voltalia

CRUACH CLENAMACRIE WIND FARM

APPENDIX 12.1 TRANSPORT ASSESSMENT - PART 1

Pell Frischmann

Cruach Clenamacrie Wind Farm

Appendix 12.1 - Transport Assessment

November 2024

108172

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1 Introduction

1.1 Purpose of the Report

Pell Frischmann (PF) has been commissioned by the Applicant (Voltalia), to undertake a Transport Assessment (TA) for the proposed Cruach Clenamacrie Wind Farm (the Proposed Development). The Proposed Development is located approximately 2 kilometres (km) northeast of Kilmore within Argyll and Bute Council (ABC) administrative area, 7km east of the centre of Oban.

The report identifies the key transport and access issues associated with the Proposed Development, including the route for Abnormal Indivisible Loads (AIL). 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 Volume 1: **Chapter 12: Transport and Access**.

1.2 Report Structure

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 in 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.

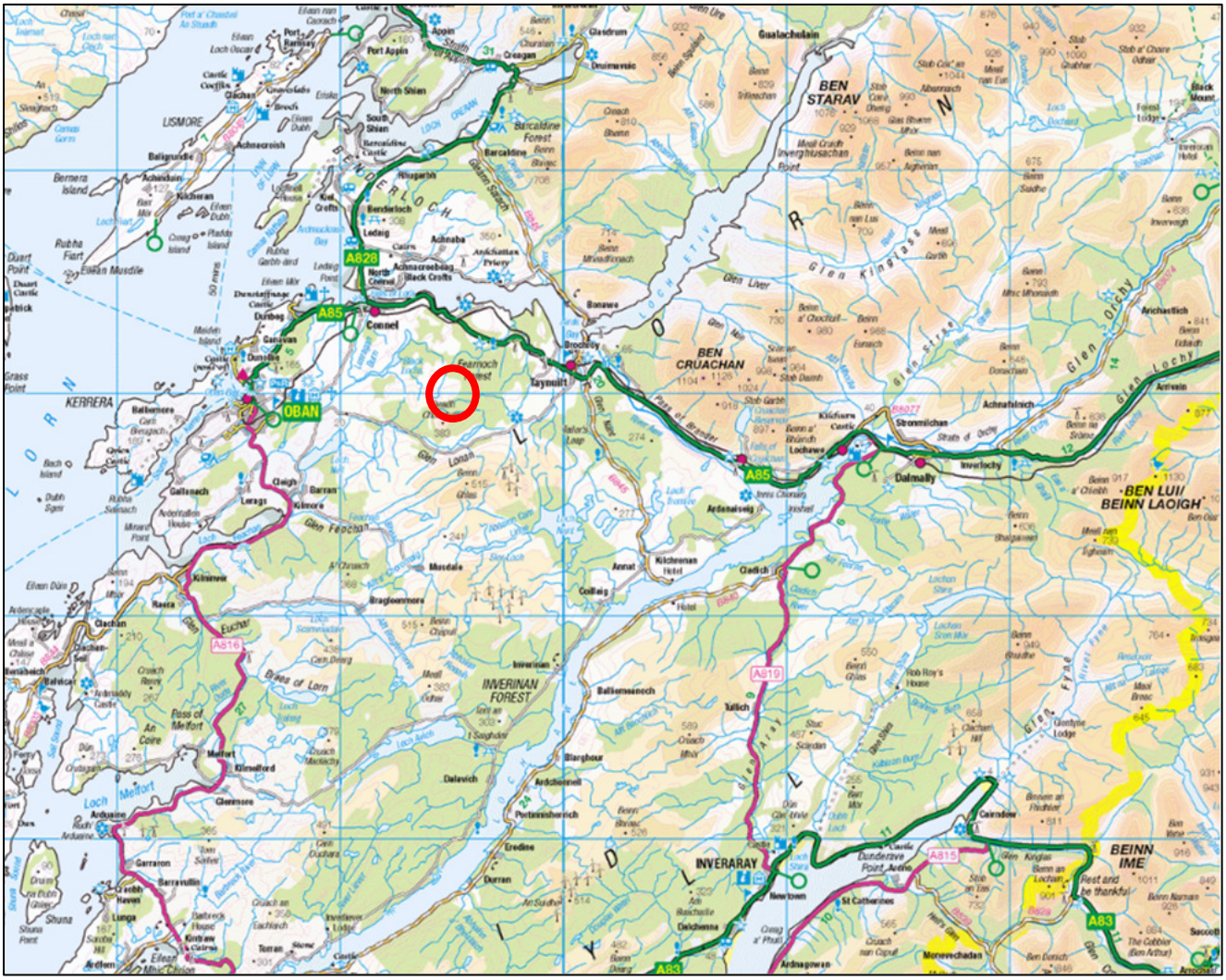
2 Site Background

2.1 Site Location

The Site is located approximately 7km east of Oban within the ABC administrative area. The Site is bordered by Fearnoch Forest to the east, south and west. The Lusragan Burn and Black Loch's tributaries run through the Site. The Site is part of an estate of agricultural and sporting enterprise. The A85 trunk road is located to the north of the Site.

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

Figure 1 Site Location



2.2 Proposed Development

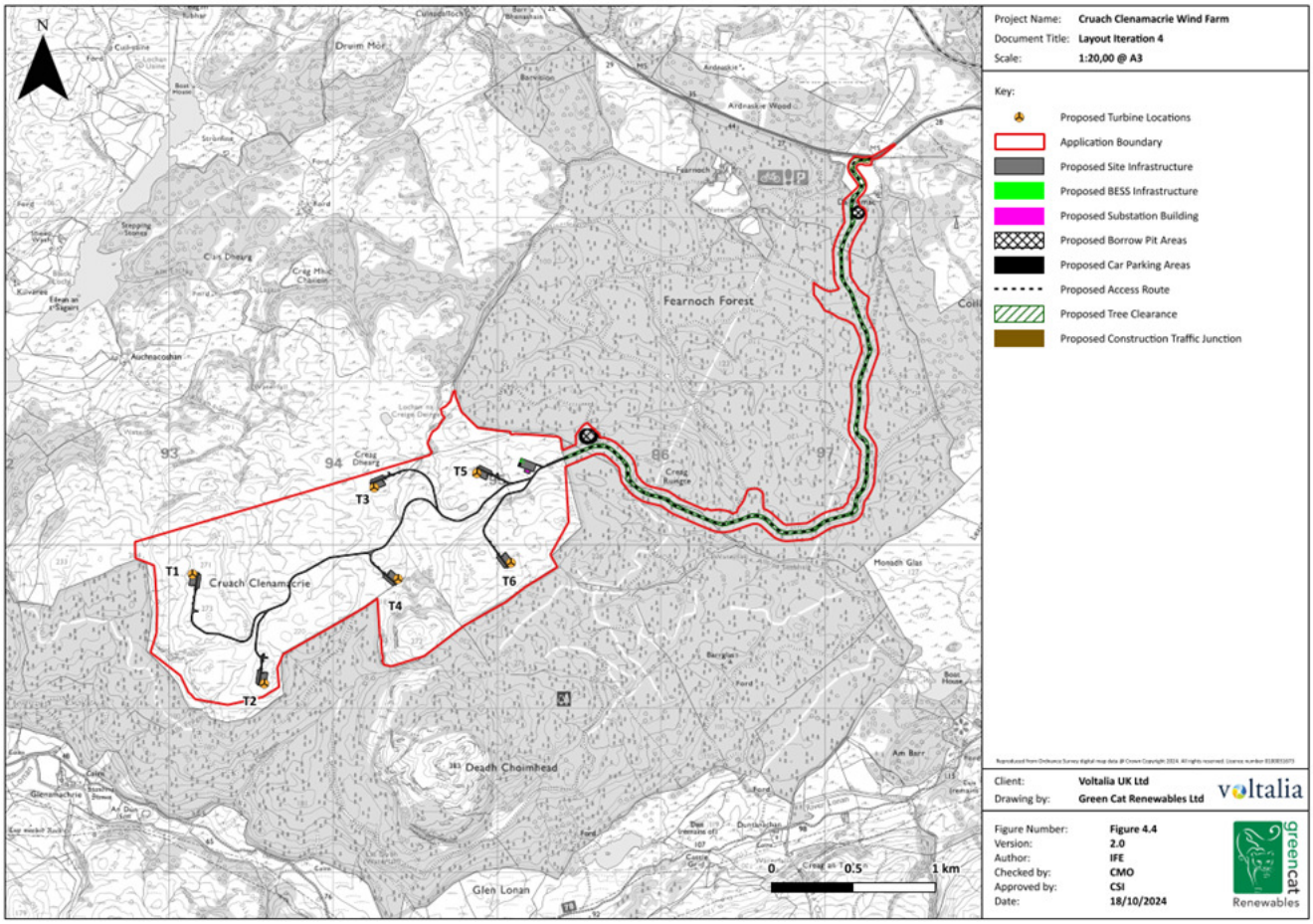
The Proposed Development will comprise the following:

- Six wind turbines, each up to a maximum tip height of 200 metres (m), with associated transformers and switchgear;
- New Access tracks, passing places and turning heads;
- Site entrance from A85;
- Access route through Fearnoch Forest;
- Turbine foundations;
- Hardstanding areas for cranes at each turbine location;
- Blade laydown areas;

- Temporary construction compound, including parking, and welfare facilities;
- Battery Energy Storage System (BESS) adjacent to the substation;
- Watercourse crossings;
- Drainage works;
- Power cables, linking the wind turbines, laid in trenches underground, including cable markers;
- An on-site electrical substation, parking and a small storage compound;
- Borrow Pits; and
- Aviation obstacle lighting fitted to turbines.

An indicative layout of the Proposed Development is presented in Figure 2.

Figure 2 Indicative Site Layout



A complete description of the Proposed Development for the purposes of the EIA is provided in EIA Report Volume 1: **Chapter 5: Project Description**.

2.3 Access Arrangement

The Site will be accessed via the A85 to the north of the Site where an access track will be constructed. The access junction will provide access to the Site for all AIL deliveries associated with the turbine deliveries, as well as access for Heavy Goods Vehicles (HGV) delivering construction materials and general Site traffic.

An indicative layout of the proposed access junction is provided in **Annex A,** while a Stage 1 Road Safety Audit (RSA) as requested by Transport Scotland (TS) provided in **Annex B**.

It is expected that AIL deliveries will access the Site from the Port of Entry (PoE) at Corpach Harbour via the A82 and A85. It should be noted that AILs will not be permitted to use Connel Bridge to reach the Site.

Within the Site itself, the Proposed Development will be served by a network of both new and upgraded on-site access tracks to enable construction and maintenance once operational. Existing access tracks will be re-used where possible and any new access tracks will seek to minimise impacts on soils and peat.

2.4 Candidate Turbine

The Applicant has indicated that they wish to consider Vestas V162 turbines with a tip height of 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

A detailed Route Survey Report (RSR) has been prepared and is provided in **Annex C**.

The selection of the final turbine model and specification will be subject to a commercial procurement process following consent of the application. The assumed dimensions may therefore vary slightly from those assumed as part of this assessment, however, the turbine tip height will be no greater than 200m.

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 a combination of trailer types will be required, particularly for the blade loads. It has been assumed that all blades would be carried on a Superwing Carrier trailer to reduce the need for mitigation in constrained sections of the route.

Where constraints are extreme, blade loads would be transferred onto a blade lifting trailer. This trailer has the ability to lift blades up to a maximum angle of 60 degrees, lifting blades over potential constraints and shortening the length plan view.

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 3 to 5.

Figure 3 Super Wing Carrier Trailer

Figure 4 Blade Lifter Trailer

Figure 5 Clamp Tower Trailer

3 Transport Policy Review

3.1 Introduction

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

3.2 National Policy and Guidance

3.2.1 National Planning Framework 4 (NPF4)[1]

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

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

Policy 11: which relates to Energy makes specific reference to the impacts of construction traffic associated with renewable energy projects. Policy 11 states the following:

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

- *vi. impacts on road traffic and on adjacent trunk roads, including during construction."*

The assessment undertaken as part of this TA and the associated EIA Report **Chapter 12** has taken cognisance of this and provided appropriate mitigation where necessary.

