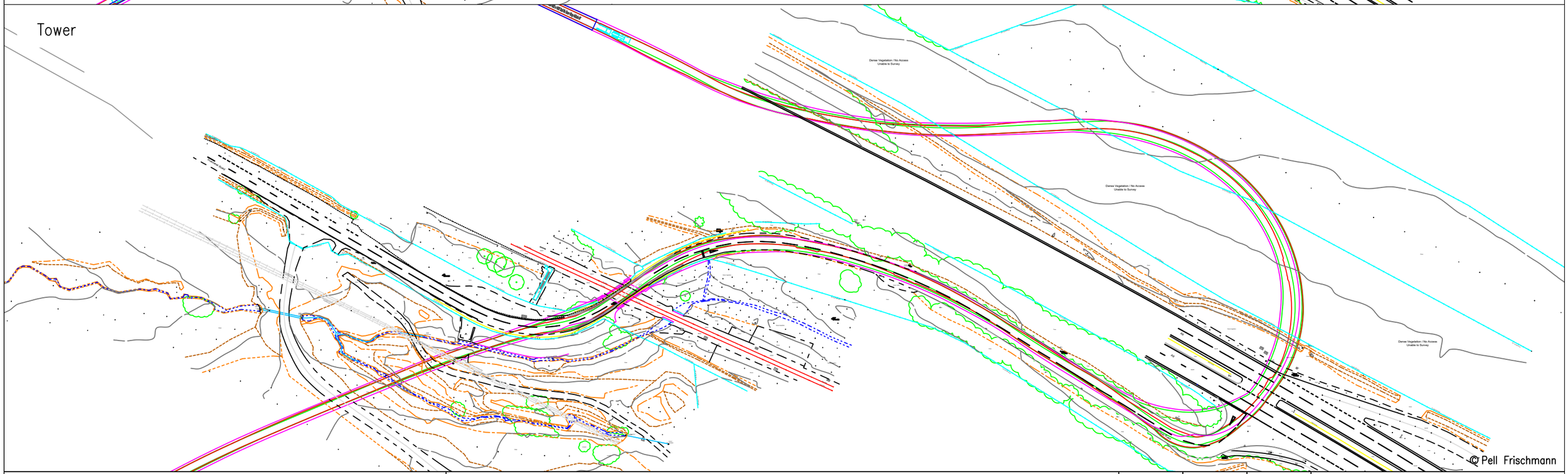
Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

Blade



Tower



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

Client: RES

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

Project: Clune Wind Farm

Drawing Title: Siemens SG170 and Tower

SPA Location: A9 Junction Southeast of Findhorn Bridge

	Name	Date
Drawn	JS	01/11/2024
Designed	GB	01/11/2024
Checked	GB	01/11/2024
Point of Interest		5 – 7

Scale: 1:1500 @ A3

File No.: 240201 Clune SPA.dwg

Drawing Status: Draft

Drawing No.: SK07

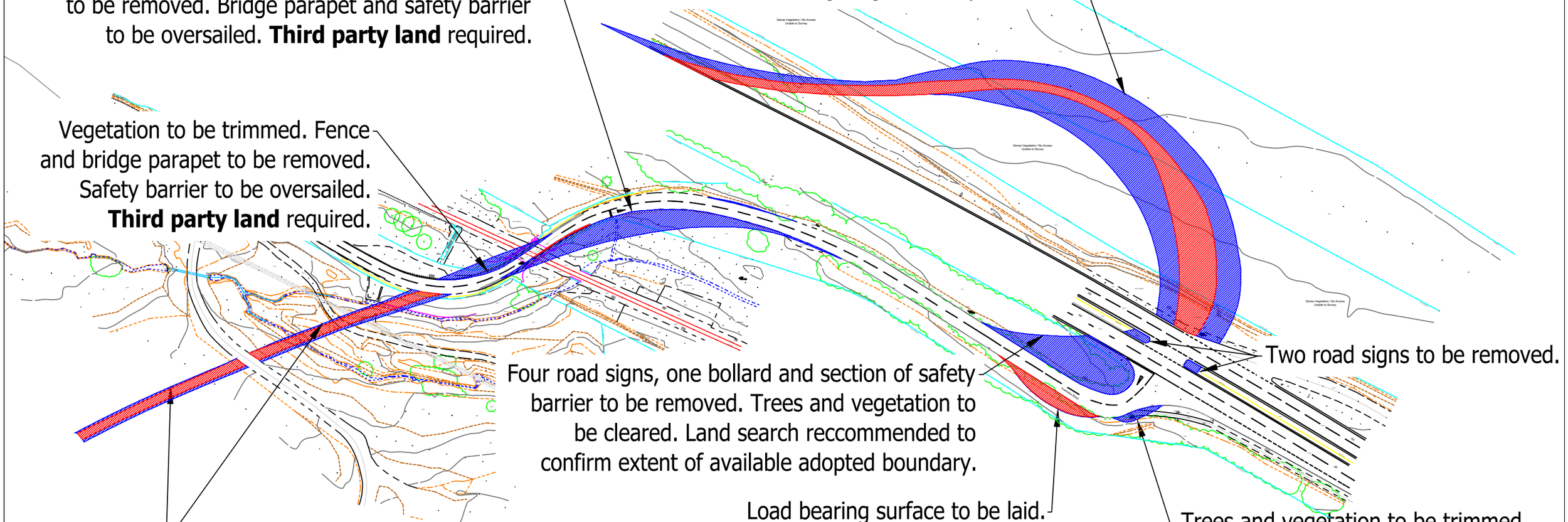
Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.

