Pell Frischmann

Bloch Wind Farm

Technical Appendix 10.1: Transport Assessment

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1 Introduction

1.1 Purpose of the Report

Pell Frischmann (PF) has been commissioned by RES Ltd to undertake a Transport Assessment (TA) for the proposed Bloch Wind Farm (the proposed development), to the south-west of Langholm in Dumfries and Galloway.

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.

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 within this assessment;
- Chapter Five describes the baseline transport conditions;
- Chapter Six describes the trip generation and distribution of traffic in the study area;
- Chapter Seven summarises the traffic impact assessment;
- Chapter Eight considers mitigation proposals for development related traffic within the study area; 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 on elevated open moorland, approximately 5.5km south-west of Langholm in the Southern Uplands. The location of the proposed development is wholly within Dumfries and Galloway Council (DGC) and is shown in Figure 1.

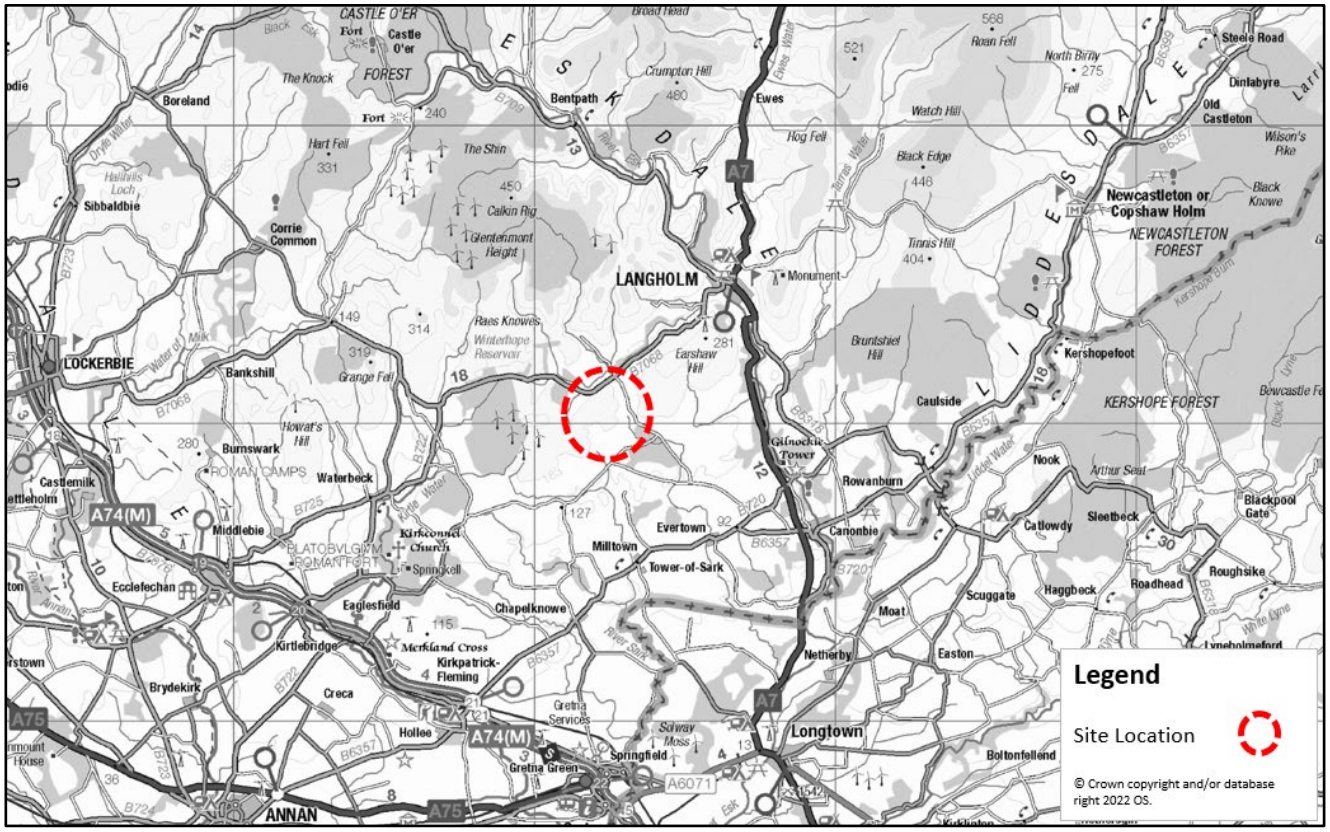

Figure 1 Site Location

In summary, the proposed development will comprise the following:

- 21 wind turbines with a likely maximum blade tip height of 230m;
- Wind turbine foundations;
- At each wind turbine location, associated low to medium voltage transformers and related switchgear;
- Hardstand areas for erection cranes at each wind turbine location;
- A network of access tracks including , watercourse crossings, passing places, turning heads and site entrances from the public road network;
- A substation compound containing electrical infrastructure, control building, welfare facilities and a communications mast;
- A battery energy storage system (BESS) compound;
- A network of buried electrical and communication cables;
- Borrow pits; and
- Temporary construction compounds.

A complete description of the proposed development for the purposes of the EIA regulations is provided in EIA Report Volume 1: Chapter 2: Proposed Development Description.

2.2 Candidate Wind Turbines

RES have indicated that they wish to consider the worst-case components from an V150 wind turbine at a tip height of 230m for use at the site and this has been used for this preliminary assessment.

The details of the components have been provided by Vestas and are detailed in Table 1 below.

Table 1 Turbine Size Summary

Component	Length (m)	Width (m)	Height / Min Diameter (m)	Weight (t)
V150 Blade	74.303	4.425	4.068	23.950
Worst Case Tower Section	29.960	4.676	4.170	73.000
Nacelle	18.279	4.180	4.351	70.001
Drive Train	7.475	2.884	3.296	96.700
Hub	4.138	3.607	3.504	34.956

The worst-case loads for route assessment for the V150 sections are:

- Blade; and
- Mid Tower.

These sections were used for the subsequent swept path assessment of the proposed loads along the access route.

The selection of the final wind turbine model and specification will 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.

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

Given the sizes of the proposed mid and top tower sections, these along with other loads such as the hub and nacelle housing would be carried on a six-axle step frame trailer. The base tower would be carried in a 4+7 clamp trailer.

Examples of the vehicles and trailers are shown in Figures 2 and 3.

Figure 2 Super Wing Carrier with Loaded Turbine Blade

Figure 3 Typical Tower Transport Trailer

3 Policy Context

3.1 Introduction

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

3.2 National Policy and Guidance

3.2.1 Scottish Planning Policy (SPP) (2014)

The purpose of the SPP is to set out national planning policies which reflect Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. The document notes that:

"Where a new development or a change of use is likely to generate a significant increase in the number of trips, a transport assessment should be carried out. This should identify any potential cumulative effects which need to be addressed."