3.2.2 Planning Advice Note (PAN) 75[2]

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

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

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

3.2.3 Transport Assessment Guidance (2012)[3]

Transport Scotland's (TS) Transport Assessment Guidance was published in 2012. It aims to assist in the preparation of TA reports 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.

[1] Scottish Government, *National Planning Framework 4*, (2024)
[2] Scottish Government, *Planning Advice Note 75: Planning for Transport,* (2005)
[3] Transport Scotland, *Transport Assessment Guidance*, (2012)

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

3.2.4 Onshore Wind Turbines, Online Renewables Planning Advice (May 2014)[4]

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

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

3.2.5 Onshore Wind Policy Statement (2022)[5]

The Scottish Government's Onshore Wind Policy Statement was published in December 2022 and sets out an ambition of *"20 GW of installed onshore wind capacity in Scotland by 2030."*

With regards to transport of Abnormal Loads and Police Escorts, the statement notes that:

"Under the Road Traffic Act 1988, any abnormal load movement on public road in Scotland must be escorted by a specially trained police officer. This puts additional pressure on both Police Scotland and hauliers, as well as the wind energy sector's ability to deploy at scale in Scotland.

In order to meet our legally-binding net-zero targets, it is estimated that 3400 turbines will be installed in Scotland between now and 2030, this is the equivalent of a new turbine being installed every day between 2025-2030. Given this, and the significant issues surrounding the transportation of components, this issue has been brought into fresh focus, as we consider it could have serious implications on the delivery of our renewable energy pipeline and subsequent threat to our 2030 net-zero targets.

To this end, the Scottish Government is working directly with senior members of Police Scotland and the renewables and haulier industries. We have come together to consider this issue and to determine what actions must be taken, both short term and long-term, to relieve the pressure on Police Scotland resources to ensure turbines components can be efficiently and effectively conveyed to site."

3.3 Local Policy

3.3.1 Argyll and Bute Local Development Plan 2 (LDP2) (2024)[6]

Argyll and Bute LDP2 was adopted in February 2024 and replaces the Argyll and Bute LDP 2015. The LDP2 provides the local planning framework for the Council area and provides the general policy context against which planning applications for new development proposals should be assessed. Its broad outcomes include developing:

- A successful, sustainable place;
- A low carbon place;
- A natural, resilient place; and
- A more connected place.

Policy 30 – The Sustainable Growth of Renewables outlines that:

[4] Scottish Government, *Onshore Wind Turbines, Online Renewables Planning Advice*, (May 2014)
[5] Scottish Government, *Onshore Wind Policy Statement*, (2022)
[6] Argyll & Bute Council, *Argyll and Bute Local Development Plan 2*, (2024)

"The Council will support renewable energy developments where these are consistent with the principles of sustainable development and it can be adequately demonstrated that there would be no unacceptable significant adverse effects, whether individual or cumulative, including on local communities, natural and historic environments, landscape character and visual amenity, and that the proposals would be compatible with adjacent land uses."

3.4 Policy and Guidance Summary

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

4 Study Methodology

4.1 Introduction

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

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

4.2 Project Phases – Transport Overview

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

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

The 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.

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

The Applicant submitted a Scoping Report to ABC and TS in respect of the EIA which included a section considering traffic and transport. A full review of that scoping opinion with regards to traffic and transport is provided in the EIA Report Volume 1: **Chapter 12: Transport and Access**.

5 Baseline Conditions

5.1 Study Area Determination

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

Strategic access to the Site is available from the A85 which forms part of the trunk road network. Access for construction materials would be predominantly from the north via the A82 or A828, followed by the A85.

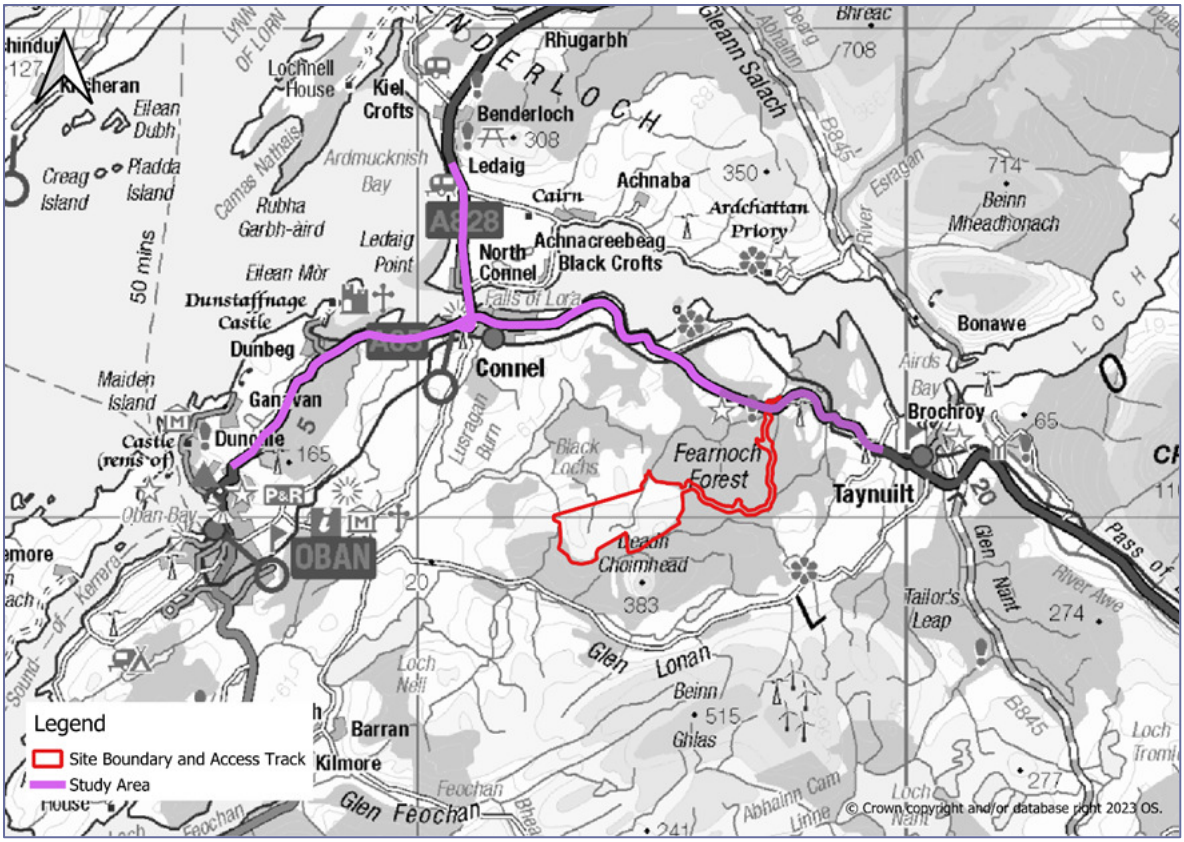
All vehicular traffic will use the main Site access. Where feasible, local materials will be sourced which will avoid traffic impacting on local communities as much as possible.

Based on the above, the Study Area for this assessment is as follows:

- The A828, between Ledaig and Connel;
- The A85, between Oban and the Site access; and
- The A85, between Taynuilt and the Site access.

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

There are limited pedestrian facilities within the immediate vicinity of the Site, reflecting the rural nature of the location.

A review of the ABC Core Path plan[7] shows that the closest Core Path to the Site is Path C160(k), Taynuilt to Oban, located approximately 500m to the south of the southern boundary of the Site. The access routes to site do not interact with this Core Path.

Core Path C157(c), Taynuilt - Airds circular, runs parallel to the A85 at Taynuilt and Core Path C300(a), Kilchrenan to Taynuilt crosses the A85, also at Taynuilt. No significant Core Path conflicts are therefore anticipated.

Further details of the Core Path network are illustrated in Figure 3 of the Socio-Economic Chapter.

The forestry tracks within Fearnoch Forest are however open to recreational use and interactions between traffic associated with the Proposed Development and other path users may occur.

A review of the Sustrans National Cycle Network map[8] notes that the route of Core Path C160(k) is a recommended route for connections between National Cycle Route 78 between Crinnan and Oban. The route is not formally part of the National Cycle Network and is located to the south of the Proposed Development.

5.3 Road Access

It is expected that general construction traffic will access the Site via the A85. Access for construction materials would be predominantly from the north via the A82 or A828, followed by the A85.

A85

The Site is accessed via the A85, a major road which runs east from Oban to Bridgend, passing through Perth. Within the Study Area, the A85 is a single carriageway road approximately 6.5m wide and is subject to a 60 miles per hour (mph) speed limit outwith settlements, where it generally reduces to 30mph.

Within the Study Area, the A85 forms part of the trunk road network and is maintained by BEAR Scotland on behalf of Transport Scotland and appears to be in good condition.

A828

The A828 is a trunk road which runs from South Ballachulish to the A85 at Connel. Within the Study Area, the A828 is a single carriageway road approximately 6.5m wide and is subject to a 60mph speed limit outwith settlements, where it generally reduces to 30mph.

Within the Study Area, the A828 forms part of the trunk road network and is maintained by BEAR Scotland on behalf of Transport Scotland and appears to be in good condition.

A82

The A82 is a trunk road which runs from Glasgow to Inverness via Fort William. The A82 is a single carriageway road approximately 6m wide and is subject to a 60mph speed limit outwith settlements, where it generally reduces to 30mph.

The A82 is maintained by Transport Scotland and appears to be in good condition.

[7] https://argyll-bute.maps.arcgis.com/apps/webappviewer/index.html?id=7fa23d13020b4a2cab6485b39a22986d [Accessed September 2024]
[8] https://www.sustrans.org.uk/national-cycle-network [Accessed September 2024]

Road Suitability

The Agreed Timber Route Map[9] has been developed by The Timber Transport Forum who are a partnership of the forestry and timber 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'.

'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.

A number of the roads within the study area form part of the agreed route network used for the extraction of timber and are therefore regularly used by HGV traffic. This includes sections of the A85, A828 and A82.

5.4 Existing Traffic Conditions

In order to assess the impact of the Proposed Development construction traffic on the Study Area, an Automatic Traffic Counter (ATC) was deployed on the A85, to the east 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.

To complement the ATC surveys, existing traffic count data was obtained from the Department for Transport (DfT)[10] database and the TS[11] database, with 2023 and 2024 data utilised respectively.

The traffic count sites used are as follows:

- A828, between Ledaig and Connel (TS Counter: ATC08064);
- A85, between Oban and the Site access (DfT Counter: 40771); and
- A85, between Taynuilt and the Site access (ATC).

The traffic counters allowed the traffic flows to be split into vehicle classes and the data has been summarised into cars / Light Goods Vehicles (LGV) and HGV (all goods vehicles >3.5 tonnes gross maximum weight).