Revision: XXX

Load bearing surfaces to be laid. Trees and vegetation to be cleared. Two road signs, section of fence and temporary road barrier to be removed. Bridge parapet and safety barrier to be oversailed. **Third party land** required.

Load bearing surface to be laid. Ditch to be culverted. Trees, rocks and vegetation to be cleared. Two road signs, one bollard, section of fence and utility box to be removed. Land to be reprofiled. Detailed design required. **Third party land** required.

Vegetation to be trimmed. Fence and bridge parapet to be removed. Safety barrier to be oversailed. **Third party land** required.



Two road signs to be removed.

Four road signs, one bollard and section of safety barrier to be removed. Trees and vegetation to be cleared. Land search reccommended to confirm extent of available adopted boundary.

Load bearing surface to be laid. Three road signs to be removed. Trees and vegetation to be cleared. Verge reprofiling required. **Third party land** required.

Trees and vegetation to be trimmed. One road sign to be removed.

Provide new AIL access. Section of fence and safety barrier to be removed and provide new water course crossings. Electrical cables to be placed underground.

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

Client: RES

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

Project: Clune Wind Farm

Drawing Title: Siemens SG170 and Tower

SPA Location: A9 Junction Southeast of Findhorn Bridge – Alternative A9 Exit Part 3

	Name	Date
Drawn	JS	01/11/2024
Designed	GB	01/11/2024
Checked	GB	01/11/2024
Point of Interest		5 – 7

Scale: 1:1500 @ A3

File No.: 240201 Clune SPA.dwg

Drawing Status: Draft

Drawing No.: SK07C

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

Revision: XXX

Annex B – Route Survey Report

Pell Frischmann

Clune Wind Farm

Abnormal Indivisible Load Route Survey

November 2024

108064

Report Ref.		**Clune Wind Farm Technical Appendix 10.1 Annex B SG170 RSR_v1**				
File Path		**https://pellf.sharepoint.com/sites/EdinburghOfficeTeam/Shared Documents/General/Projects/108064 RES Clune/01 - WIP/Reports/RSR/Clune WInd Farm Technical Appendix 10.1 Annex B SG170 RSR_v1.docx**				
Rev	**Suit**	**Description**	**Date**	**Originator**	**Checker**	**Approver**
01		Draft	22/08/2022	J Stirrat	G Buchan	G Buchan
02		Revision following RES comments	11/09/2022	J Stirrat	G Buchan	G Buchan
03		Revision following RES comments	01/11/2024	S Cochrane	G Buchan	G Buchan
Ref. reference. Rev revision. Suit suitability.						

Prepared for

Renewable Energy Systems Ltd (RES) Ltd

Third Floor, STV
Pacific Quay
Glasgow
G51 1PQ

Prepared by

Pell Frischmann Ltd

93 George Street
Edinburgh
EH2 3ES

Contents

Figures

Tables

Appendices

1 Introduction

1.1 Purpose of the Report

Pell Frischmann (PF) has been commissioned by Renewable Energy Systems Ltd. (RES) (the Applicant) to undertake a survey of the approved delivery route for wind turbine Abnormal Indivisible Loads (AIL) associated with the construction and development of Clune Wind Farm. The Proposed Development is located in The Highland Council (THC) administrative area near the village of Tomatin on land located approximately 27 kilometres (km) south-east of Inverness and approximately 13km north-west of Aviemore, Scottish Highlands.

The Route Survey Report (RSR) has been prepared to help inform RES 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 RES 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 and have been made in accordance with the relevant legislation at the time of delivery.