In relation to the construction of new developments, the SPP notes:

"Consideration should be given to appropriate planning restrictions on construction and operation related transport modes when granting planning permission, especially where bulk material movements are expected, for example freight from extraction operations".

3.2.2 National Planning Framework 3 (2014)

Scotland's National Planning Framework (NPF3) sets the context for development planning in Scotland and provides a framework for the spatial development of Scotland as a whole. It sets out the Scottish Government's development priorities over the next 20 to 30 years from the date of approval and identifies national developments which support the development strategy. Scotland's third NPF was laid before the Scottish Parliament on 23 June 2014.

The Draft National Planning Framework 4 (DNPF4) was laid in Parliament on 10 November 2021 and the consultation was closed on 31 March 2022. Following the consultation and the end of the Parliamentary scrutiny process, the responses will be analysed and the NPF4 will be produced. In relation to transportation, Policy 19: Green Energy within the DNPF4 notes that:

"…development proposals for renewable energy developments must take into account:

- *cumulative impacts – taking into account the cumulative impact of existing and consented energy development;*
- *public access, including impact on long-distance walking and cycling routes and scenic routes; and*
- *impacts on road traffic and on adjacent trunk roads.*

3.2.3 Planning Advice Note (PAN) 75

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

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

"All planning applications that involve the generation of person trips should provide information which covers the transport implications of the development. The level of detail will be proportionate to the complexity and scale of the impact of the proposal...For smaller developments the information on transport implications will enable local authorities to monitor potential cumulative impact and for larger developments it will form part of a

scoping exercise for a full transport assessment. Development applications will therefore be assessed by relevant parties at levels of detail corresponding to their potential impact."

3.2.4 Transport Assessment Guidance (2012)

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

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

3.2.5 Onshore Wind Turbines, Online Renewables Planning Advice (May 2014)

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

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

3.3 Local Policy

3.3.1 Dumfries and Galloway Council Local Development Plan - The Local Development Plan 2 (2019)

The Dumfries and Galloway Council Local Development Plan - The Local Development Plan 2 (LDP2) was adopted on 3 October 2019 and replaces the adopted 2014 LDP. The LDP2 is the established planning policy for Dumfries and Galloway and sets out a settlement strategy and spatial framework for how the Council foresees development occurring in the forthcoming twenty-year period.

Policy IN2: Wind Energy outlines the following in relation to transport implications associated with the development of wind farms:

"The Council will support wind energy proposals that are located, sited and designed appropriately. The acceptability of any proposed wind energy development will be assessed against the following considerations:

Cumulative impact

The extent of any cumulative detrimental landscape or visual impact or impacts on existing patterns of development from two or more wind energy developments and the potential for mitigation.

Impact on local communities and residential interests

The extent of any detrimental impact on communities, individual dwellings, residents and local amenity, including assessment of the impacts of noise, shadow flicker, visual dominance and the potential for associated mitigation.

Impact on infrastructure

The extent to which the proposal addresses any detrimental impact on road traffic, adjacent trunk roads and telecommunications, particularly ensuring transmission links are not compromised.

Other impacts and considerations

a) the extent to which the proposal avoids or adequately resolves any other significant adverse impact on the natural environment, including biodiversity, forests and woodland, carbon-rich soils, hydrology, the water environment and flood risk, the historic environment, cultural heritage, tourism and recreational interests and public access.

b) the extent to which the proposal addresses any physical site constraints and appropriate provision for decommissioning and restoration."

3.3.2 Dumfries and Galloway Council LDP Supplementary Guidance Part 1 Wind Energy Development: Development Management Considerations (2017)

The LDP2's Policy IN2 is supported by the Supplementary Guidance 'Part 1 Wind Energy Development: Development Management Considerations'. The relevant transport elements from this policy are:

"Where wind energy developments will involve abnormal load impact on public roads, developers and their contractors will be required, in consultation with the Council as roads authority, to produce an appropriate Traffic Management Plan. Developers will also be required to enter into a Section 75 or other legal agreement.

Developers should also carry out early consultation with the local roads and/or trunk roads officials and the Police in respect of abnormal load deliveries to the application site. Due to the size of the components being transported there can be issues in relation to the capacity of rural roads to cope with these loads; and

The route of new access roads/tracks should be carefully selected and be as sensitive to the existing contours as is practical in relation to the use it will receive."

3.4 Policy Summary

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

4 Study Methodology

4.1 Introduction

There are three phases of the life of the proposed development. All three phases 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 all of the three phases, the construction phase is considered to have the greatest impact in terms of transport. Construction plant, bulk materials and wind turbine sections will be transported to site, potentially have a significant increase in traffic on the study area.

The decommissioning phase involves fewer trips on the public 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.

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 public road network.

It should be noted however the construction effects are short lived and transitory in nature.

4.3 Scoping Discussions

The applicant submitted a request for scoping opinion to the Scottish Ministers in respect of the Environmental Impact Assessment which included a section considering traffic and transport. A full review of that scoping opinion and other correspondence relating to the scope of the study including pre-application advice is provided in the Traffic and Transport Chapter of the EIA (EIA Report Volume 1: Chapter 10).

5 Baseline Conditions

5.1 Access Arrangement

The proposed development will be accessed via access junctions on the C70A. The C70A connects to the A7 via the Old Irvine – Kerr track, U251A and Auchenrivock Road. Auchenrivock Road is connected to the A7(T) via a priority junction to the north, and also by a priority junction to the south.

It is proposed that vehicles accessing and egressing from the site will exclusively use the A7(T) / Auchenrivock Road priority junction (south). This avoid any direct impact on rural settlements as far as is possible.

5.2 Study Area Determination

Strategic access to the site is available from the A7(T) trunk road network to the east of the site, and also from the A74(M) to the west of the site, via the A7(T) and A6071.

The study area for this assessment is shown in Figure 4 and is described as follows:

- The C70A leading to the site entrances;
- The U251A and the Old Irvine – Kerr track leading to the C70A;
- Auchenrivock Road between the A7(T) / Auchenrivock Road priority junction (south) and the Auchenrivock Road / U251A priority junction;
- A7(T) between the north of Langholm and Longtown;
- A6071 between Longtown and Gretna; and
- A74(M) between Gretna and Kirtlebridge.