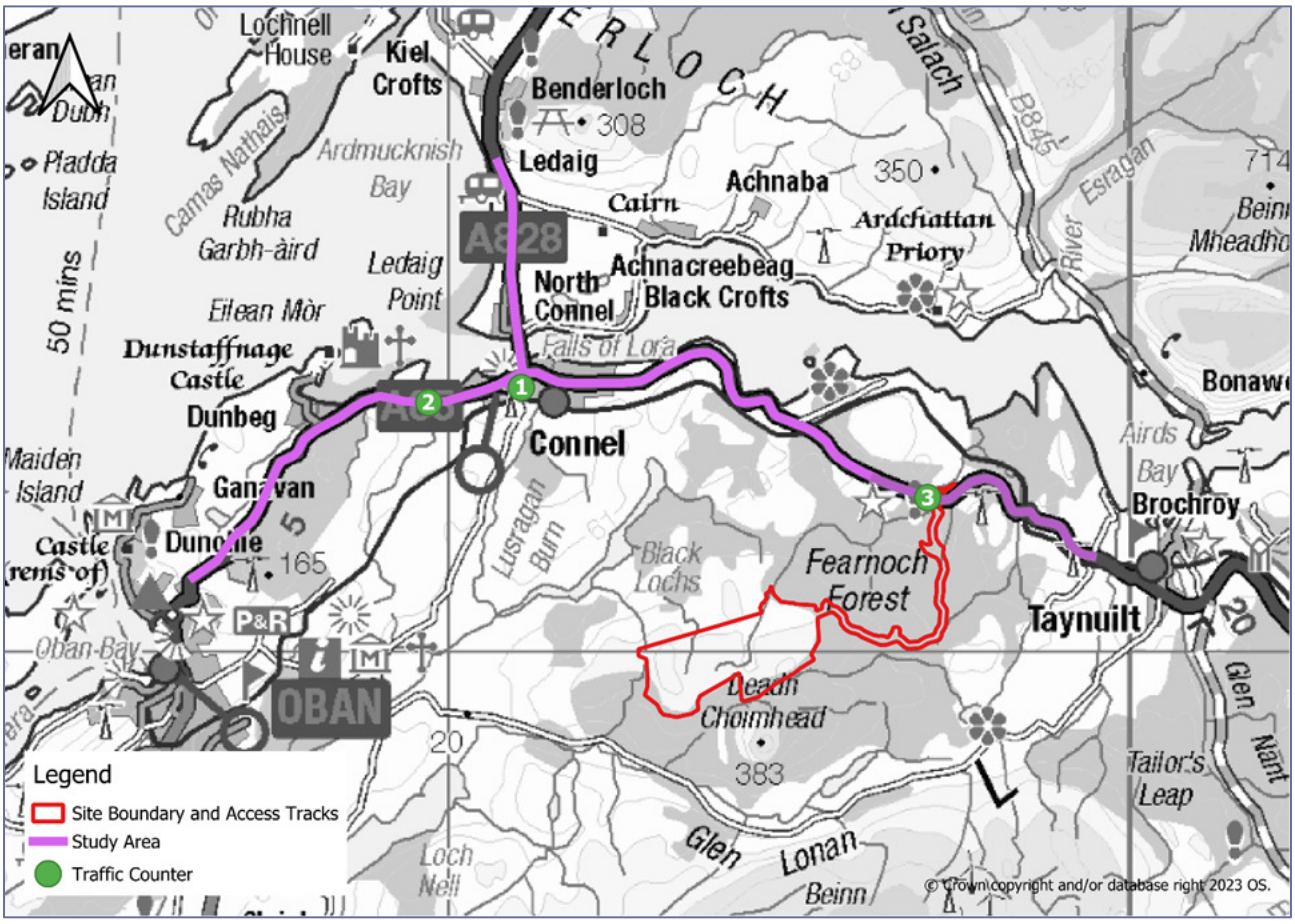
A National Road Traffic Forecast (NRTF) low growth factor was applied to the 2023 flow obtained from the DfT database in order to estimate future year flows. The NRTF low growth from 2023 to 2024 is 1.007.

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 12**.

The locations of the traffic count sites are illustrated in Figure 5.

[9] https://timbertransportforum.org.uk/ [Accessed September 2024]
[10] https://roadtraffic.dft.gov.uk/#6/55.254/-11.096/basemap-regions-countpoints [Accessed August 2024]
[11] https://ts.drakewell.com/multinodemap.asp [Accessed August 2024]

Figure 7 Traffic Counter Locations



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 & LGV	HGV	Total
1	A828, between Ledaig and Connel	TS	5,807	546	6,353
2	A85, between Oban and the Site access	DfT	7,953	264	8,217
3	A85, between Taynuilt and the Site access	ATC	1,810	535	2,346

Please note minor variances due to rounding may occur.

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	A828, between Ledaig and Connel	TS	24.6	28.3	30
2	A85, between Oban and the Site Access	DfT	No data available	No data available	60
3	A85, between Taynuilt and the Site Access	ATC	45.0	50.6	60

** No speed data available from DfT database*

Speed information from Table 3, suggests that the recorded speeds are being adhered to within the Study Area.

5.5 Accident Review

Personal Injury Accident (PIA) data for the five-year period commencing 01 January 2018 through to the 31 December 2022 was obtained from the online resource CrashMap[12] which uses data collected by the police about road traffic crashes occurring on British roads, where someone is injured.

TA Guidance[13] 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.

The statistics are categorised into three categories, namely “Slight” for damage only incidents, “Serious” for injury accidents and “Fatal” for accidents that result in a death.

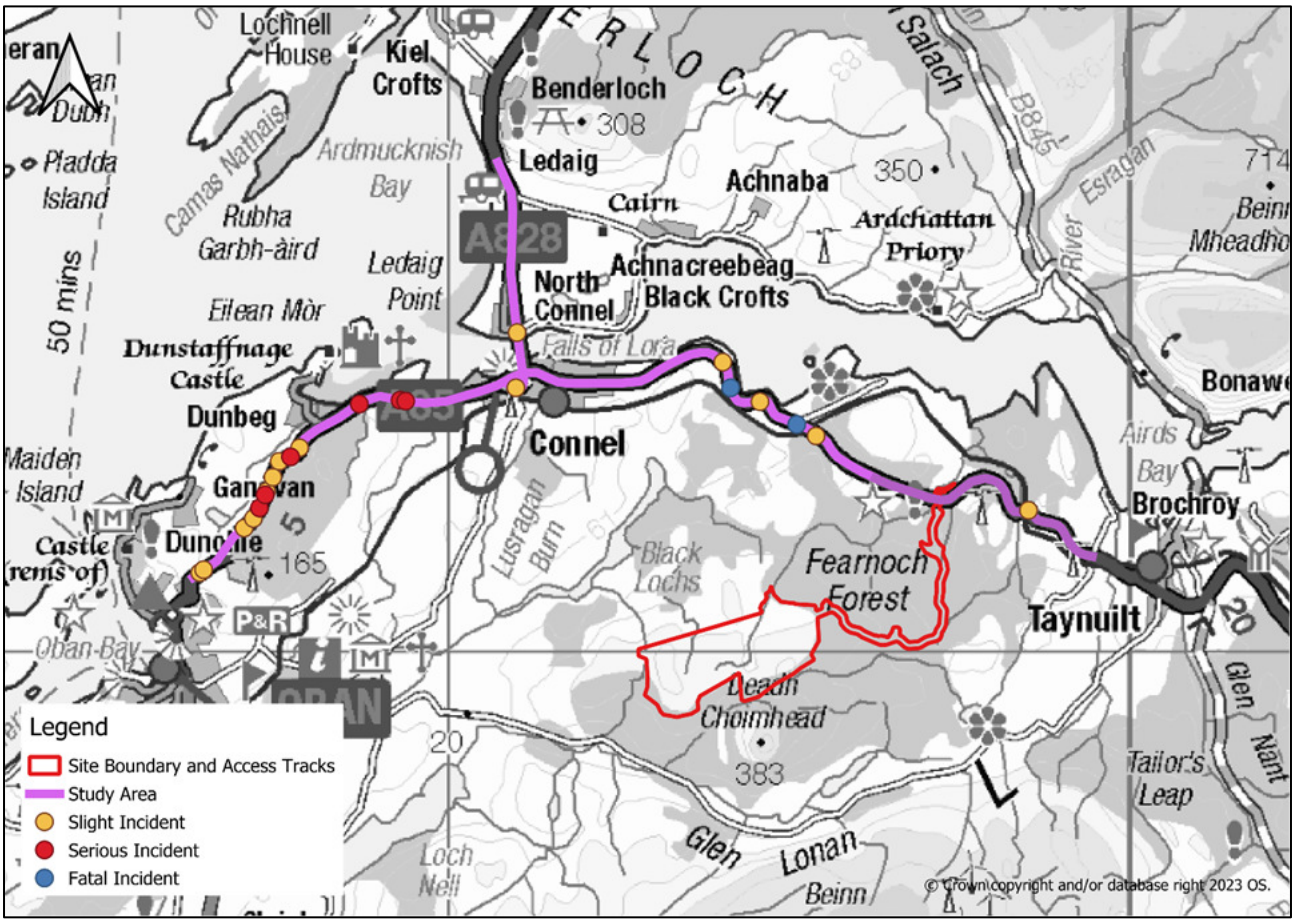
The locations and severity of the recorded accidents within the Study Area are summarised in Table 4, while Figure 7 shows their locations.

Table 4 Personal Injury Accident Summary

Road Link	Slight	Serious	Fatal	HGV Incidents
A828, between Ledaig and Connel	2	0	0	1
A85, between Oban and the Site access	11	6	2	3
A85, between Taynuilt and the Site access	1	0	0	0
Total	**14**	**6**	**2**	**4**

[12] https://www.crashmap.co.uk [Accessed August 2024]
[13] https://www.transport.gov.scot/media/4589/planning_reform_-_dpmtag_-_development_management__dpmtag_ref__17__-_transport_assessment_guidance_final_-_june_2012.pdf

Figure 8 Personal Injury Accident Locations



A summary analysis of the incidents indicates that:

- A total of 22 accidents were recorded within the Study Area roads during the five-year period;
- The majority of incidents occurred on the A85, mainly to the west of the Site access;
- The analysis indicates that most recorded accidents are categorised as being “Slight” (64%), with “Serious” accidents representing approximately 27% of all accidents. There were two “Fatal” (9%) accidents within the Study Area;
- There were a total of four incidents involving HGVs (18%), most of which occurred on the A85;
- 17 incidents involved more than one vehicle, with four involving a young driver;
- Both “Fatal” accidents involved a motorcyclist;
- No accidents took place within the immediate vicinity of the Site access junction; and
- There was a total of two incidents involving pedestrians and one involving a cyclist.

The analysis indicates that most recorded accidents are categorised as being “Slight” (64%) with “Serious” accidents representing approximately 27% of all accidents. In general, there are no clusters of a significant number of PIAs at any location in the assessed area. The majority of PIAs recorded occurred at or on approach to junctions/access to properties, where there is an increased interaction between vehicles and on bends.

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 2030 Traffic Flows

Construction of the Proposed Development is anticipated to commence in 2030 if consent is granted and is expected to last up to 18 months depending on weather conditions and ecological considerations.

To assess the likely effects during the construction phase, base year traffic flows were determined by applying an NRTF low growth factor to the surveyed traffic flows. The NRTF low growth factor for 2024 to 2030 is 1.031. This factor was applied to the 2024 traffic data presented in Table 2 to estimate the 2030 Base traffic flows presented in Table 5.

Table 5 Future Baseline Daily Two-Way Traffic (2030)

Site ID	Survey Location	Cars & LGV	HGV	Total
1	A828, between Ledaig and Connel	5,987	563	6,550
2	A85, between Oban and the Site access	8,200	272	8,472
3	A85, between Taynuilt and the Site access	1,866	552	2,419

Please note minor variances due to rounding may occur.

5.7 Committed Developments

5.7.1 Onshore Wind Farm and Energy Related Planning Applications

A review of the ABC online planning portal[14] and the Scottish Government's Energy Consents Unit portal[15] was undertaken in the preparation of this assessment 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.

TA Guidance[16] advises that only those projects with extant planning permission or local development plan allocations within an adopted or approved plan are required 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.

The review highlighted Blarghour Wind Farm (Planning Ref. 23/00537/S36) which is located within 20km (60km by road) of the Proposed Development. This development is expected to be operational by 2027. Given that the Proposed Development is not expected to commence construction until 2030 at the earliest, the peak of construction activities on both developments would not occur at the same time. As such, this has not been included in the future baseline traffic flows.

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.

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.

[14] https://publicaccess.argyll-bute.gov.uk/online-applications/spatialDisplay.do?action=display&searchType=Application/ [Accessed August 2024]
[15] https://www.energyconsents.scot/ApplicationSearch.aspx?T=1 [Accessed August 2024]
[16] https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements

5.7.2 Other Planning Applications

A review of the ABC 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., have associated traffic impact of over 30%).

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

It should be noted that the use of 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

6.1.1 Trip Derivation

During the 18-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 Battery Energy Storage System (BESS), substation components, and associated infrastructure; and
- AILs consisting of the wind turbine sections and heavy lift cranes.

Average monthly traffic flow data was used to establish the construction trips associated with the Site 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.

6.1.2 Construction Staff

Staff would arrive in non-HGV vehicles and, where possible, will be encouraged to car share. The workforce on-site will depend on the activities undertaken, but, based on previous wind farm construction site experience for a project of this scale, which suggests three staff per turbine during the short peak period of construction is likely, the maximum number of staff expected on-site could be around 30 per day.