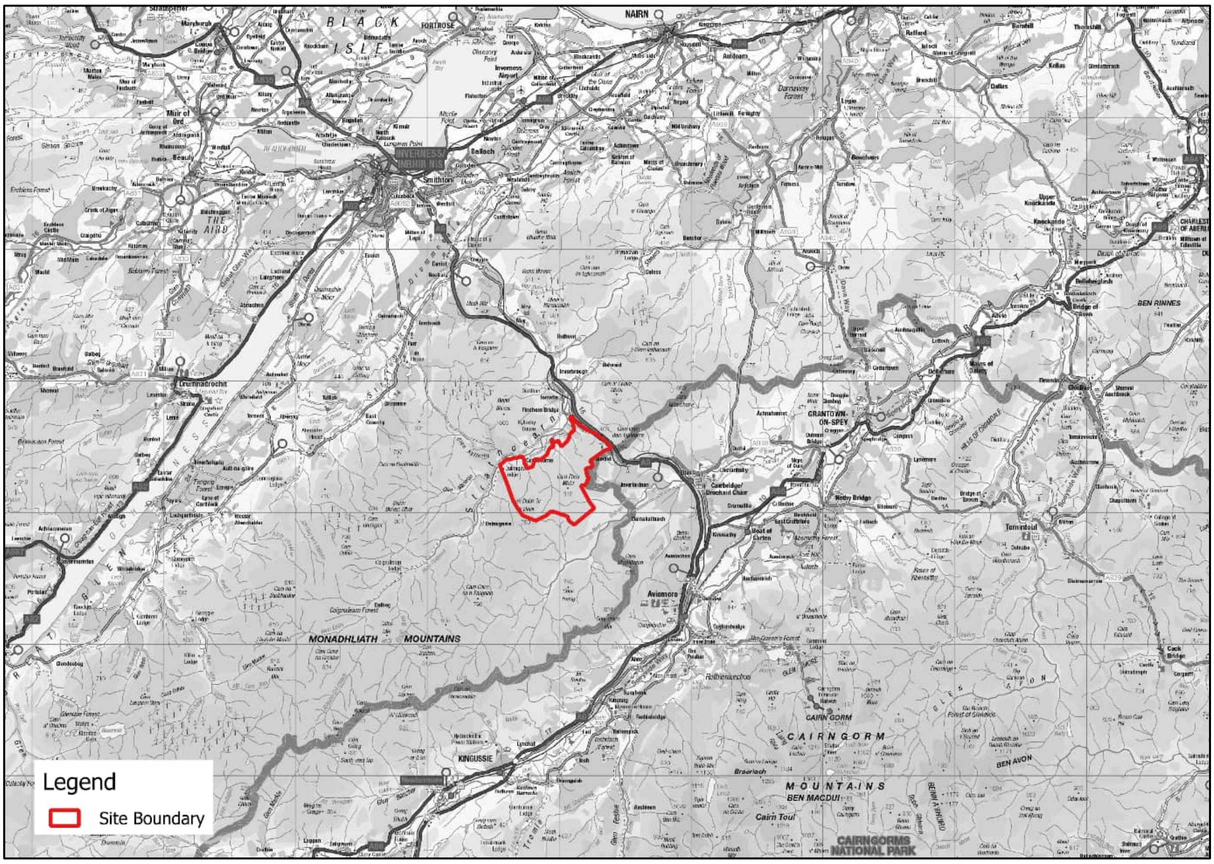
2 Site Background

2.1 Site Location

The Proposed Development is located approximately 27km southeast of Inverness and approximately 3km south of the village of Tomatin.

The location of the Proposed Development is presented in **Figure 1**.

Figure 1: Site Location Plan



2.2 Candidate Turbine

RES has indicated that they wish to consider the SG170 components at a hub height of 200 metres (m) for this assessment. The details of the components have been provided by Siemens and are detailed in **Table 1**.

Table 1: Component Size Summary

Component	Length (m)	Width (m)	Height / Min Diameter (m)	Weight (t)
Blade	83.741	4.186	3.500	29.000
Base Tower	13.564	4.700	4.700	84.958
Mid Tower 1	18.200	4.700	4.436	84.328
Mid Tower 2	23.800	4.436	4.427	84.548
Mid Tower 3	26.880	4.427	4.021	71.771
Top Tower	29.970	4.021	3.503	63.863

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 Blade Dolly trailer where necessary 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.

Examples of the vehicles and trailers that are likely to transport loads are shown in **Figure 2** to **4**.