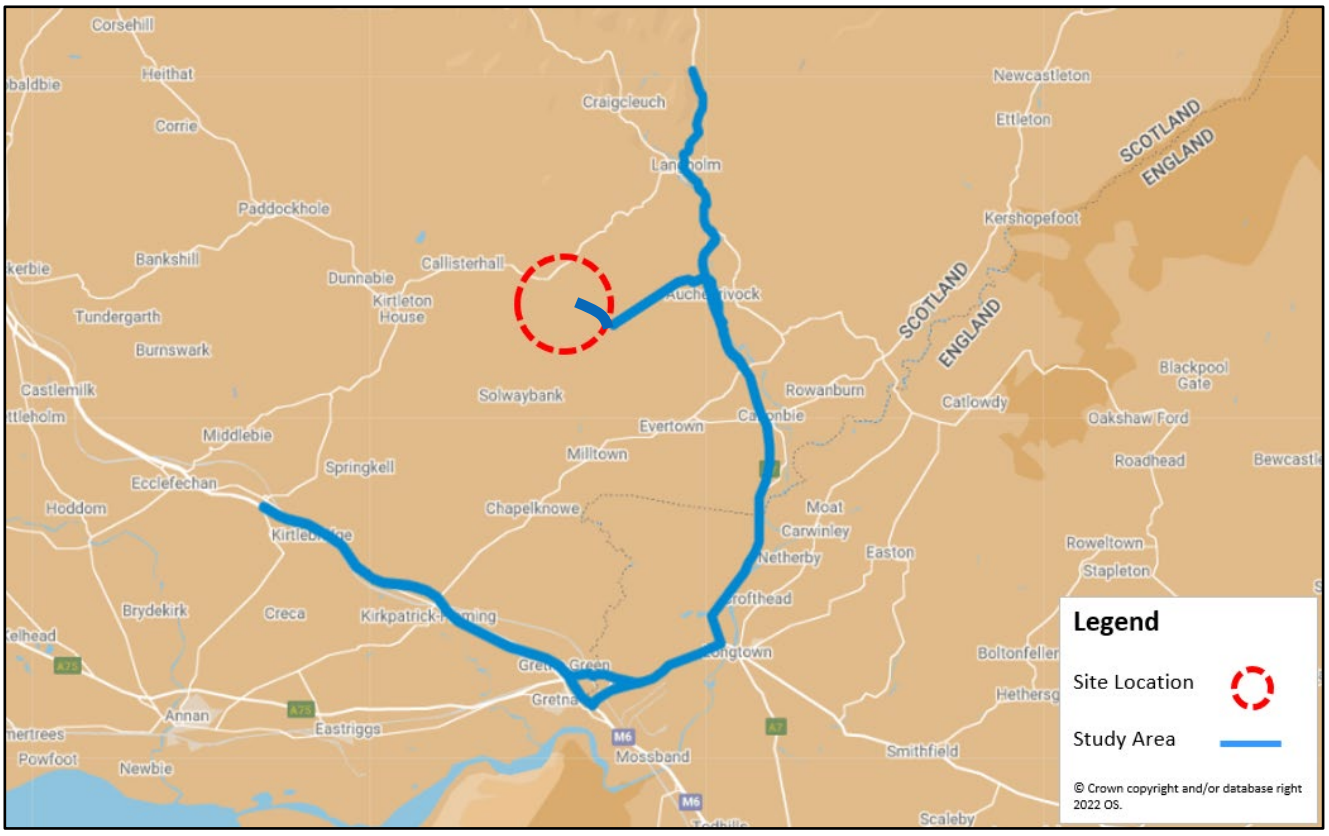

Figure 4 Assessment Study Area

5.3 Pedestrian and Cyclist Networks

A review of the DGC's online mapping application (https://www.dumgal.gov.uk/article/15304/Core-paths-in-Dumfries-and-Galloway) indicates that the following Core Paths (shown by a purple line in Figure 5) will be located along the access route to the site:

- Mouldy Hill to Outer Hill; and
- Cockplay Hill Walk.

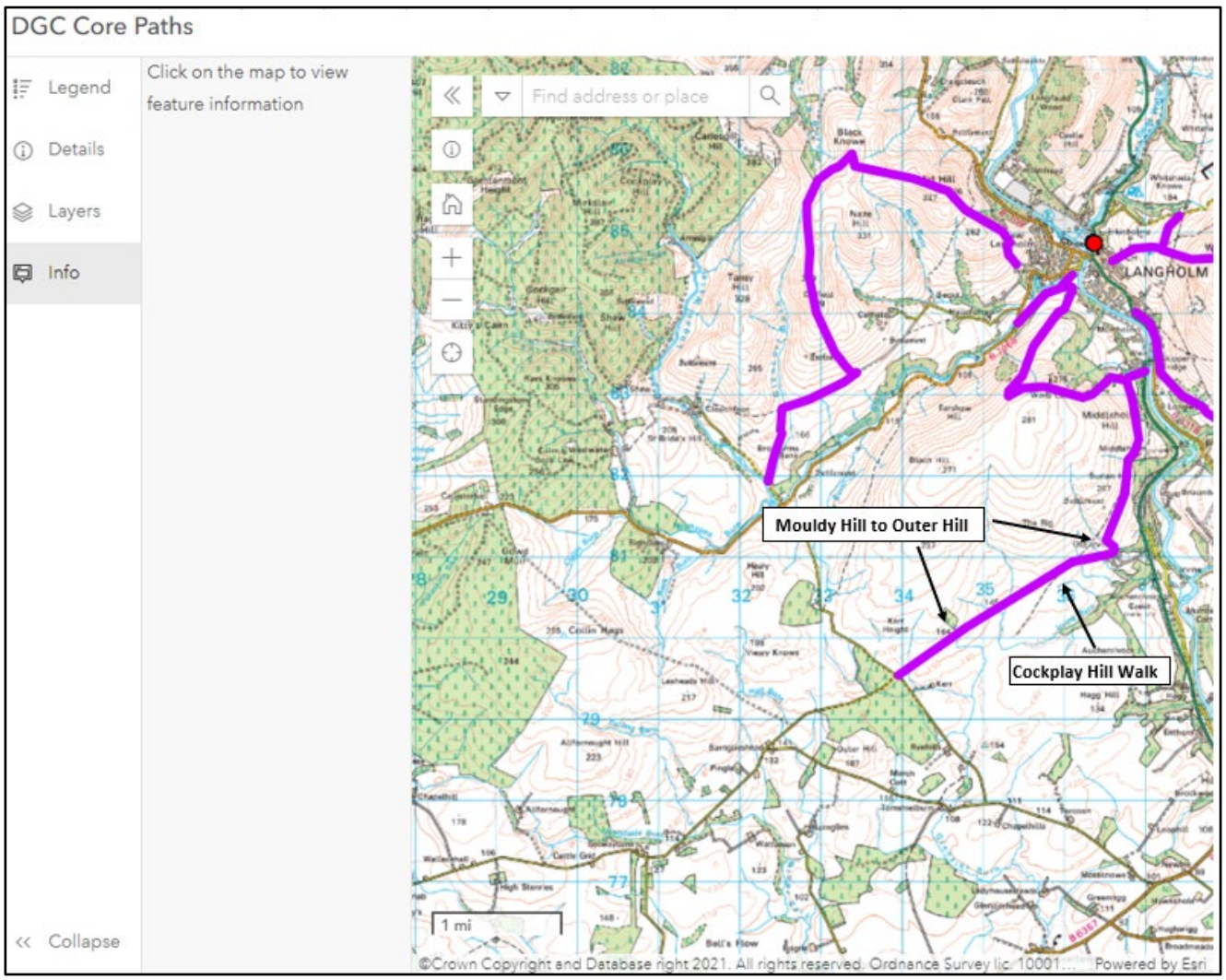

Figure 5 Core Path Plan (Dumfries and Galloway Council)