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).

Based on these assumptions, staff transport cars and light vehicles would account for a maximum of 40 vehicle movements (approximately 20 inbound trips and 20 outbound trips) per day during the peak period of construction.

6.1.3 Abnormal Indivisible Load Deliveries

The turbines are broken down into components for transport to the Site. The nacelle, blade, and tower sections are classified as 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	0.25 (parts shared between 4 wind turbines on one delivery)

In addition to the turbine deliveries, up to 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 of up

to 1,000 tonnes that are escorted by boom and ballast trucks to allow full mobilisation on-site. Smaller erector cranes would also be present to allow the assembly of the main cranes and to ease the overall erection of the turbines.

Escort vehicles would accompany the AIL convoys to support the traffic management measures. Up to three vehicles would be deployed and it is assumed that three AIL turbine component loads would be delivered per convoy. This would result in 23 convoys on the network, with a total of approximately 138 escort vehicle movements (68 inbound trips and 68 outbound trips).

Wind turbine components that do not classify as AILs, would be delivered in addition to these, resulting in a further approximate 76 movements (38 inbound trips and 38 outbound trips). All of these deliveries are expected to occur over a period of approximately three months.

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

6.1.4 General Deliveries

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

6.1.5 Material Deliveries

Various materials will need to be delivered to the 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 deliver construction machinery.

It is proposed a concrete batching plant is to be located on-site. All turbine and substation foundation concrete will therefore be mixed on-site, with 100% of deliveries of cement powder, water and sand being delivered by HGV tankers. For the purpose of this assessment, it is assumed that concrete materials such as cement and water will arrive to the Site from the north via the A828 and A85. It is assumed that all of the required sand and concrete aggregate will be delivered to the Site from the quarry located along the A828, to the northwest of the access to the Proposed Development. It is assumed that 354 journeys to the Site (177 inbound and 177 outbound) will be made delivering concrete materials.

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

Table 7 Steel Reinforcement Deliveries

Element	Weight / Installation (t)	Total Weight (t)	Lorry Capacity (t)	Inbound Trips	Total Movements
Turbine Foundation	94	564	30	19	38
Substation Foundations	20	20	30	1	2

The majority of the on-site access tracks will be constructed from crushed rock and material won from the Site via the borrow pits, as per the existing forestry access tracks. This material would also be used to help create the crane pads, compound areas, batching plant and substation.

The proposed main borrow pits are located within the main development Siteof the Proposed Development, with a further borrow pit located near the proposed access. As such, all material for the access track works leading from the A85 to the Site will need to be imported.

The borrow pits have been sized to provide for 100% of the access track and hardstand aggregate. To provide a worst-case assessment, it is proposed that the on-site borrow pits generate 50% of the aggregate required within the wind farm Site.

Together with the aggregate for the wider access track, it is assumed that this material will be delivered from a quarry located along the A828, to the northwest of the access to the Site. In total, it is estimated that up to 24,338m^3 of material will need to be imported to site, resulting in 5,356 journeys.

The access tracks would generally be 5-6m in width and would be designed to accommodate construction load 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.

Geotextile will be delivered to the Site in rolls. A total of 216 large rolls may be required at the Site and would be delivered by HGV.

Cables will connect each turbine to the internal substation and control building. Trip estimates for the cable materials are provided below in Table 8 and Table 9. Three cables are to be provided within each cable trench and would be backfilled with cable sand. The cable materials would be likely sourced from Oban to the west.

Table 8 Cable Trip Estimate

Element	Total Cable Length (m)	Length per Drum (m)	Number of Drums	Inbound Trips	Total Journeys
Cables	17,307	500	35	18	36

Table 9 Cable Sand Trip Estimate

Element	Volume (m3)	Lorry Capacity (t)	Inbound Trips	Total Journeys
Cable Sand	2,558	20	205	410

It is assumed that 10 journeys to the Site (5 inbound trips and 5 outbound trips) would be required to deliver ducting materials.

A substation will be constructed on the Site. This will require deliveries of building materials and structural elements and would result in 240 journeys (120 inbound trips and 120 outbound trips). Deliveries associated with battery materials would result in a further 24 journeys(12 inbound trips and 12 outbound trips).

In order to accommodate the access to the turbine development area, it is assumed that forestry extraction will be required which will result in an additional 150 journeys.

The resulting traffic generation estimates have been plotted into the indicative construction programme to illustrate the peak journeys on the network. Table 10 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 10 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
Site Establishment & Remediation	HGV	60	40															60	40
General Site Deliveries	HGV	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Timber Extraction	HGV	50	50	50															
Aggregate Import	HGV		670	670	670	670	670	670	670	670									
Geogrid Deliveries	HGV		11	11															
Concrete Batching Deliveries	HGV							88	88	88	88								
Reinforcement Deliveries	HGV						10	10	10	10									
Cable & Ducting Deliveries	HGV									46									
Cabling Sand	HGV									103	103	103	103						
Substation & HV Deliveries	HGV										60	60	60	60					
Cranage Deliveries	HGV													10			10		
AIL Deliveries	HGV														57	57	57		
Battery Storage	HGV														12	12			
Commissioning & Reinstatement	Car & LGV															88	88	88	88
AIL Escorts	Car & LGV														45	45	45		
Staff	Car & LGV	440	440	880	880	880	880	880	880	880	880	880	880	880	880	880	880	440	440
Total HGV	HGV	150	811	771	710	710	719	807	807	956	291	203	203	110	109	109	107	100	80
Total Cars / LGV	Car & LGV	440	440	880	880	880	880	880	880	880	880	880	880	880	925	1,013	1,013	528	528
Total Movements		590	1,251	1,651	1,590	1,590	1,599	1,687	1,687	1,836	1,171	1,083	1,083	990	1,034	1,122	1,120	628	608
Total HGV per Day		7	37	35	32	32	33	37	37	44	13	9	9	5	5	5	5	5	4
Total Cars / LGV per Day		20	20	40	40	40	40	40	40	40	40	40	40	40	42	46	46	24	24
Total per Day		27	57	75	72	72	73	77	77	84	53	49	49	45	47	51	51	29	28

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

The peak of construction occurs in month nine with a total of 84 vehicle movements per day comprising 40 two-way Car / LGV movements and 44 two-way HGV movements.

This would equate to approximately seven two-way total vehicles movements or approximately three 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.

6.1.6 Distribution of Construction Trips

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

- All HGV construction traffic, including AIL delivery vehicles, will enter the Site via the access junction on the A85;
- Deliveries associated with stone materials for tracks and hardstandings are expected to be delivered from a quarry off the A828;
- Cement and water deliveries associated with the batching of concrete on Site will arrive from the northwest via the A828. Sand and aggregate materials will be sourced from a local quarry. As a worst-case assessment, it is assumed that all material will be sourced from a concrete plant to the northwest of the Site via the A828 and access the Site from the A85. The Balance of Plant (BoP) contractor will confirm final quarry and material sourcing with ABC in the Construction Traffic Management Plan (CTMP);
- HGV deliveries associated with the substation electrical installation, control buildings, batteries, inverters, etc. will arrive from the east along the A85;
- Staff working at the Site are likely to be based locally. It is assumed that 70% of staff will arrive from Oban, 10% from locations along the A828, and 20% from the east via the A85; and
- General Site deliveries will arrive from the east via the A85 to the Site. These are generally smaller rigid HGV vehicles.

For the purposes of preparing EIA Report **Chapter 12** and this TA, it has been assumed that all AIL relating to the turbine components would be delivered from the proposed POE at Corpach Harbour. The port has been previously used for turbine imports in the past, including tower and nacelle deliveries for Stronelairg Wind Farm.

The AIL access route from Corpach Harbour to the Site, is as follows:

- Loads would exit Corpach Harbour and proceed east on the A830;
- Loads would exit the A830 to join the A82 southbound;
- At Tyndrum, loads would exit the A82 to join the A85 westbound; and
- Loads would then proceed along the A85, where they would turn left into the proposed Site access junction.

The proposed AIL access route is illustrated in Figure 9 and has been considered, within the AIL RSR, provided in **Annex C**.

Figure 9 Proposed AIL Access Route

6.1.7 Peak Construction Traffic

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 11.

Table 11 Peak Daily Construction Traffic

Site ID	Survey Location	Cars & LGVs	HGVs	Total
1	A828, between Ledaig and Connel	4	42	46
2	A85, between Oban and the Site access	32	42	74
3	A85, between Taynuilt and the Site access	8	2	10

Please note minor variances due to rounding may occur

6.2 Operational Phase

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

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

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

The peak month (month nine) traffic data was combined with the future year (2030) traffic data to allow a comparison between the baseline results to be made. The increase in traffic volumes is illustrated in percentage increases for each class of vehicle. This is illustrated in Table 12.

Table 12 Peak Daily Construction Network Impact

Site ID	Survey Location	Cars & LGVs	HGVs	Total	Cars / LGVs % Increase	HGV % Increase	Total % Increase
1	A828, between Ledaig and Connel	5,991	605	6,596	0.07%	7.39%	0.70%
2	A85, between Oban and the Site access	8,232	314	8,545	0.39%	15.29%	0.87%
3	A85, between Taynuilt and the Site access	1,874	553	2,429	0.43%	0.33%	0.41%

Please note minor variances may occur due to rounding

The total traffic movements are not predicted to increase by more than 0.87% on all of the Study Area roads.

Table 12 shows that highest HGV traffic movements increase will occur on the A85 between Oban and the proposed Site access junction, where it is estimated to increase by 15.29%.

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 B738 has been split into two distinct sections for the capacity assessment, to take account of the change in character of the road, primarily the reduction in width. The results are summarised in Table 13.

Table 13 Peak Traffic Flow Capacity Review

Site ID	Survey Location	2030 Baseline Traffic	2030 Baseline + Development Flows	Theoretical Capacity	Spare Road Capacity %
1	A828, between Ledaig and Connel	6,550	6,596	19,200	66%
2	A85, between Oban and the Site access	8,472	8,545	21,600	60%
3	A85, between Taynuilt and the Site access	2,419	2,429	21,600	89%

Please note minor variances may occur due to rounding

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 to accommodate construction phase traffic.

The location with the greatest increase in traffic, as a result of construction traffic associated with the Proposed Development is the A85 west of the Site access. This road section still shows a high level of spare road capacity available after the addition of construction traffic.

8 Proposed Traffic Mitigation Measures

8.1 Construction Traffic

8.1.1 Construction Traffic Management Plan (CTMP)

The following measures will be implemented through a CTMP during the construction phase. The CTMP will be agreed with ABC and TS prior to construction works commencing:

- Where possible, the detailed design process will minimise the volume of material to be imported to the Site to help reduce HGV numbers;
- A Site worker transport and travel arrangement plan, including transport modes to and from the worksite (including pick up and drop off times);
- All materials delivery lorries (dry materials) will be sheeted to reduce dust and stop spillage on public roads;
- Specific training and disciplinary measures will be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- Wheel cleaning facilities may be established at the Site entrance, depending on the views of ABC and TS;
- Normal Site working hours will be limited to between 0700 and 1900 (Monday to Friday) and 0700 and 1300 (Saturday) with the exception of any emergency working or turbine deliveries. During the installation phase, there may be the requirement for extended working as some critical elements of installation cannot be stopped once started, such as concrete pouring. Activities outside of normal working hours, such as component delivery and turbine erection, would be discussed and agreed with ABC and TS;
- Appropriate traffic management measures will be put in place on the A828 and on the A85 in the vicinity of the Site access junction to avoid conflict with general traffic, subject to the agreement of the roads authority. 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 and or a newsletter to be distributed to residents within an agreed distance of the Site.
- All drivers will be required to attend an induction to include:
    - A tool box talk safety briefing;
    - The need for appropriate care and speed control;
    - A briefing on driver speed reduction agreements (to slow Site traffic at sensitive locations through the villages); and
    - Identification of the required access routes and the controls to ensure no departure from these routes.