Figure 2: Blade Dolly Trailer

Figure 3: Tower Trailer

Figure 4: Tower Trailer

3 Access Route Review

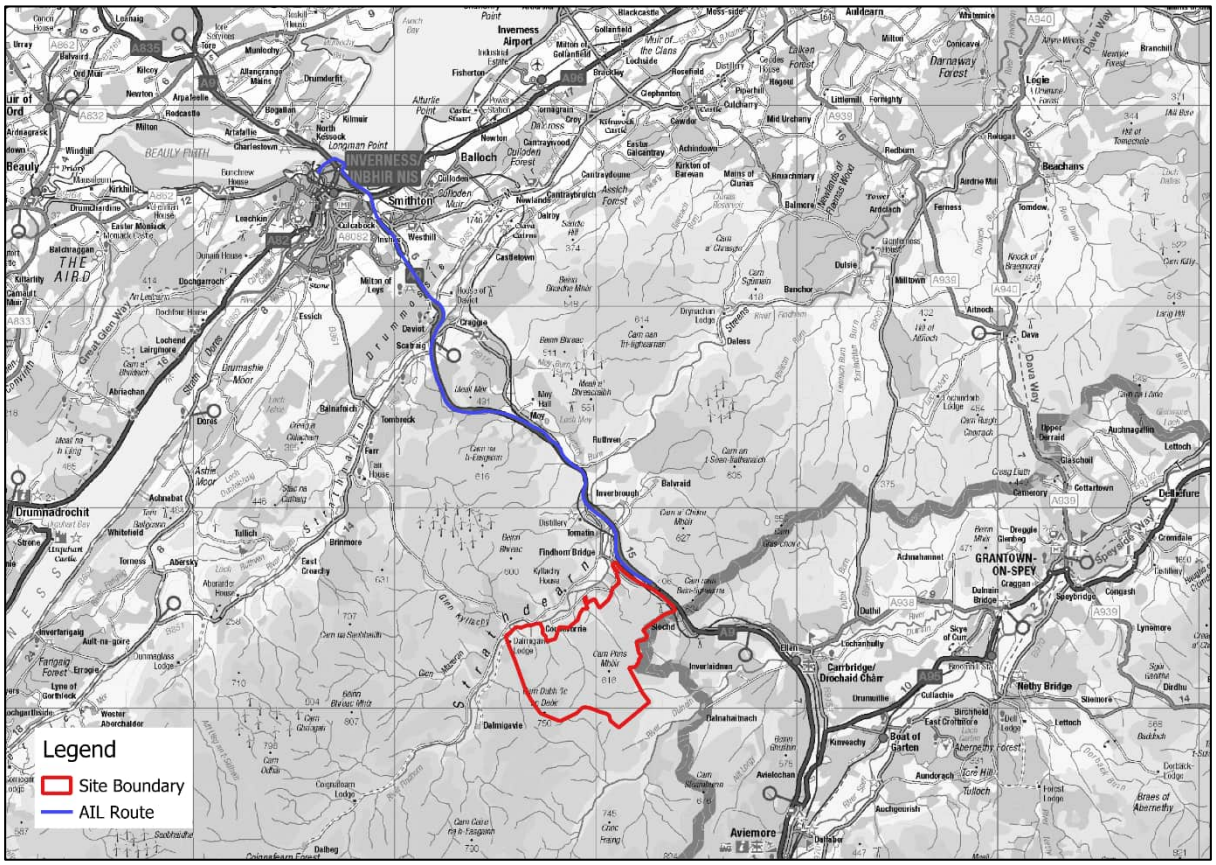
3.1 Proposed Access Routes

A Site visit to review the access route has been undertaken. The proposed access route to the Site boundary from departing the A9 is as follows:

- Loads will turn left on exiting the harbour onto Longman Drive / Stadium Road;
- Loads will take the first exit at the roundabout and join the A9 heading south;
- Loads will depart the A9 at the Tomatin South junction and will proceed on to the U2856; and
- Once on the U2856 the loads will head north westbound before turning left in to the Site via the proposed access junction.

The proposed access route is illustrated in **Figure 5**.

Figure 5: Proposed AIL Access Route



3.2 Route Constraints

The constraints noted on the route are provided in the table below. These cover all constraints from the port exit through to the proposed Site access junction. No consideration of the transport issues within the port have been undertaken within the report. Matters relating to the Site access junction and within the Proposed Development Site are covered separately within the Environmental Impact Assessment (EIA).

Plans illustrating the location of the constraints are provided in **Annex A**.

Table 2: Constraint Points and Details

POI	Key Constraint	Details
1	**Inverness Harbor Exit** Coordinates: 57.49223, -4.23172 	Loads will turn left at the junction and join Longman Drive / Stadium Road. Loads will overrun the south western verge on exit where a load bearing surface should be laid. The port fence, one road sign and one lighting column should be removed. Early discussions are strongly recommended to ensure that the area remains clear during deliveries. Loads will overrun the eastern verge of Longman Dr where a load bearing surface should be laid. Swept path drawing SK01 is included in **Annex B**.
2	**Stadium Road Bend 1** Coordinates: 57.49652, -4.22131 	Loads will continue on Stadium drive at this location. Loads will oversail the inside of the bend, however no physical works are required. Swept path drawing SK02 is included in **Annex B**.
3	**Stadium Road Bend 2** Coordinates: 57.49457, -4.21265 	Loads will continue on Stadium drive at this location. Loads will oversail the inside of the bend, however no physical works are required. Swept path drawing SK03 is included in **Annex B**.
4	**Longman Roundabout** Coordinates: 57.49174, -4.21422 	Loads will take the first exit at the roundabout joining the A9. Loads will oversail both verges of the carriageway though this location. One lit road sign and four lighting columns should be removed on the eastern verge. Swept path drawing SK04 is included in **Annex B**.