It is proposed that the access to the site from the public road network will travel along the Mouldy Hill to Outer Hill and Cockplay Hill Walk Core Paths (described as the Old Irvine – Kerr track). These paths will be upgraded to ensure that both construction vehicles and potential path users can safely use these links together. It is proposed that the paths will be upgraded to 4.5m wide tracks and will contain Core Path refuge areas and other suitable mitigation which will segregate path users from construction vehicles. Further mitigation measures will be provided in the form of a Path Management Plan, which is detailed in the Mitigation section of this TA.

A review of Sustrans' National Cycle Network (NCN) online information (https://www.sustrans.org.uk/national-cycle-network) shows that there are no National Cycle Routes (NCR) in the vicinity of the site.

There is a shared path located, approximately 350m in length, along the A7(T) between the Auchenrivock Road (approximately 20m east of A7(T) / Auchenrivock Road priority junction (south)) and the U249A (signposted for Hollows).

A review of Google Maps indicates that there are bus stops located approximately 150m to the south of the A7(T) / Auchenrivock Road priority junction (south), which facilitates the following services:

- X95 – bus route from Edinburgh to Carlisle (six services each way daily between Monday to Friday and three services each way on Sunday);
- 122 / 123 – bus route from Langholm – Hollows / Rowanburn (four services each way daily between Monday to Friday (including on school service), three services each way daily on Saturdays and no services on Sundays); and
- 127 – bus route from Newcastleton to Langholm (two / three services each way daily between Monday to Friday (including a school service)).

While the location is designated as a bus stop, there are no bus stop facilities such as flagpole, shelter or bus bay at the location. It appears as though this is a more informal bus stop location.

5.4 Road Access

Access to the site will be taken from the C70A public road. The C70A connects the B720 in the south to the B7068 in the north. It connects with the Old Irvine – Kerr track, which provides a link to the U251A to the east.

The U251A is the section of road linking Auchenrivock Road to the Old Irvine – Kerr track. The U251A forms a priority junction with Auchenrivock Road and crosses under the A7(T) Dockenbeck Bridge.

The initial section (310m) of the Old Irvine – Kerr track that meets the U251A provides access to approximately three dwellings, as well as farmland.

Auchenrivock Road which leads to the U251A, off the A7(T) is a two-way single carriageway which is subject to the national speed limit. The road is winding in nature and there are some signs of deterioration of the surfacing along the carriageway. The road mainly provides access to a small number of farms in the area. The road can be accessed from the A7(T) by two methods, either from the existing priority junction to the south of Auchenrivock or from the existing priority junction to the north of Auchenrivock. Auchenrivock Road is maintained by DGC. It is proposed that construction traffic will use the A7(T) / Auchenrivock Road (south) to access and egress the site.

The A7(T) is a major road which connects Edinburgh, Scotland to Carlisle, England. Between the Kingsknowe Roundabout, Galashiels and the Scottish / English border, the A7(T) forms part of the trunk road network and is maintained by BEAR Scotland, on behalf of Transport Scotland (TS). The A7(T) is a single carriageway which is mainly subject to the national speed limit, which reduces when travelling through villages. The A7(T) is bound mainly by trees and hedgerows and there are no footways along the majority of its length, however in the vicinity of the A7(T) / Auchenrivock (south) priority junction there is a shared path, located to the east of the A7(T), which is approximately 350m in length and provides a connection between Auchenrivock and Hollows. There is a dedicated right-turn lane on the A7(T) for vehicles wishing to turn right onto Auchenrivock Road at the A7(T) / Auchenrivock (south) priority junction.

The A6071 links the A7(T) to the A74(M) and is located south of the Scottish / English border within Carlisle District Council area. The A6071 is mainly subject to the national speed limit, which reduces in the vicinity of the junction with the A7(T). The A6071 is bound mainly by trees and hedgerows and there are no footways along its length.

In Scotland, the A74(M) provides a connection between Gretna Green and Glasgow. The A74(M) comprises three lanes in each direction which are separated by a central reserve and is the responsibility of TS. The A74(M) connects to the A6071 at Junction 22. South of the English border, the motorway is designated as the M6 and is the responsibility of National Highways.

5.5 Existing Traffic Conditions

In order to assess the impact of traffic associated with the proposed development on the study area, traffic count data was obtained from the Transport Scotland (TS) and Department for Transport (DfT) website count sites.

The TS and DfT count sites are as follows:

1. A7(T), south of A7(T) / Auchenrivock Road priority junction (south) (Traffic flows at this location assumed to be equal to flows at TS Count Site JTC08199);
2. A7(T), south of Canonbie (TS Count Site ATC09002);
3. A7(T), west of Crofthead (DfT Count Site 6179);
4. A6071, west of Gaitle (DfT Count Site 90274);
5. A74(M), northbound between Jct 21 and 22 (TS Count Site ATC6_37N);
6. A74(M), southbound between Jct 21 and 22 (TS Count Site ATC6_37S);
7. A7(T), north of A7(T) / Auchenrivock Road priority junction (south) (TS Count Site JTC08199); and
8. A7(T), north of Langholm (TS Count Site ATC09001).

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 the Traffic & Access Chapter of the EIA Report.

The C70A, Old Irvine – Kerr track, U251A and Auchenrivock Road provide access to a small number of dwellings and farmland and therefore can be reasonably assumed to be lightly trafficked. Traffic surveys were not undertaken along these roads, instead it is assumed that, given the light use of the road and the fact that these roads will provide access to the site entrance, receptors along these links will experience significant impacts and will be assessed in this manner in the EIA Report Traffic and Transport chapter.

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

The locations of the traffic sites are illustrated in Figure 6.