TS may request that an agreement to cover the cost of abnormal wear and tear on its road 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 state of the road prior to any construction work commencing. This baseline will inform any change in the road condition during the construction stage of the Proposed Development. Any necessary repairs will be coordinated with the Roads Authority. 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.

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

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

8.2 Abnormal Load Traffic

8.2.1 Abnormal Load Management Plan

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

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

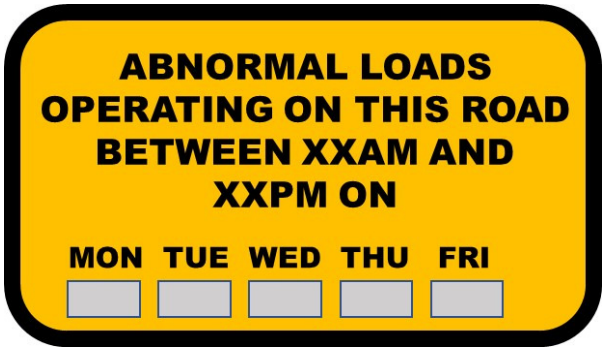
The majority of potential conflicts between construction traffic and other road users will occur with abnormal load traffic. General construction traffic is not likely to come into conflict with other road users as the vehicles are smaller and road users are generally more accustomed to them.

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

- On sections of single carriageway road or narrow road sections, for example on the A82 and A85;
- 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.

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 10. Flip up panels (shown in grey) will be used to mask over days when convoys would not be operating. When no convoys are moving, the sign would be bagged over by the traffic management contractor.

Figure 10 Example Information Sign



This signage will assist in helping improve driver information and allow other road users to consider alternative routes or times for their journey (where such options exist). The location and number of signs will be agreed upon post consent and will form part of the wider Traffic Management Proposal for the project.

The Abnormal Load Transport Management Plan will also include:

- Procedures for liaising with the emergency services to ensure that police, fire, and ambulance vehicles are not impeded by the loads. This is normally undertaken by informing the emergency services of delivery times and dates, and agreeing communication protocols and lay over areas to allow overtaking;
- A diary of proposed delivery movements to liaise with the communities to avoid key dates;
- 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. This will provide a public interface with the applicant, the construction contractors, the local community, and if appropriate, the police. This committee will form a means of communicating and updating on forthcoming activities and dealing with any potential issues arising.

8.2.2 Public Information

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

Information will relate to expected vehicle movements from the PoE through to the Site access junction. This will assist residents in becoming aware of the convoy movements and may help reduce any potential conflicts.

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

8.2.3 Convoy System

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

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

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

8.3 Outdoor Access Management Plan (OAMP)

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

Users of the forest paths 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[17] compliant temporary road signage will be provided to assist at these crossings for the benefit of all users.

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.

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

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 on the interactions between HGV traffic and horses. Horses are normally nervous of large vehicles, particularly when they do not often meet them. Horses are flight animals and will run away in

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

panic if 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 horse and rider.

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

- Something approaching them, which is unfamiliar and intimidating;
- A large moving object, especially if it is noisy;
- Lack of space between the horse and the vehicle;
- The sound of air brakes; and
- Anxiety on the part of the rider.

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

- On seeing riders approaching, drivers must slow down and stop, minimising the sound of air brakes, if possible;
- If the horse still shows signs of nervousness while approaching the vehicle, the engine should be shut down (if it is safe to do so);
- The vehicle should not move off until the riders are well clear of the back of the HGV;
- If drivers wish 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

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

The A85 and Site access tracks will be well maintained and monitored during the operational life of the Proposed Development. Regular maintenance will be undertaken to keep the Site access track drainage systems fully operational and to ensure there are no run-off issues onto the public road network.

9 Summary and Conclusions

Pell Frischmann was commissioned by the Applicant (Voltalia) to undertake a Transport Assessment for the proposed Cruach Clenamacrie Wind Farm, which is located approximately 2km northeast of Kilmore within ABC administrative area, 7km east of the centre of Oban.

The Proposed Development will be accessed directly from the A85 to the north via a combination of both new and upgraded on-site access tracks. The 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.

It is expected that AIL deliveries will access the Site from PoE at Corpach Harbour via the A82 and A85, utilising proven AIL routes used during the construction of other wind farms in the area.

Existing traffic data from the DfT and TS was supplemented by new ATC surveys of the Study Area, with the data used to establish a base point for determining the impact during the construction phase. This was factored into future levels (2030) to help determine the impact of construction traffic on the local road network.

The construction traffic would result in a temporary increase in traffic flows on the road network surrounding the Proposed Development. The maximum traffic effect associated with the construction of the Proposed Development is predicted to occur in Month nine of the construction programme. During this month, an average of 44 HGV movements is predicted per day and it is estimated that there would be a further 40 car and LGV movements per day to transport construction workers to and from the Site.

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

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 ABC.

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..

Annex A: Indicative Junction Layout

NOTE:

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

KEY:

PROPOSED ACCESS TRACK AND JUNCTION

RED LINE BOUNDARY

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Client

Voltalia

Project

Cruach Clenamacrie

Drawing Title

Access Junction
General Arrangement

	Name	Date	Scale	1:200 @ A1
Designed	JS	07.11.2024	File	241106 Cruach Clenamacrie Access Junction
Checked	GB	07.11.2024	Drawing Status	DRAFT

Drawing No. SK01

Revision 1

NOTE:

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

KEY:

PROPOSED ACCESS TRACK AND JUNCTION

RED LINE BOUNDARY

4.5m x 160m Visibility Splay

4.5m x 215m Visibility Splay

Pell Frischmann
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Email: pfedinburgh@pellfrischmann.com
www.pellfrischmann.com

Client

Voltalia

Project

Cruach Clenamacrie

Drawing Title

Access Junction
Visibility Splays

	Name	Date	Scale
			1" = 1' @ A1
Designed	JS	07.11.2024	File: 241106 Cruach Clenamacrie Access Junction
Checked	GB	07.11.2024	Drawing Status: DRAFT

Drawing No.: SK02

Revision: 1

Superwing Carrier Blade Entry

Tower Entry

NOTE:

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KEY:

- PROPOSED ACCESS TRACK AND JUNCTION
- RED LINE BOUNDARY
- VEHICLE WHEELS
- VEHICLE BODY
- VEHICLE LOAD

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

Voltalia

Project

Cruach Clenamacrie

Drawing Title

Access Junction
Swept Path Analysis

	Name	Date	Scale	1:250 @ A1
Designed	JS	07.11.2024	File	241106 Cruach Clenamacrie Access Junction
Checked	GB	07.11.2024	Drawing Status	DRAFT

Drawing No. SK03

Revision 1

16.5m Artic

Large Tipper

NOTE:

1. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION FOR HIGHWAY WORKS AND THE TURBINE MANUFACTURERS STANDARDS AND ALL RELEVANT DRAWINGS WITHIN THE PROJECT DESIGN PACKAGE.
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KEY:

- PROPOSED ACCESS TRACK AND JUNCTION
- RED LINE BOUNDARY
- VEHICLE WHEELS
- VEHICLE BODY
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Client

Voltalia

Project

Cruach Clenamacrie

Drawing Title

Access Junction
Swept Path Analysis

	Name	Date	Scale	1:250 @ A1
Designed	JS	07.11.2024	File	241106 Cruach Clenamacrie Access Junction
Checked	GB	07.11.2024	Drawing Status	DRAFT

Drawing No. SK04

Revision 1

Annex B: Stage 1 Road Safety Audit

Pell Frischmann

Cruach Clenamacrie Wind Farm

Interim Road Safety Audit

November 2024

Report Ref.		**108172/IRSA/R01B**				
File Path		P:\Data\Road Safety Audits (Bham office)\2024\24-29 - IRSA Cruach Clemacrie\Report\108172-IRSA-R01B_Cruach Clenamacrie_FINAL.docx				
Rev	**Suit**	**Description**	**Date**	**Originator**	**Checker**	**Approver**
A		Final	06/11/2024	DS	SDB	SDB
B		Report title updated	07/11/2024	DS	SDB	SDB

Prepared for

Voltalia UK Limited

The Wheelhouse
Bond's Mill Estate
Stonehouse
GL10 3RF

Prepared by

Pell Frischmann

3rd Floor
Edmund House
12-22 Newhall Street
Birmingham
B3 3AS

Contents

Tables

Figures

Appendices

1 Project Details

Table 1: Project Details

Project Details	
Project Title:	Cruach Clenamacrie Wind Farm Interim Road Safety Audit
Date:	6th November 2024
Document and revision:	108172/IRSA/R01A
Prepared by:	Pell Frischmann
On behalf of:	Voltalia UK Limited

2 Introduction

Voltalia UK Limited have appointed Pell Frischmann to undertake an Interim Road Safety Audit of proposed highway alterations relating to site access arrangements for a Wind Turbine site. The extent of the Road Safety Audit is shown on **Figure 1** of this report.

The Road Safety Audit relates to proposed alterations to the A85, 7km east of Oban, Scotland. The alterations associated with this Road Safety Audit include kerb alterations to provide a site access for proposed Cruach Clenamacrie Wind Farm.

The Audit Team were appointed by Voltalia UK Limited, via Gordon Buchan of Pell Frischmann (Edinburgh office). The Interim Road Safety Audit has been requested to provide an early audit of potential road safety-related problems, in advance of a full preliminary design, which will require a full GG 119[1] compliant Stage 1 Road Safety Audit.

This Interim Road Safety Audit has been undertaken broadly in line with the requirements of GG 119, with the exception of approval of the Audit Team and Audit Brief by the Overseeing Organisation, or carrying out a site visit. The Audit Team meet the requirements of GG 119 and have experience of auditing comparable schemes.

The Audit Team was as follows, with details of the Audit Team's qualifications and experience provided at **Appendix A**:

- Steve Bibb, MCIHT, MSoRSA
  Associate, Pell Frischmann, Birmingham
  Certificate of Competency in Road Safety Audit gained in 2012

- Daniel Susans, MCIHT, MSoRSA, EngTech MICE
  Transport Planner, Pell Frischmann, Birmingham
  Certificate of Competency in Road Safety Audit gained in 2020

The Road Safety Audit team undertook the desktop audit on Monday 4th November 2024. For this Interim Road Safety Audit no site visit has been undertaken, but will be required as part of a Stage 1 Road Safety Audit.

The Road Safety Audit comprised an examination of the information, listed in **Appendix B**. No previous Road Safety Audits were provided to the Audit Team for review.

The Road Safety Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the design to any other criteria. All comments and recommendations are referenced to the drawings provided and the locations have been indicated on **Figure 2** of this report.

[1] Design Manual for Roads and Bridges, GG119 Road Safety Audit (Revision 2), January 2020

3 Items raised at this Interim Road Safety Audit

A1 Local Alignment

The Audit Team identified no Local Alignment related road safety problems at this Interim Road Safety Audit.

A2 General

The Audit Team identified no General related road safety problems at this Interim Road Safety Audit.

A2.1 Departures from Standards

The Audit Team have not been advised of any departures from standards.

A3 Junctions

A3.1 Visibility

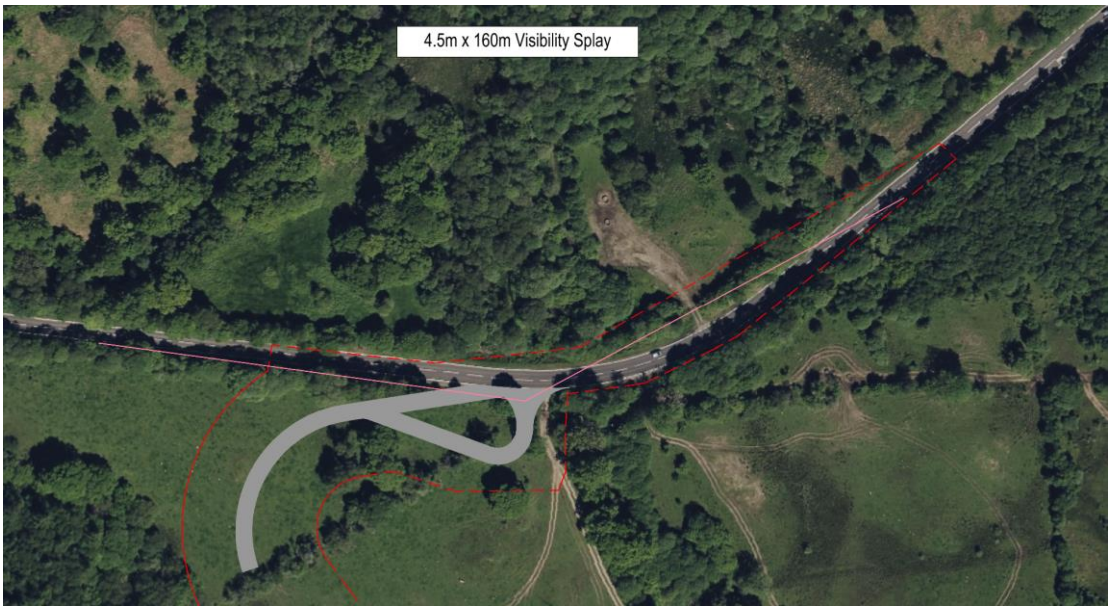
A3.1.1 Problem 1

Location: A85/ proposed access.