POI	Key Constraint	Details
5, 6 & 7	**A9 Junction Southeast of Findhorn Bridge & U2856 Proposed Access Location** Coordinates: 57.31158, -3.94818 57.3121, -3.95095 & 57.31183, -3.95310   	**A9 Junction Southeast of Findhorn Bridge Section** Loads will exit the A9 southbound, turning right on to the U2856, where the Site access for the Proposed Development will be located. A new track is required on the north of the A9 and a detailed design review is required. The gradients along the new track alignment should be confirmed suitable. Vegetation, trees, two road signs, one bollard, one utility cabinet and section of fence should be removed. Culverts are required over the watercourses. **Third party land** will be required. Loads will oversail the central reserve where two road signs should be removed. Loads will oversail the crash barrier. Loads will oversail the inside of the junction where vegetation and trees should be removed. Four road signs should be removed. Loads will oversail the bollards and safety barrier. A land search should be undertaken to confirm available adopted boundary. A load bearing surface should be laid on the southern verge of the U2856 on entry where the embankment should be reprofiled. Three road signs should be removed and **third party land** is required. Loads will oversail the northern verge through the double bend over the railway where vegetation and trees should be trimmed. Four road signs and fence should be removed. The bridge parapet and safety barrier will be oversailed into **third party Network Rail land**. Loads will oversail the southern verge through the double bend where trees should be trimmed. Two road signs, a section of fence on the temporary on-road barrier should be removed. Bridge parapet and safety barrier should be oversailed. **Third party Network Rail land** is required. **U2856 Proposed Access Location Section** Loads will depart the U2856 immediately south of the railway bridge. A Site access junction and track should be constructed, and detailed design is required. Trees should be trimmed. Two road signs and the fence should be removed. Loads will oversail the bridge parapet and safety barrier into **third party land**. A new bridge should be constructed over the water course. **Third party land** is required. Note, the above is based on the existing situation. As part of the wider development proposals, a new bridge is proposed between the Proposed Development Site and the A9, on the U2856 road, across the Highland Main Line. This is to replace the existing bridge, which is substandard and not suitable to accommodate the predicted loads. The works in relation to the new bridge will form part of a separate planning application and will be done in full consultation with THC, Transport Scotland and Network Rail. Swept path drawing SK07 is included in **Annex B**.

3.3 Swept Path Assessment Results and Summary

The detailed swept path drawings for the locations assessed are provided in Annex B for review. The drawings illustrate tracking undertaken for the worse 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 oversail areas are illustrated on the swept path drawings as hatched red or blue. 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.

Please note that where assessments have been undertaken using Ordnance Survey (OS) base mapping, CAD 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 OS base mapping, aerial mapping, historic topographical surveys or client supplied data.

Please note that turbine supplier guidance suggests that the minimum road width for the safe transport of AIL components is 4.5m. 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.

3.4 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 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.

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 3m from the road edge. This can vary between areas and location.

3.5 A9 Upgrade Works

Dualling works along the A9 between Birnam and Inverness are ongoing in sections. The two sections of upgrade works that are of relevance to this project are Tomatin to Moy and Dalraddy to Slochd.

The section between Tomatin and Moy is scheduled to commence in Spring 2025, with the road expected to be completed by Spring 2028. As such, ongoing dialogue with Transport Scotland and BEAR Scotland will be

required to ensure that any works in relation to the dualling will not have an impact on the movement of the AILs associated with the Proposed Development.

3.6 Weight Review

A weight review has been undertaken via the ESDAL (Electronic Service Delivery for Abnormal Loads) contacts database using the National Highways website www.esdal.com. All of the relevant ESDAL contacts are noted in **Table 3**, and all have been contacted to ascertain if there are any relevant constraints that should be noted.