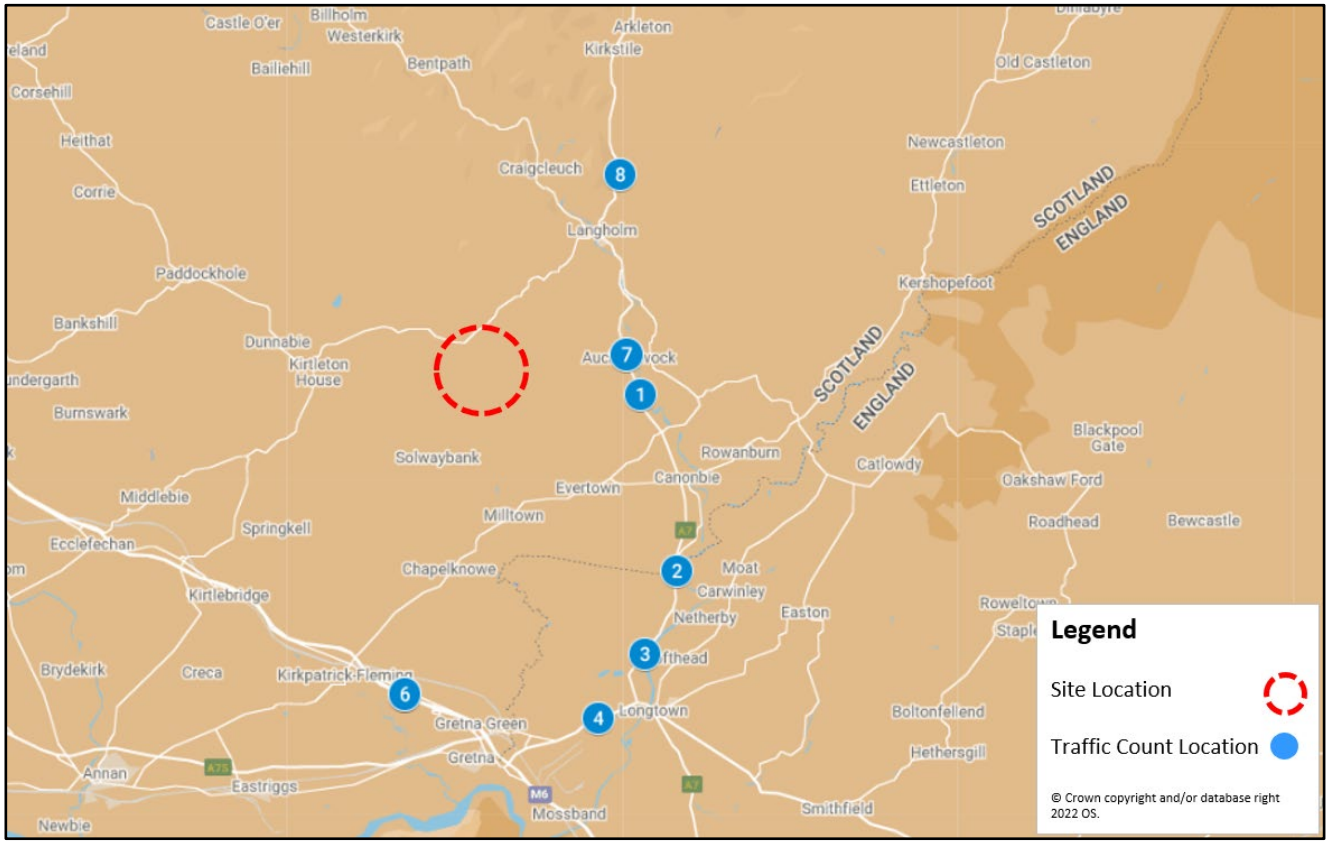

Figure 6 Traffic Count Locations

The traffic flows from the DfT count locations were extracted for 2019 flows in order to obtain flows which were not affected by Covid 19 travel restrictions. A National Road Traffic Forecast (NRTF) low growth factor of 1.022 was applied to the 2019 flows to forecast 2022 flows.

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 (2022)

No.	Survey Location	Data Source	Cars & LGV	HGV	Total
1	A7(T), south of A7(T) / Auchenrivock Road priority junction (south)	TS*	3,073	614	3,687
2	A7(T), south of Canonbie	TS	4,033	527	4,560
3	A7(T), west of Crofthead	DfT	3,524	360	3,884
4	A6071, west of Gaitle	DfT	2,993	693	3,686
5	A74(M), northbound between Jct 21 and 22	TS	12,168	5,925	18,092
6	A74(M), southbound between Jct 21 and 22	TS	12,035	5,813	17,848
7	A7(T), north of A7(T) / Auchenrivock Road priority junction (south)	TS	3,073	614	3,687
8	A7(T), north of Langholm	TS	1,869	379	2,248

Please note minor variances due to rounding may occur.

*Assumed flows based on flow data from TS Count Site JTC08199.

The two-way daily average and 85th percentile speeds recorded at the TS count sites for 2022[1] are summarised in Table 3.

[1] Available speed information until 17 September 2022.

Table 3 Speed Summary (2022)

No.	Survey Locations	Mean Speed (mph)	85th %ile Speed (mph)	Speed Limit (mph)
1	A7(T), south of A7(T) / Auchenrivock Road priority junction (south)*	61.6	71.3	60.0
2	A7(T), south of Canonbie	52.3	59.6	60.0
3	A7(T), west of Crofthead	No information available		60.0
4	A6071, west of Gaitle	No information available		60.0
5	A74(M), northbound between Jct 21 and 22	63.0	78.5	70.0
6	A74(M), southbound between Jct 21 and 22	68.5	78.7	70.0
7	A7(T), north of A7(T) / Auchenrivock Road priority junction (south)	61.6	71.3	60.0
8	A7(T), north of Langholm	49.7	57.6	60.0

*Assumed speeds based on speed data from TS Count Site JTC08199.

The speed information shown in Table 3 indicates that the 85th percentile speeds exceed the speed limit at the A74(M) northbound and southbound count locations, as well as along the A7(T) in the vicinity of the A7(T) / Auchenrivock Road priority junction (south). The above results suggest that there is a need for greater enforcement at these count locations and greater enforcement measures may be required by the relevant authorities.

The speed summary indicates that the wind farm construction contracts and Construction Traffic Management Plan (CTMP) must feature maximum speed measures for all contractors working at the site to ensure that the speed limit is adhered to, and that slower construction traffic can assist in slowing down other vehicles within villages on the access routes.

5.6 Accident Review

Road traffic accident data for the period commencing 01 January 2018 through to 30 June 2021 was obtained from the online resource crashmap.co.uk which uses data collected by police about road traffic crashes occurring on British roads. It should be noted that at the time of writing this TA, there was only provisional data available for 2021, up until June.

The statistics are categorised into three categories which include “slight” for damage only incidents, “serious” for injury accidents and “fatal” for accidents that result in death.