Summary: Lateral visibility and Stopping Sight Distance to access may be obscured by existing trees and vegetation, with potential to obscure visibility between approaching traffic and emerging vehicles, with potential for side swipe and shunt collisions.

Description: Visibility splay drawings show the lateral visibility from the proposed junction impeded by existing trees and vegetation. Subsequently, visibility between vehicles travelling on the A85 and those emerging from the proposed access may be obscured and may lead to egressing vehicles pulling into the path of approaching traffic, with potential for side swipe and shunt collisions.

Speed surveys provided in the Transport Assessment do not include A85 westbound approach to the site access, so suitability of lateral visibility splay cannot be determined.



A85: Visibility for proposed junction impeded by trees and vegetation

RECOMMENDATION

Undertake speed survey for A85 westbound approach to site access, demonstrating correspondent lateral visibility and Stopping Sight Distance in order to identify extent of trees/ vegetation to be removed in order to provide clear visibility. Where visibility requirements cannot be met, a reduced speed limit in the vicinity of the site access should be provided.

A3.2 Layout

A3.2.1 Problem 2

Location: A85/ proposed access.

Summary: Junction geometry may be unsuitable to accommodate required vehicle types, with potential for vehicle overrunning of opposing A85 lane or site access extents, with potential for head-on collisions with oncoming traffic or HGV toppling/ load spill for vehicles utilising the access.

Description: The Transport Assessment indicates that the proposed access will be utilised by HGVs (Heavy Goods Vehicles) and AILs (Abnormal Indivisible Loads). Swept path analysis for likely vehicle types have not been provided to demonstrate expected vehicle manoeuvres can be accommodated safely. Subsequently, larger vehicles may be required to overrun the opposing A85 lane, with potential for head-on collisions with oncoming traffic, or overrun the access with potential to topple vehicles due to level difference at access, which could also lead to load spilling onto the A85 and access.

RECOMMENDATION

Designer to provide swept path analysis for all likely vehicle types and manoeuvres associated with the proposed access. Where required, access geometry should be revised to safely accommodate likely vehicle movements.

A4 Walking, Cycling and Horse Riding

The Audit Team identified no Walking, Cycling and Horse Riding related road safety problems at this Interim Road Safety Audit.

A5 Traffic Signs, Carriageway Markings and Lighting

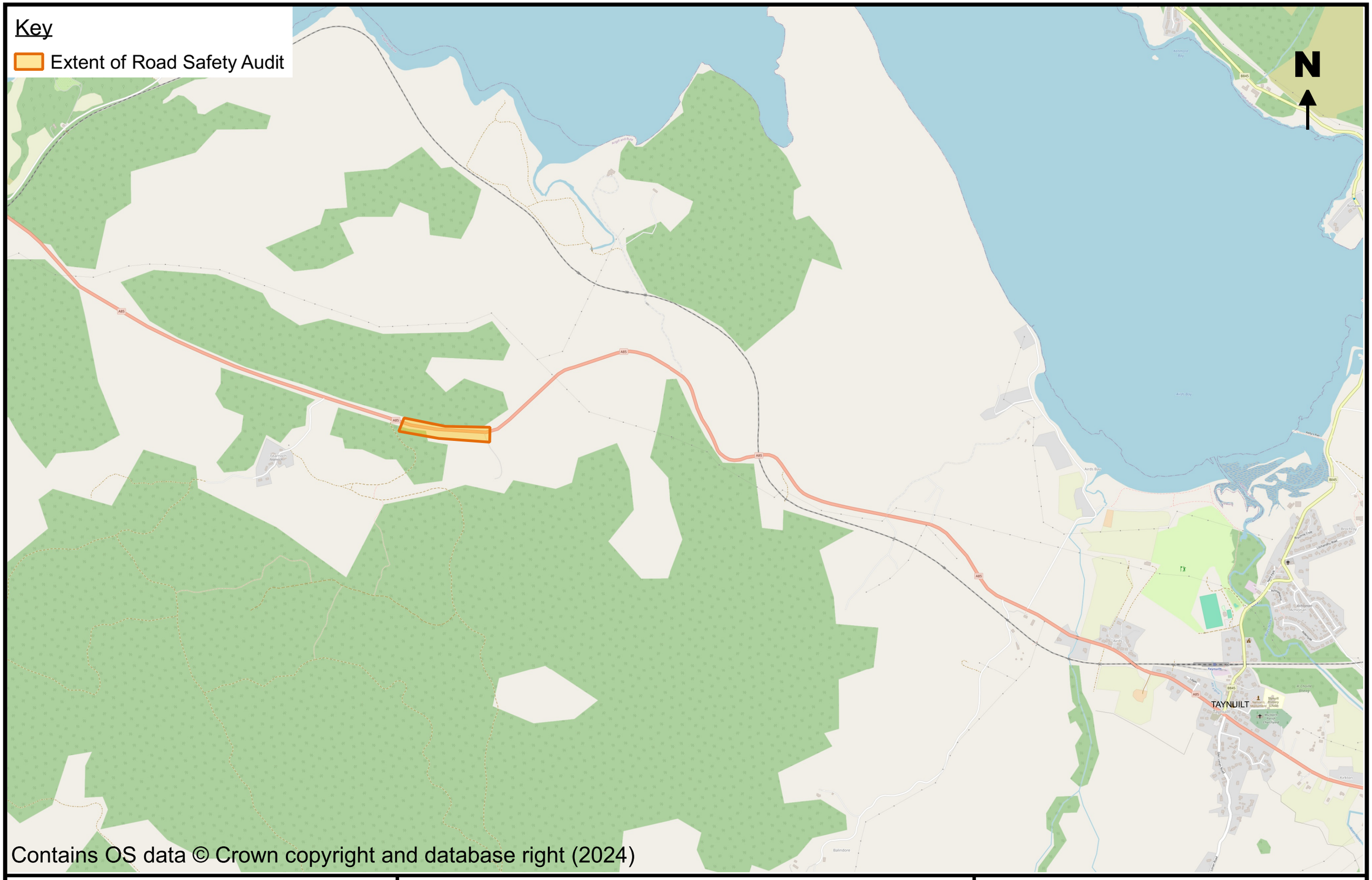
The Audit Team identified no Traffic Signs, Carriageway Markings and Lighting related road safety problems at this Interim Road Safety Audit.

4 Audit Team Statement

Table 2: Audit Team Statement

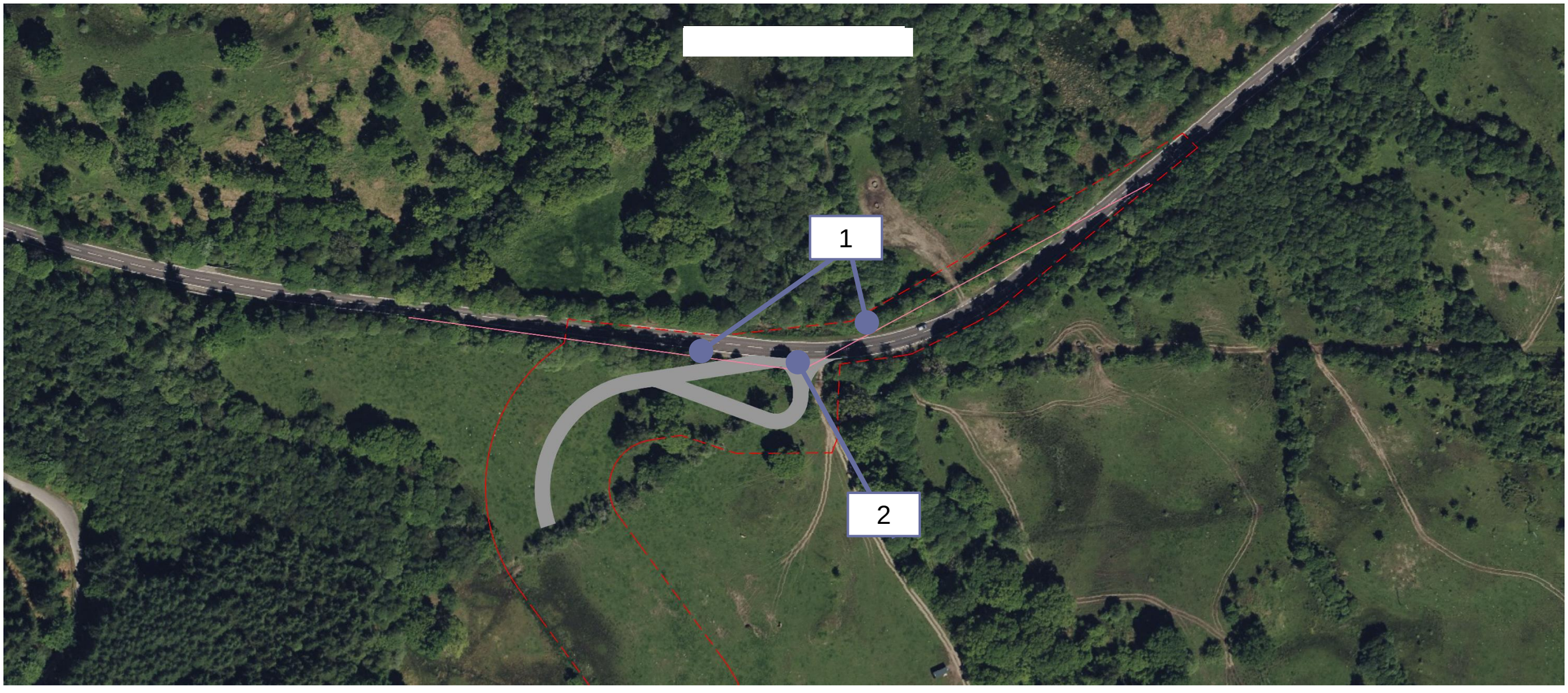
We certify that this road safety audit has been carried out in accordance with GG 119, with the exception of prior agreement of the Audit Team and provision of an Audit Brief.	
Road Safety Audit Team Leader	
Name:	Steve Bibb, MCIHT, MSoRSA
Signed:	
Position:	Associate
Organisation:	Pell Frischmann
Date:	7th November 2024
Road Safety Audit Team Member	
Name:	Daniel Susans, MCIHT, MSoRSA, EngTech MICE
Signed:	
Position:	Transport Planner
Organisation:	Pell Frischmann
Date:	4th November 2024

Figures



Cruach Clemacrie Wind Farm Interim Road Safety Audit	**Figure 1** Site Location Plan	Pell Frischmann

N



Cruach Clemacrie Wind Farm
Interim Road Safety Audit

Figure 2
Problem Location Plan

Pell Frischmann

Appendix A Audit Team Experience

Steve Bibb

Associate Transport Planner

Years' Experience: 20+

Qualifications:
HNC Civil Engineering Studies, University of Wolverhampton, 2000
RoSPA Accident Investigation & Prevention (10 days), 2006
Highways England Approved Certificate of Competency, 2012

Memberships & Accreditations:
CIHT Member
SoRSA Member

Recent Continuing Professional Development

- Structured Reading: LTN 1/24 Bus User Priority, June 2024 (1.5 hours)
- CIHT Road Safety Insights: A Journey Through the STATS19 Update, May 2024 (1 hour)
- CIHT Disadvantage Caused by Temporary Design, April 2024 (1 hour)
- Structured Reading: Wrong Way Driving: Mitigation Toolkit, National Highways, April 2024 (1 hour)
- CIHT Inclusive Active Travel, with Insights on Neurodiversity, April 2024 (1 hour)
- Structured Reading: Pedestrian Slips, Trips and Falls, Living Streets, January 2024 (1.5 hours)
- CIHT Understanding Disability, December 2023 (1.5 hours)
- Structured Reading: Guide to Designing for Motorcyclists, National Highways, April 2023 (1 hour)
- CIHT Masterclass, Road Safety, November 2023 (1 hour)
- Active Travel – Links, crossings and minor junctions seminar, West Midlands Combined Authority, October 2023 (2 hours)
- CIHT Masterclass, Sustainable Transport, July 2023 (1 hour)

* Signed CPD Records for structured reading and webinars available upon request

Summary of Road Safety Audit Experience

Steve has eighteen years' road safety related experience spanning the areas of collision investigation and remedial engineering, in addition to some safety experience prior to this working in the public sector delivering capital works projects, design of Tamworth Town Centre Pedestrianisation, involvement with Safer Routes to School projects and implementation of signage schemes on safety camera routes identified by Staffordshire's Safety Camera Partnership.