Table 3: ESDAL Consultees

Organisation	Email Address
Police Scotland	OSDAbnormalLoadsScotland@scotland.pnn.police.uk
Network Rail	AbLoadsESDAL@networkrail.co.uk / abnormalloadsenquiries@networkrail.co.uk
Historic Rail Estate	rsgbrb@jacobs.com
Transport Scotland	AbnormalLoads@transport.gov.scot
Highland Council	abnormal.loads@highland.gov.uk
Bear North West	NWAbnormalLoad@Bearscotland.co.uk
AMEY North East	abnormal-loadne@amey.co.uk

Where responses from the ESDAL have been received, these are contained in **Annex C**. Where no response has been received, it is assumed that no constraints are in place at this time.

3.7 Summary Issues

It is strongly suggested that following a review of the RSR, RES 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 completed;
- Liaise with Transport Scotland on upgrade works to the A9;
- 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 RES to prepare a Route Survey Report to examine the issues associated with the transport of AIL turbine components to the Proposed Development Site.

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 RES. Various road modifications, structural reviews and interventions are required to successfully access the Site. If these are undertaken following agreement and permissions from the relevant stakeholders, access to the proposed wind farm Site is considered feasible.

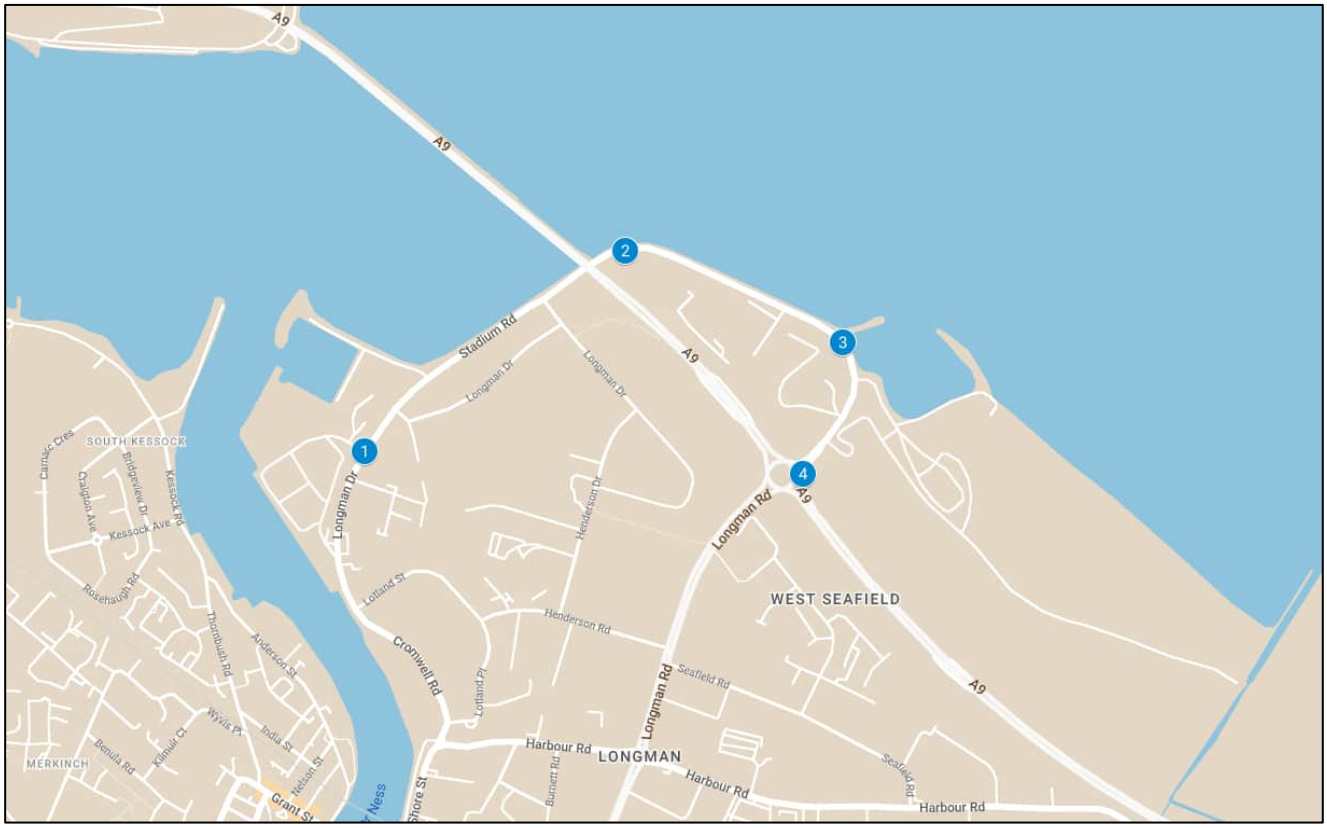
4.2 Further Actions

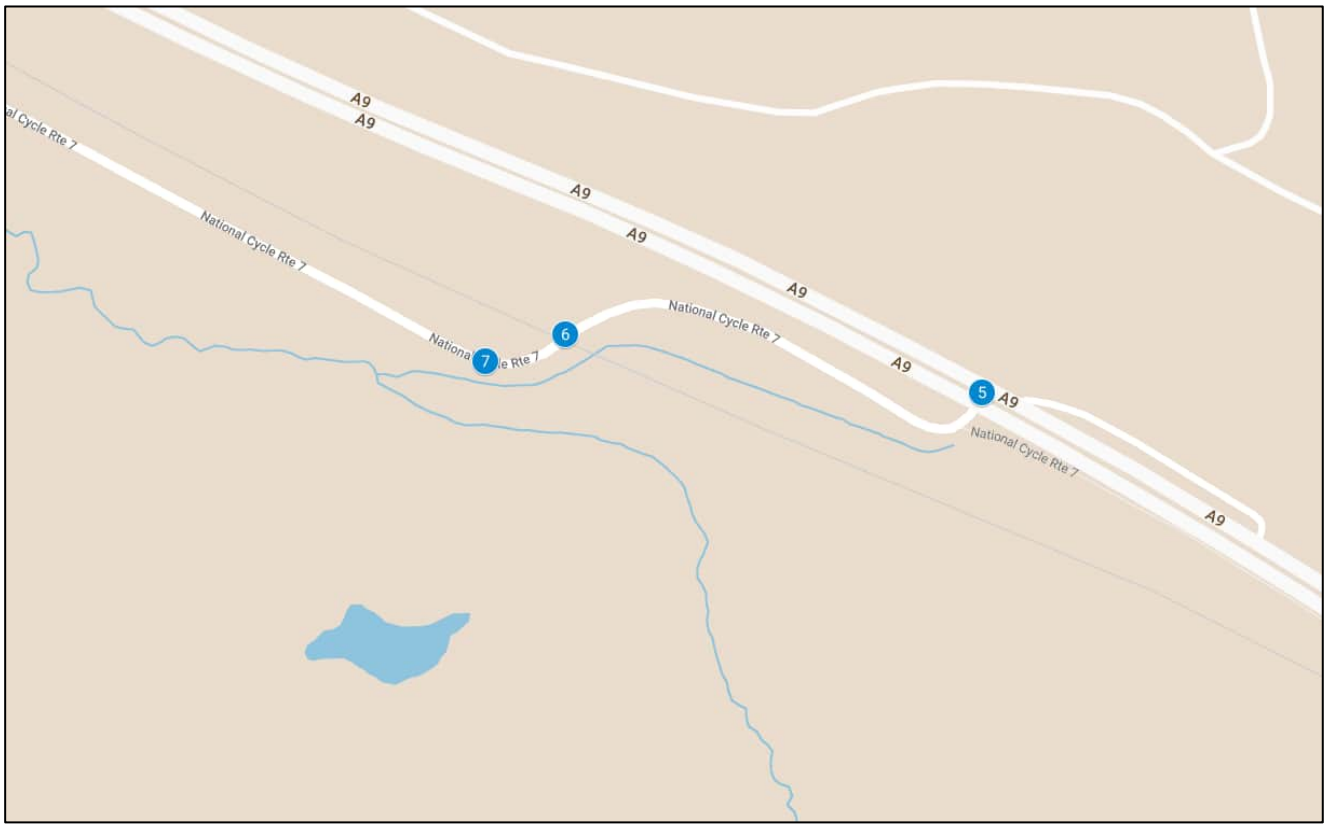
The following actions are recommended to pursue the transport and access issues further:

- Prepare detailed mitigation design proposals to help inform the land option / consultee discussions;
- Obtain the necessary land options;
- Liaise with Transport Scotland on upgrade works to the A9;
- 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 Abnormal Load Transport Management Plan to assist in transporting the proposed loads. Further details in this regard are included in **Chapter 10: Transport and Access** of EIA Report Volume 1 and **Technical Appendix 10.1 Transport Assessment**.

Annex A Points of Interest

An electronic version of the POI plans can be found here:
https://www.google.com/maps/d/u/0/edit?mid=1tsmC_ZDr8ua6vKHuVoge-TWGTja7mBY&usp=sharing





Annex B Swept Path Assessments

Annex C ESDAL Correspondence & Turbine Weights

SG170 115m HH Turbine dimensions

Base Section

Section length:	13.342M

Overall Width:	4.8	Maximum Height:	4.8	Gross weight or gross train weight:	130,300T

No of Wheels	2	2	4	4	4	4	4	4	4	4	4	4	4	4
Axle Weight	7.8	7.8	10.6	10.6	10.9	10.9	10.9	8.7	8.7	8.7	8.7	8.7	8.7	8.7
1xle Spacing	2.545	1.355	1.44	2.175	1.36	1.36	17.054	1.65	1.51	1.36	1.36	1.51	1.65	