Accident information on the public road network within the study area was reviewed. The summary statistics indicate that:

- There was a total of fifteen accidents recorded within the study area, of which six accidents were recorded as slight and seven were recorded as serious. Two of the accidents were recorded as fatal;
- The two accidents which involved fatalities occurred along the A74(M);
- One fatal accident occurred to the south-east of Kirtlebridge and was recorded as a single-vehicle accident involving a car;
- One fatal accident was recorded as a two-vehicle accident involving HGVs to the north-west of Kirtlebridge;
- Two accidents involving motorcycles occurred along the A7(T) and at the A7 (T) / A6071, respectively;
- A total of seven accidents involving HGVs were recorded within the survey period;
- One serious accident involving a pedestrian was recorded along the High Street in Langholm, and involved a car; and
- No accidents were recorded along Auchenrivock Road or the U251A during the reviewed period.

The locations of the accidents are presented in Figure 7.

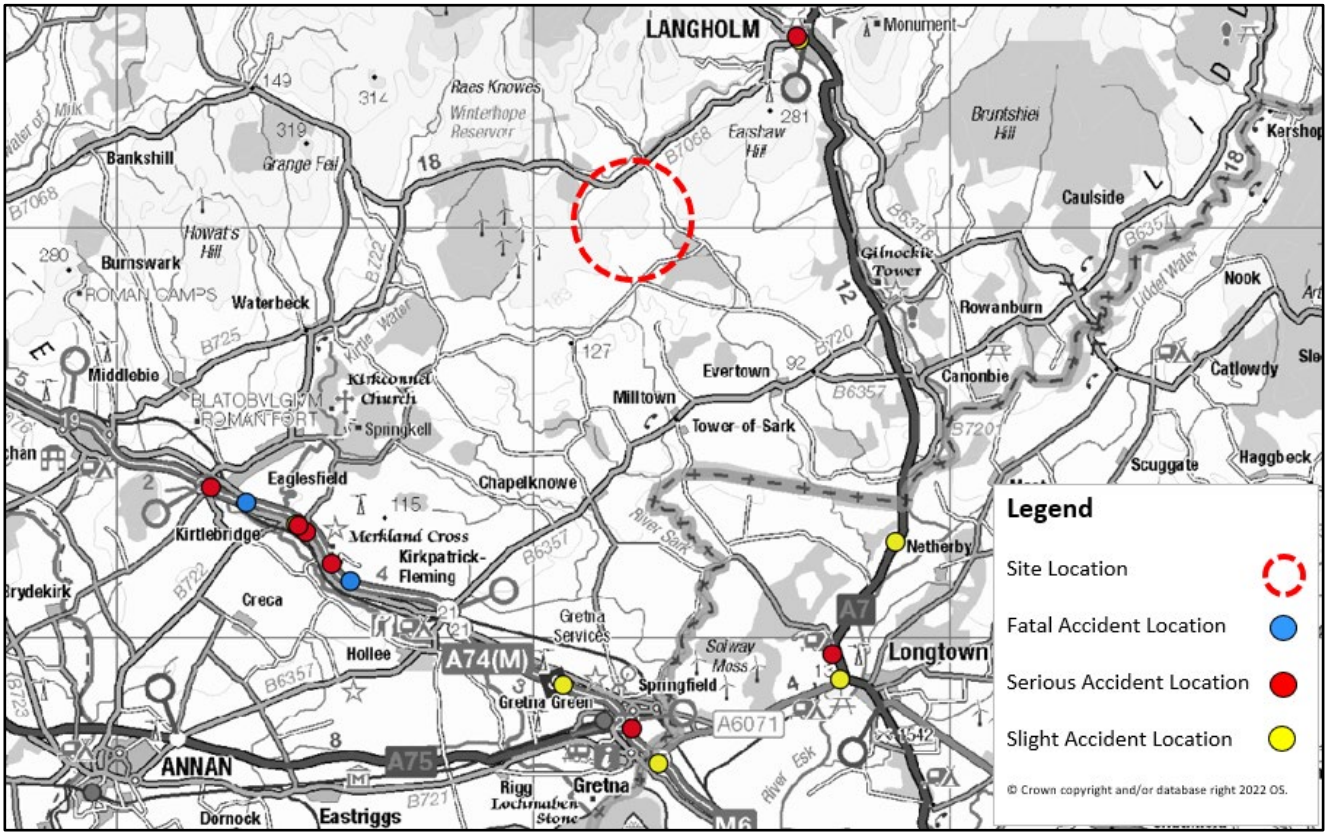

Figure 7 Accident Locations

The review of the accident data did not reveal any apparent accident trends within the study area.

5.7 Future Baseline Traffic Conditions

Construction of the proposed development could commence during 2026 if consent is granted and is anticipated to take up to 15 months depending on weather conditions and ecological considerations.

To assess the likely effects during the construction and typical operational phase, base year traffic flows were determined by applying a NRTF low growth factor to the 2022 traffic flows in Table 4. The NRTF low growth factor for 2022 to 2026 is 1.021.

Table 4 Baseline 2026 24-hour Average Traffic Data

No.	Survey Location	Cars & LGV	HGV	Total
1	A7(T), south of A7(T) / Auchenrivock Road priority junction (south)	3,138	627	3,765
2	A7(T), south of Canonbie	4,118	538	4,656
3	A7(T), west of Crofthead	3,598	367	3,965
4	A6071, west of Gaitle	3,056	707	3,764
5	A74(M), northbound between Jct 21 and 22	12,423	6,049	18,472
6	A74(M), southbound between Jct 21 and 22	12,288	5,935	18,223
7	A7(T), north of A7(T) / Auchenrivock Road priority junction (south)	3,138	627	3,765
8	A7(T), north of Langholm	1,908	387	2,296

Please note minor variances due to rounding may occur.

5.8 Committed Development

A review of online planning applications was undertaken to identify consented developments, including onshore wind farm developments, within the vicinity of the proposed development which could share the same study area as the proposed development during construction, and for which there could be combined traffic flows on the public road network.