Since joining the private sector, Steve has been involved with numerous local safety schemes, including Local Safety Schemes in Wolverhampton, and Road Safety Appraisal studies for a range of major projects, including Hinkley Point C advance works and A38 Trerulefoot to Carkeel Safety Package.

Steve has been undertaking Road Safety Audits across a range of scheme types and has subsequently taken part in over 350 Audits at Stages 1, 2 and 3 primarily in the United Kingdom, but also in Saudi Arabia. Audit experience ranges from small local authority highway schemes, residential developments, Mini Holland cycle schemes in Transport for London format and major infrastructure schemes for National Highways.

Steve joined Pell Frischmann in September 2017 and continues to lead the delivery of Road Safety Audits.

Recent Road Safety Audit Experience

Since 2010 Steve has undertaken Road Safety Audits as an Audit Team Member and Leader in accordance with the requirements of HD 19/15 and GG 119 subsequently. Steve has undertaken numerous Road Safety Audits in the last two years. A selection of these Audits, in addition to Strategic Road Network-related audits, are shown below. These audits have been carried out in accordance with the requirements of GG 119.

Strategic Road Network and Equivalent

Date	Audit Stage	Audit Team Role	Details
March 2024 March & Dec '23 June 2020	3 3 (Interim) 2	Team Leader	**M6 Junction 10, Walsall** – Reconfiguration of roundabout including two new four-lane bridges, signal control, additional NMU facilities and upgrades to other nearby junctions
December 2023	1	Team Leader	**A4, Necton –** Temporary access to proposed Green Grid Park adjoining substation next to existing A47
April 2023 April 2021 June 2019	3 2 1	Team Leader	**Etruria Valley Link Road, Stoke-on-Trent** – Reconfiguration of A500 slip roads and Wolstanton dumbbell roundabouts, at interface with new adjoining link road, in addition to pedestrian provision along A500 trunk road.
February 2022 October 2021	3 3 (Interim)	Team Leader	**A69/ A6079 Bridge End Roundabout, Hexham** – Proposal to convert the junction to grade separated, with main A69 passing beneath the existing roundabout and existing entry/exit lanes converted to on/off slip lanes.
October 2020	1/ 2	Team Leader	**M6 Junction 12, Reading** - introduction of maintenance bays in order to service signal equipment on roundabout gyratory.
July 2016	1	Team Member	**Eaton Leys, Milton Keynes** - alterations to A5/ A4146 Kelly's Kitchen roundabout to provide additional capacity in the form of lane widening and 'through traffic' lanes across the central island of the roundabout. Development access will be gained from new traffic signal-controlled junction on the A4146.
May 2014 to December 2015	1, 1 / 2 and 2	Team Leader	**Jeddah Infrastructure Projects, Saudi Arabia** – Audit of Conceptual Design options to HD 19/03 standard for upgrade of two strategic intersections at King Abdul Aziz Road, 4.7km route improvements at Tahliya Street, improvements to the intersection of King Abdullah Aziz Square and it's approaches and 20 pedestrian footbridges situated across the city of Jeddah.

All Other Roads

Date	Audit Stage	Audit Team Role	Details
July 2024	1	Team Leader	**Market Place, Cleethorpes** – Levelling up scheme to convert existing car park and carriageway to pedestrianised public square.
July 2024	1	Team Member	**Liverpool Road, Kingsfold and Middleforth, Penwortham –** Three separate schemes comprising a range of public realm enhancements and active travel measures on behalf of South Ribble Borough Council
February 2024	3	Team Leader	**The Spot Phase 2 (TCF):** St Peters Street, Babington Lane & Gower Street – Derby town centre public realm scheme, including active travel road space reallocation, pedestrian crossing and parking reconfiguration.
February 2024	1/ 2	Team Leader	**Cross City Bus Package 5: Washwood Heath Road –** Providing of bus lanes on route in and out of Birmingham city centre, including parking, waiting and loading restrictions, bus signal priority and pedestrian crossing alterations.
November 2023	3	Team Leader	**1000 Trades, Frederick Street, Birmingham** - New Parklet including new seating area and bollards
August 2023	3	Team Leader	**Birmingham Eastside Extension Section 1** - Highway alterations relating to the Section 1 proposals as part of the BEE (Birmingham Eastside Extension) tram route.
June 2023 November 2022	3 Interim Stage 3	Team Leader	**Wolverhampton City Centre Extension** – Metro extension along Pipers Row to Wolverhampton Railway Station.
June 2023	1/ 2	Team Leader	**Church Road S106, Birmingham** – Proposals relating to Section 106 highway alterations, including convert existing zebra crossing to signal control and signage and lining alterations at Church Road/ Stoney Lane/ Hob Moor Lane gyratory
May 2023	1	Team Member	**Robin Hood Intermediate Option, Hall Green, Birmingham** - Alterations to further signalise Robin Hood Island, including additional traffic signalling, upgraded pedestrian crossing points, formalised parking arrangements, central island redesign, gateway features, paving upgrade, cycle connections and street

Date	Audit Stage	Audit Team Role	Details
			Planting.
April 2023	3	Team Leader	**Newport Lane, Stoke-on-Trent** – Audit of priority junction accesses (s278) to new residential development and audit of internal residential roads (s38).
January 2023	1	Team Leader	**Birmingham Eastside Metro Extension, Digbeth High Street Cycle Jug Handle** – Proposed design alteration to incorporate improved LTN 1/20 compliant cycle facilities on Digbeth High St.
October 2022	3	Team Leader	**Pershore Road, Edgbaston, Birmingham** - Highway alterations to accommodate a new segregated cycle route. The scheme forms a connection between the existing segregated cycle route on the A38 Bristol Road and National Cycle Route 5 at Canon Hill Park.
July 2022	3 (Stg 2 Aug '21)	Team Leader	**Parry Lane, Bradford** – Introduction of signal controlled junction at Sticker Lane, Broad Lane with new 250 metre link road connecting to existing Parry Lane.
May 2022	3	Team Leader	**Edgbaston Metro Extension, Birmingham** – 2km tram extension along Broad Street from Centenary Square to Five Ways (Hagley Road), involving alteration to existing highway configuration, introduction of signal controlled junctions and crossings.
March 2022	1	Team Leader	**Morledge to Rail Station, Derby** - Proposed shared use footway/ cycleway between existing Lara Croft Way and Morledge bus station. Bus priority also provided at Morledge junctions with the bus station and A601 Traffic Street.
February 2022	Interim Stage 1	Team Leader	**New Deal for the Bus: Cape Hill/Windmill Ln/Waterloo Rd/Shireland** - Concept design of proposed highway alterations to A4092 Cape Hill/ A4092 Waterloo Road/ B4125 High Street/ B4136 Windmill Lane/ B4125 Shireland Road, including reconfiguration of lane approaches to signal-controlled crossings, their pedestrian crossings and converting A4136 Windmill Lane junction to a priority junction.
February 2022	3	Team Leader	**Snow Hill Public Realm Project 1.1** - Colmore Row (east) and Livery Street - Audit of public realm areas in vicinity of Snow Hill Station, including widened footways, carriageway narrowing, traffic priority alterations and provision of a new bus lay-by

Collision Investigation and Safety Engineering/ Road Design Experience

Date	Context of Study	Details
March 2023	Design Options Appraisal	A4540 Ring Road Birmingham, Birmingham City Council – Review of five years collision data on eastern section of Ring Road (Dartmouth Circus to Haden Circus) to determine baseline safety conditions and collision patterns, particularly for pedestrians and cyclists where the route creates severance. Data will inform Options Appraisal (underway) relating to three design packages to improve reliability and safety, whilst reducing severance for buses and NMUs crossing the route.
February 2021	Safety Appraisal	A38 Carkeel to Trerulefoot Safety Package, Highways England – Collision data (five year) and traffic flows for six mile section of A38 in Cornwall were analysed to determine the baseline safety conditions through link analysis (KSI, Severity Ratio and Accident Rate) and clusters. Collision patterns and causation were reviewed and a potential mitigation measures were identified and used to inform potential design options.
Sep 2017	Transport Assessment	Midland Metro, East Birmingham to Solihull Extension – Analysis and Review of Collisions along proposed 17.5km EBS Route between Digbeth, Birmingham and Birmingham International/ Birmingham Airport, Solihull
February 2014	Transport Statement	Walney Extension Offshore Wind Farm – Prepared Transport Statement associated with construction movements for onshore cabling and movements of materials. The TS considered impacts at the potential construction ports of Barrow, Heysham and Fleetwood. This included high level collision analysis of routes to each port, identifying a total of 919 collisions and 30 cluster sites. Further analysis would be required to determine suitable mitigations once the construction port had been selected.
April 2011	Environmental Statement	Hinkley Point C Preliminary Works, Somerset – Preparation of safety section for ES Transport chapter assessing impacts of Hinkley Point C Preliminary Works, including preparatory earthworks and construction of a temporary jetty to support main construction works. Investigation of 379 collisions on approach routes including strategic routes such as the M5, A38 & A39 to determine baseline safety conditions, relationships to national averages and accident rate to determine predicted collision numbers using future year traffic flows. Mitigation measures identified included funding for road safety monitoring and delivery of road safety schemes by Somerset County Council in accordance with their requirements.

Daniel Susans

Transport Planner

Years' Experience: 7

Qualifications:
RoSPA Road Safety Engineering (Modular) (10 days), 2019
Level 3 BTEC Diploma Civil Engineering & Built Environment, 2017-2019
NH approved Certificate of Competency, 2020
BSc (Hons) Civil Engineering, 2021-2024

Memberships & Accreditations:
ICE Member and EngTech
CIHT Member
SoRSA Member

Recent Continuing Professional Development

Transport Decarbonisation – Introduction, CIHT (1 hour), November 2023
Highway Infrastructure Asset Management, CIHT (1 hour), November 2023
Accident Causations and Evaluation of Road Safety Measures, CIHT (1 hour), March 2024
ATE Engagement Webinar: Spotlight on Bus Stop Bypasses, DfT (1 hour), May 2024
Road Safety Insights: A Journey Through the STATS19 Update, CIHT (1 hour), May 2024
Survey Types and Emerging Technologies Lunch and Learn, Tracsis (1 hour), May 2024
Designing Highways and Transport for People with Dementia, CIHT (2 hours), June 2024
Structured Reading: CD123 Geometric design of at-grade priority and signal-controlled junctions, National Highways (1 hour), June 2024
Road Safety & Personal Security Webinar, CIHT (1 hour), July 2024
Seminar: Pod Point and EV Chargers (1 hour) September 2024
Seminar: Asphalt Ravelling Mitigation with Cellular Materials (CIHT) (1 hour) October 2024
* Signed CPD Records for structured reading and webinars available upon request

Summary of Road Safety Audit Experience

Dan joined Pell Frischmann's Traffic and Transportation team in September 2017 as an Apprentice Engineer. He has since been involved in a range of transport planning and traffic and road safety engineering projects for public sector clients and private developers.