Mid-Section 1

Section length:	18.2M

Overall Width:	4.7	Maximum Height:	4.436	Gross weight or gross train weight:	129,600T

No of Wheels	2	2	4	4	4	4	4	4	4	4	4	4	4	4
Axle Weight	7.8	7.8	10.2	10.2	10.9	10.9	10.9	8.8	8.8	8.8	8.8	8.8	8.8	8.8
1xle Spacing	2.545	1.355	1.44	2.175	1.36	1.36	21.69	1.65	1.51	1.36	1.36	1.51	1.65	

Mid-Section 2

Section length:	23.8M

Overall Width:	4.436	Maximum Height:	4.427	Gross weight or gross train weight:	129,848T

No of Wheels	2	2	4	4	4	4	4	4	4	4	4	4	4	4
Axle Weight	7.6	7.6	9.8	9.8	10.8	10.8	10.8	9.0	9.0	9.0	9.0	9.0	9.0	9.0
1xle Spacing	2.545	1.355	1.44	2.175	1.36	1.36	27.29	1.65	1.51	1.36	1.36	1.51	1.65	

Mid-Section 3

Section length:	27.16M

Overall Width:	4.427	Maximum Height:	4.021	Gross weight or gross train weight:	117,071T

No of Wheels	2	2	4	4	4	4	4	4	4	4	4	4	4	4
Axle Weight	7.6	7.6	9.8	9.8	9.5	9.5	9.5	7.7	7.7	7.7	7.7	7.7	7.7	7.7
1xle Spacing	2.545	1.355	1.44	2.175	1.36	1.36	30.65	1.65	1.51	1.36	1.36	1.51	1.65	

Top Section

Rigid length Of Vehicle:	29.97M

Overall Width:	4.021	Maximum Height:	3.503	Gross weight or gross train weight:	109,163T

No of Wheels	2	2	4	4	4	4	4	4	4	4	4	4	4	4
Axle Weight	7.1	7.1	7.9	7.9	8.8	8.8	8.8	7.4	7.4	7.4	7.4	7.4	7.4	7.4
1xle Spacing	2.545	1.355	1.44	2.175	1.36	1.36	33.46	1.65	1.51	1.36	1.36	1.51	1.65	

Blade

Section length:	84.021M

Overall Width:	4.366	Maximum Height:	3.500	Gross weight or gross train weight:	79.5T

No of Wheels	2	2	2	2	4	4	4	4	4
Axle Weight	7.5	9	9	9	9	9	9	9	9
1xle Spacing	3.9	1.36	2.048	1.31	69.32	1.81	1.675	1.31	

Nacelle

Rigid length Of Vehicle:	15M

Overall Width:	4.200	Maximum Height:	3.643	Gross weight or gross train weight:	114,417T

No of Wheels	2	2	4	4	4	4	4	4	4	4	4	4
Axle Weight	7.5	7.5	11.4	11.4	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
1xle Spacing	2.6	1.44	1.42	2.619	1.4	4.2	1.4	1.4	1.4	1.4	1.4	

Drivetrain

Rigid length Of Vehicle:	7.446M

Overall Width:	3.13	Maximum Height:	3.218	Gross weight or gross train weight:	136,861T

No of Wheels	2	2	4	4	4	4	4	4	4	4	4	4	4	4
Axle Weight	8.7	8.7	11.5	11.5	9.4	9.4	9.4	9.8	9.8	9.8	9.8	9.8	9.8	9.8
1xle Spacing	1.94	2.16	1.44	2.99	1.51	1.51	2.59	1.56	1.56	1.56	1.56	1.56	1.56	

ESDAL Responses

From: Abnormal Loads NW[redacted]
Sent: 05 August 2022 15:49
To: Jordan Stirrat[redacted]
Cc: NW AbnormalLoad[redacted]
Subject: RE: Clune Wind Farm ESDAL

Hi[redacted]

Base on the information you have provided we don't foresee any problems at this stage regarding structures on the A9.

regards

[redacted]

Bridge Engineer | BEAR Scotland | North West Unit

Telephone: 07876 825865 | Visit us @ www.bearscot.com

BEAR Think Safe Home Safe experience that delivers

From: rsgbrb[redacted]
Sent: 05 August 2022 12:14
To: Jordan Stirrat[redacted]
Subject: RE: Clune Wind Farm ESDAL

Dear[redacted]

Thank you for your enquiry.

I have assessed the proposed route, and can confirm that no HRE structures would be affected by either the actual or alternative routes.

I therefore have no objections or further comment to make.

Regards

[redacted]

[redacted]

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

Jacobs

DDI: 0118 946 8911

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