5.8.1 Consented Onshore Wind Farm Developments

The consented onshore wind farm developments are as follows:

- Windy Edge Wind Farm is to comprise nine wind turbines with a maximum height of 125m. On 3 March 2021, planning permission allowing an extension of time was granted which noted that the development must be commenced within three years of the permission. Traffic associated with the consented Windy Edge Wind Farm may impact upon the proposed development's study area. It should be noted that a scoping application has been submitted for a wind farm (also called Windy Edge) comprising 12 turbines and part of the planning application boundary forms part of previous consented scheme's planning application boundary.
- Pines Burn Wind Farm is to comprise a total of 12 wind turbines with a maximum blade tip height of 149.9m. A review of Pine Burns Wind Farm's planning application documents shows that construction traffic associated with the wind farm will impact the proposed development's study area.
- Hopsrig Wind Farm was granted planning permission for 12 wind turbines with a maximum tip height of 140m. In November 2021, a Section 36 Application was submitted for an expanded wind farm to comprise 13 wind turbines with a maximum tip height of 200m. A review of Hopsrig Wind Farm's planning application documents show that construction traffic associated with the wind farm will impact the proposed development's study area.
- Loganhead Wind Farm was granted planning permission in 2019 for eight wind turbines with a maximum tip height of 135m. In November 2021, a Section 36 Application was submitted for an expanded wind farm which is to comprise nine wind turbines at a maximum tip height of 200m. A review of Loganhead Wind Farm's planning application documents shows that construction traffic associated with the wind farm will impact the proposed development's study area.
- Little Hartfell Wind Farm was granted planning permission in June 2020 for 12 wind turbines with a maximum tip height of 160m. Little Hartfell Wind Farm's planning application documents were reviewed and did not show that construction related traffic travelling to Little Hartfell Wind Farm will travel within the study area of the proposed development.

Faw Side Wind Farm is to comprise a total of 45 wind turbines with a maximum tip height of 200m. The planning application for the wind farm was objected to by Scottish Borders Council in March 2021. A Public Inquiry has been lodged and the case has been transferred to the Scottish Government's Planning and Environmental Appeals Division (DPEA) for examination. As the wind farm has not received planning permission, it cannot be considered as committed development.

Teviot Wind Farm is to comprise a total of 62 wind turbines with a maximum tip height of 240m, as well as a solar array. As the wind farm development is still in the planning application stage, and has not received planning permission, it cannot be considered as committed development.

Traffic flows associated with the consented wind farm developments have not been included in the 2026 Baseline Flows as the inclusion of further traffic flows in the baseline will dilute the potential impact that the Solwaybank Wind Farm proposals will have. The approach taken is therefore considered to be an overly robust assessment.

In order to inform the planning authorities of possible issues if the consented onshore wind farm sites were to be constructed concurrently with the proposed development and have overlapping peak construction timescales, a combined assessment has been undertaken as part of the cumulative assessment in Chapter 11 of the EIA Report.

It should be noted that any crossover of traffic with the proposed development flows would be addressed via the CTMP, secured by planning condition on the proposed development consent.

5.8.2 Other Consented Developments

In relation to other non-wind farm related consented developments, a review of DGC's online planning portal has found that consent has been granted for the following schemes:

- The formation of the forest tracks (22/0658/DPA).; and
- A residential development comprising 35 supported housing units (21/1215/FUL).

There is no trip information available on the planning portal for the forest tracks proposals and as such cannot be added to the committed development. It should be noted however that the trips associated with the forest track proposals are not considered to be significant as no Transport Assessment was required for the planning application and as such are assumed to be captured in the low NRTF growth factors.

Trips associated with the residential development comprising 35 supported housing units have been calculated based on planning documents associated with the application. These committed development trips have been added to the 2026 Baseline flows, previously shown in Table 4, and the combined flows are presented in Table 5. This will be used in the Construction Peak Traffic Impact Assessment.

Table 5 2026 Base + Committed Development Daily Traffic Data

No.	Survey Location	Cars & LGV	HGV	Total
1	A7(T), south of A7(T) / Auchenrivock Road priority junction (south)	3,232	627	3,860
2	A7(T), south of Canonbie	4,212	538	4,751
3	A7(T), west of Crofthead	3,693	367	4,060
4	A6071, west of Gaitle	3,056	707	3,764
5	A74(M), northbound between Jct 21 and 22	12,423	6,049	18,472
6	A74(M), southbound between Jct 21 and 22	12,288	5,935	18,223
7	A7(T), north of A7(T) / Auchenrivock Road priority junction (south)	3,232	627	3,860
8	A7(T), north of Langholm	1,914	387	2,302

Please note minor variances due to rounding may occur.

5.9 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 public road network than the construction 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 onsite to allow transport by a reduced number of HGVs.

6 Trip Generation and Distribution

6.1 Construction Phase

6.1.1 Trip Derivation

During the 15 month construction period, the following traffic will require access to the site:

- Staff transport, in either cars or minibuses;
- Construction equipment and materials, deliveries of machinery and supplies such as concrete and crushed rock; and
- AIL comprising wind turbine sections and also heavy lift crane(s).

Average monthly traffic flow data were used to establish the construction trips associated with the site based on the assumptions detailed in the following sections. Please note 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 onsite will depend on the activities undertaken, but, based on previous wind farm construction site experience for a project of this scale which suggests three staff per wind turbine during the short peak period of construction is likely, the maximum number of staff expected onsite could be around twelve 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 LGVs would account for a maximum of 16 vehicles trips (eight inbound and eight outbound) per day during the peak period of construction.

6.1.3 AIL Deliveries

The wind turbines are broken down into components for transport to the site. The nacelle, blade and tower sections are classified as AILs 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 5.

In addition to the wind turbine deliveries, two high-capacity erection cranes would be needed to offload some components and erect the wind turbines. The main crane is likely to be a mobile crane with a capacity up to 1,000 tonnes that would be escorted by boom and ballast trucks to allow full mobilisation on-site. A smaller assist crane will also be present to allow the assembly of the main crane and to ease overall erection of the wind 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 wind turbine components would be delivered per convoy.

Table 6 Wind Turbine Components

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

6.1.4 General Deliveries

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

6.1.5 Material Deliveries

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

The site is large enough to warrant on-site batching of concrete. All wind turbine and substation foundation concrete will be mixed on-site, with deliveries of cement powder and water being delivered by HGV tankers. Sand and aggregate will be delivered by HGV tipper and is expected to originate at quarries via the A74(M).

Individual deliveries associated with the raw materials required for onsite batching have been estimated and result in inbound trips of 46 cement tankers, 656 sand and aggregate tippers and 263 water tankers.

Reinforcement required in the foundations across the site are detailed in Table 6 below.

Table 7 Steel Reinforcement Deliveries

Element	Weight / Installation (t)	Total Weight (t)	Lorry Capacity (t)	Inbound Trips	Total Journeys
Wind Turbine Foundation	68	1,428	30	48	96
Substation Foundation	20	20	30	1	2

It is anticipated that 71,707m³ of the aggregate material, which will be used in the construction of the proposed development's access tracks and junction areas, will be sourced from quarries offsite which will result in 15,776 two-way trips (7,888 inbound trips and 7,888 outbound trips). It is assumed that aggregate material will be sourced from quarries via the A74(M). While aggregate materials for off-site works, such as access tracks, are not included in the assessment, it is proposed that the impacts of off-site works will be mitigated in accordance with measures proposed for the on-site works (as presented in Section 8 Proposed Traffic Mitigation Measures).