In his time with Pell Frischmann, Dan has developed his competency in development of preliminary highway design associated with transport planning projects and is conversant with overarching design standards including, Manual for Streets, Design Manual for Roads and Bridges and Traffic Signs Manuals.

Dan has been undertaking Road Safety Audits since 2018 and has undertaken audits at multiple stages in relation to both the Strategic Road Network and the wider highway network. Dan has also been undertaking multiple Road Safety Audits of various tram schemes during his time at Pell Frischmann.

Dan is a competent user of AutoCAD, AutoDesk Vehicle Tracking and SignPlot. Dan also has experience in modelling tools, including Junctions 9 and LinSig. He has also presented a range of geographical based data using GIS software and has carried out data analysis using Excel.

Recent Road Safety Audit Experience

Dan is a Road Safety Audit Team Member in accordance with GG 119, having gained experience of highways design, appropriate design standards and completing the RoSPA Road Safety Engineering course in 2019. Dan achieved his National Highways approved Certificate of Competency in 2020, allowing him to undertake Audits on the Strategic Road Network.

Since 2019 Dan has undertaken Road Safety Audits as an Audit Team Member and Leader in accordance with the requirements GG 119. Dan has undertaken numerous Road Safety Audits in the last two years. A selection of these Audits, in addition to Strategic Road Network-related audits, are shown below.

Strategic Road Network and Equivalent

Date	Audit Stage	Audit Team Role	Details
December 2023 March 2023	3 3 (Interim)	Team Member	**M6 Junction 10** - The proposed scheme provides two new, curved four-lane bridges replacing the existing two-lane M6 overbridges to the north and south of the roundabout. Provision to accommodate a 5th M6 lane in the future, widening to four quadrants of the junction. Widening of Black Country Route, improvement to A454 Wolverhampton Road/ Bloxwich Lane junction and improved drainage and gantry signage.
April 2023	3	Team Member	**Etruria Valley Link Road, Stoke-on-Trent** - Highway alterations at the A527 Wolstanton dumbbell roundabouts, the adjoining A500 slip roads and new road providing a link between the A500 at Wolstanton and Festival Way.
October 2021 and February 2022	3 (Interim) & 3	Team Member	**A69/ A6079 Bridge End Roundabout, Hexham** – Proposal to convert the junction to grade separated, with the main A69 passing beneath the existing roundabout and existing entry/exit lanes converted to on/off slip lanes.
April 2021	2	Team Member	**Etruria Valley Link Road, Stoke-on-Trent** – Reconfiguration of A500 slip roads and Wolstanton Roundabouts, at interface with new adjoining link road, in addition to pedestrian provision along A500 trunk road.
January 2021	1/ 2	Team Member	**M40 Junctions 7, 9 and 10** – Proposed vehicle restraint systems and amendments to signage on junction slip roads.
October 2020	1/ 2	Team Member	**M4 Junction 12 Maintenance Bays, Reading** – Proposed maintenance bays associated with traffic signal upgrade scheme for Highways England.
June 2020	2 (Interim)	Team Member	**M6 Junction 10, Walsall** – Reconfiguration of roundabout including two new four-lane bridges, signal control, additional NMU facilities and upgrades to other nearby junctions.
November 2019	1/ 2	Team Member	**M27 Junction 7 Maintenance Bays, Hedge End** – Proposed maintenance bays associated with traffic signal upgrade scheme for Highways England.

All Other Roads

Date	Audit Stage	Audit Team Role	Details
August 2024	1	Team Leader	**Cross City Bus Package 4 -** Alterations to Cross City Bus Package 4 corridor between Longbridge and Castle Vale. The scope of the project consists of a series of general highway alterations related measures which aim to improve bus priority across the Birmingham conurbation.
July 2024	1	Team Member	**Cleethorpes Levelling Up Fund -** Conversion of an existing car park and carriageway into a pedestrianised public square, that will also serve as a marketplace on certain days.
July 2024	3	Team Leader	**Church Lane, Stoke-on-Trent -** New mini roundabout at the junction of Church Lane/ Grange Lane, Stoke-on-Trent. The scheme also provides two new toucan crossings, one on Church Lane (southern arm) and one on Grange Lane.
February 2024	2, 3	Team Leader	**Lozells Places for People -** Alterations to an implemented scheme, with amendments including alterations to one-way streets, contraflow cycling measures and the removal of bollards.
November 2023	3	Team Member	**1000 Trades, Frederick Street, Birmingham** - New Parklet including new seating area and bollards.
August 2023	3	Team Member	**Birmingham Eastside Extension Section 1** - Highway alterations relating to the Section 1 proposals as part of the BEE (Birmingham Eastside Extension) tram route.
June 2023	3	Team Member	**Wolverhampton City Centre Extension** - Highway alterations of constructed highway works associated with the Wolverhampton City Centre Extension (WCCE) of the Midland Metro tram route, from Wolverhampton railway station to Bilston Street**.**
June 2023	1, 2	Team Leader	**TCF Derby Road, Derby** - Proposed pedestrian/ cycle facility improvements along Derby Road which connects proposed Nottingham Road cycle scheme in the north-west, to Spondon Roundabout in the south-east.
June 2023	1/ 2	Team Member	**The Victoria & Albert Public Realm Scheme, Derby** - Proposed highway alterations relating to public realm improvements on Corporation Street, Albert Street and Victoria Street, Derby.

May 2023	1	Team Leader	**Hall Green, Birmingham** - Proposed alterations to the further signalisation of Robin Hood Island. The works include additional traffic signalling, upgraded pedestrian crossing points, formalised parking arrangements, central island redesign, gateway features, paving upgrade, cycle connections, and street planting.
February 2023	1	Team Leader	**A45 to Acorn Way, Derby** - Proposed highway alterations to improve cycling/ pedestrian facility improvements, relating to corridor improvements on Derby Road from Spondon Roundabout to Raynesway.
October 2022	1	Team Leader	**Corridor Improvements, Chaddesden: Park Road to Raynesway (Nottingham Road), Derby** – Pedestrian and cycle infrastructure improvement scheme, including segregated and shared-use facilities.
September 2022	2	Team Leader	**Etruria Valley Link Road Spitfire, Stoke-on-Trent –** Spitfire statue within scheme's internal roundabout and associated trief kerbing.
September 2022	2	Team Leader	**Monmouth Drive, Sutton Coldfield –** Safety scheme providing trief kerbing, guard railing and uncontrolled pedestrian crossings.
March 2022	1, 1/ 2, 2 & 3	Team Member	**Portsmouth PFI** – Resurfacing schemes and zebra crossing in ground illumination.
March 2022	1	Team Member	**Public Realm, Derby** - Proposed public realm on Victoria Street, Albert Street and Corporation Street. Provision of contraflow cycle lane with one-way westbound on Victoria Street.
February 2022	3	Team Member	**Snow Hill Public Realm Project 1.1** - Colmore Row (east) and Livery Street - Audit of public realm areas in vicinity of Snow Hill Station, including widened footways, carriageway narrowing, traffic priority alterations and provision of a new bus lay-by.

Collision Investigation and Safety Engineering/ Road Design Experience

Date	Context of Study	Details
August 2023	Local Safety Scheme Review	**Heybarnes Road Local Safety Scheme** – 19 collisions along a 0.65 mile stretch of carriageway on the outskirts of Birmingham City Council. Three key areas requiring mitigation were identified, two locations of fatalities and one cluster of collisions at the junction with Coventry Road. Dan undertook the collision analysis and is overseeing the delivery of the scheme.
May 2023	Local Safety Scheme Review	**Washwood Heath Road Local Safety Scheme** – 67 collisions along a 0.8 mile stretch of carriageway on the outskirts of Birmingham City Centre. The collision analysis was split into three sections, based on nature of the road space. Dan undertook the collision analysis and is overseeing the delivery of the scheme.
November 2022	Local Safety Scheme Review	**Coventry Road Local Safety Scheme** – 57 collisions along a 1.65 mile stretch of carriageway on the outskirts of Birmingham City Centre. Four clusters of collisions were identified, one of nine collisions, one of four collisions, one of 18 collisions and one of eleven collisions. Dan wrote the technical note following the collision analysis summarising the findings and proposals to reduce the collision numbers.
August 2022	Local Safety Scheme Review	**Rednal Road Local Safety Scheme** – Sixteen collisions along a 2.14km stretch of carriageway over a three year period. Two clusters of collisions were identified, one of five collisions and one of four collisions. Although, two cluster of collisions were identified, there was no pattern of collisions and therefore no safety scheme was proposed.
December 2021	Safety Measures in Designs	**Kings Heath LTN Wider Impacts Study** – A transport study of Kings Heath and the surrounding area to consider current and historic network performance, and the impacts of the Places for People scheme, with a view to identifying further interventions that would contribute singly or cumulatively to improving and managing the flow of traffic through Kings Heath.
August 2021	Access Strategy	**Southside Access Strategy** – Measures to provide a safer and pedestrians and cyclists, particularly through pedestrian zones, raised junctions/ crossings, wheelchair friendly paving and parking alterations to promote sustainable modes of transport.
February 2021	Pedestrian Safety Measure	**A New Deal for The Bus Package 3** – The project was looking at design and appraisal of six-cross city bus packages in Birmingham, Sandwell and Dudley, to improve reliability and journey times. This element looked at a pedestrian crossing raised by the council as a safety risk given its close proximity to a roundabout.
January 2021	Safety Appraisal Report for National Highways	**A38 Carkeel to Trerulefoot Safety Package** – Study seeking to introduce improvements to the A38 in Cornwall, between Trerulefoot and Carkeel to improve safety conditions in response to a relatively high number of KSI collisions. Collision cluster identification was undertaken to scope potential mitigation measures along the route.
December 2019 to August 2021	Bus Corridor Improvements	**New Deal for the Bus** – A Transport for West Midlands project looking at design and appraisal of six cross-city bus packages in Birmingham, to improve reliability and journey times. Dan has supported the development of measures at preliminary and detailed design, which include bus lanes, bus gates, traffic signal bus priority, parking management and other traffic restrictions.

Appendix B Incoming Audit Information

Document/ Drawing No.	Rev	Title/ Description	Scale	Date
-	1.1	240915 Cruach Clenamacrie Transport Assessment	-	8/10/24
SK01	1	Access Junction General Arrangement	1:200 @ A1	29.10.24
SK02	1	Access Junction General Arrangement	1" = 1' @ A1	29.10.24
SK03	1	Access Junction Swept Path Analysis	1:250 @ A1	29.10.24

Interim road safety audit: Designer Response

Project Summary

Date:	06/11/2024
Prepared by:	Pell Frischmann
Project:	Cruach Clenamacrie Wind Farm
Report title:	Interim Stage 1 RSA
PREPARED BY:	
Name:	Gordon Buchan

Introduction

The designer response supplements the report results from an Interim Stage 1 Road Safety Audit carried out by Pell Frischmann on the proposed A85 site access junction for the propsoed Cruach Clenamacrie Wind Farm.

The designer response was produced by Pell Frischmann Consultants Limited, the designers of the proposed road scheme.

Road safety audit log

RSA Issue	RSA Recommendation	Designer Response
A3.1.1	Undertake speed survey for A85 westbound approach to site access, demonstrating correspondent lateral visibility and Stopping Sight Distance in order to identify extent of trees/ vegetation to be removed in order to provide clear visibility. Where visibility requirements cannot be met, a reduced speed limit in the vicinity of the site access should be provided.	The Applicant has control of the area required for the 160 and 215m visibility splay and has confirmed that works to clear this area form part of the planning submission. No speed reduction to accommodate visibility is proposed.
A3.2.1	Designer to provide swept path analysis for all likely vehicle types and manoeuvres associated with the proposed access. Where required, access geometry should be revised to safely accommodate likely vehicle movements.	Swept path drawings for the likely vehicles used during construction have been undertaken and is included in the junction drawing pack. Minor adjustments to geometry have been made.

Summary

A series of further RSA will be undertaken should the access proposals progress through the planning stage. The design will be amended to accord with the results of the RSA.

Annex C: Route Survey Report