The access tracks would generally be 4.5m in width and would be designed to accommodate 13 tonne axle loads. In addition to the access tracks, crane hardstands will be constructed to enable the wind turbine erection process.

The access tracks, crane hardstands and compounds will require geotextile in the foundations. Geotextile will be delivered to site in rolls. A total of 178 large rolls may be required at site and would be delivered by HGV, which would result in a total of 18 journeys.

Cables will connect each wind turbine to the substation compound. Trip estimates for the cable materials are provided below in Tables 7 and 8. Three cables are to be provided within each cable trench and would be backfilled with cable sand.

Table 8 Cable Trip Estimate

Element	Total Cable Length (m)	Length per Drum (m)	Number of Drums	Inbound Trips	Total Journeys
Cables	62,970	500	126	14	28

Table 9 Cable Sand Trip Estimate

Element	Volume (m3)	Lorry Capacity (t)	Inbound Trips	Total Journeys
Cable Sand	7,084	20	567	1,134

A substation building will be constructed on the site. This will require deliveries of building materials and structural elements and would result in 240 journeys (120 inbound and 120 outbound) and are expected to arrive from the A7(T) to the south of the site.

It is assumed that 76 two-way trips will be associated with the delivery of batteries and their associated equipment.

It should also be noted that no ducting materials are anticipated to be required and it is not anticipated that any peat will be transported out of the site.

The resulting two-way traffic generation estimates have been plotted onto the indicative construction programme to illustrate the peak journeys on the public road network. Table 9 illustrates the trip generation throughout the construction programme.

Table 10 Construction Traffic Profile

Activity	Class	Month														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Site Establishment	HGV	50	70												70	50
Plant Deliveries	HGV	10	20												20	10
General Site Deliveries	HGV	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Imported Stone	HGV	2,629	2,629	2,629	2,629	2,629	2,629									
Reinforcement	HGV								33	33	33					
Concrete Deliveries	HGV								643	643	643					
Cable Deliveries	HGV									28						
Cabling Sand	HGV									378	378	378				
Geotextile Deliveries	HGV		6							6	6					
HV Deliveries & Substation Building	HGV									79	79	79	79			
Cranes	HGV										10			10		
Wind Turbine Deliveries	HGV											298	298			
AIL Escorts	Car & LGV											88	88			
Commissioning	Car & LGV														44	44
Staff	Car & LGV	920	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	920
Total HGV	HGV	2,729	2,765	2,669	2,669	2,669	2,669	40	716	1,207	1,189	795	417	50	130	100
Total Cars / LGV	Car & LGV	920	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,927	1,927	1,839	1,883	964
Total Movements	Total	3,649	4,605	4,509	4,509	4,509	4,509	1,879	2,555	3,046	3,028	2,722	2,344	1,889	2,013	1,064
Total HGV per Day	HGV	124	126	121	121	121	121	2	33	55	54	36	19	2	6	5
Total Cars / LGV per Day	Car & LGV	42	84	84	84	84	84	84	84	84	84	88	88	84	86	44
Total per Day	**Total**	**166**	**209**	**205**	**205**	**205**	**205**	**85**	**116**	**138**	**138**	**124**	**107**	**86**	**92**	**48**

Please note variances due to rounding may occur. In order to provide a robust assessment, calculations are based on 22 working days per month.

The peak of construction occurs in Month 2 with 209 journeys (84 Car / LGV and 126 HGV journeys).

6.1.6 Distribution of Construction Trips

The distribution of traffic associated with the proposed development on the public road network would 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 construction traffic, including AIL delivery vehicles, will enter and exit the site via the A7(T) / Auchenrivock priority junction (south). They will then proceed via the U251A, Old Irvine – Kerr track and C70A to the site access junction;
- All AIL would be delivered from King George V (KGV) Docks in Glasgow via the A74(M), A6071, A7(T), Auchenrivock Road, U251A, Old Irvine – Kerr track and C70A;
- Deliveries associated with concrete materials, such as aggregate, cement powder and water will be sourced from local concrete suppliers and delivered via the A74(M), A6071, A7(T), Auchenrivock Road,, U251A, Old Irvine – Kerr track and C70A
- Aggregate materials requirements for on-site works will be sourced from local quarries and will be delivered via the A74(M), A6071, A7(T), Auchenrivock Road, U251A, Old Irvine – Kerr track and C70A;
- HGV deliveries associated with the HV electrical installation, control buildings and batteries etc. will arrive via the A74(M);
- Staff working at the site are likely to be based locally. It is assumed that 50% will come from the north, along the A7(T), and 50% will come from the south along the A7(T); and
- General site deliveries will be via the A7(T) from the south. These are generally smaller rigid vehicles.

Loads relating to the wind turbine components would be delivered from the proposed Port of Entry (PoE) for the site is the KGV Docks, Glasgow. The port has been used by renewables deliveries in the past for a number for a number of wind farms, including Kype Muir, Kilgallioch and Clyde Wind Farms.

The proposed access route from the PoE to site is presented in Figure 8 and is described as follows:

- Loads would exit KGV Docks in Glasgow onto Kings Inch Drive;
- Continue along Kings Inch Drive before turning left onto the M8 slip road at Junction 25a;
- Continue east on the M8 to Junction 21 where they would join the M74 travelling south;
- Loads would travel south on the M74 and M6, before utilising the Golden Fleece Roundabout to turn around and travel north on the M6 and onto the M74 northbound;
- Loads would depart the M74 at Junction 45;
- Loads would turn right at the off-slip junction and continue east on the A6071;
- Loads would turn left onto the A7(T) and continue northbound;
- Loads would turn right at A7(T) / Auchenrivock priority junction (south) onto Auchenrivock Road, approximately 1.75km north of the B720 / A7(T) / Hollows staggered junction, and travel north before turning left onto U251A and passing under the A7(T); and
- Loads would then use the existing Old Irvine – Kerr track to access the site from the east via the C70A.

Figure 8 Proposed AIL Access Route

6.1.7 Peak Construction Traffic

Following the distribution and assignment of traffic flows to the study area, the resultant daily traffic flows during the peak of construction are summarised in Table 10.

Table 11 Peak Construction Traffic

No.	Survey Location	Cars & LGV	HGV	Total
1	A7(T), south of A7(T) / Auchenrivock Road priority junction (south)	42	126	167
2	A7(T), south of Canonbie	42	126	167
3	A7(T), west of Crofthead	42	126	167
4	A6071, west of Gaitle	42	126	167
5	A74(M), northbound between Jct 21 and 22	21	63	84
6	A74(M), southbound between Jct 21 and 22	21	63	84
7	A7(T), north of A7(T) / Auchenrivock Road priority junction (south)	42	0	42
8	A7(T), north of Langholm	42	0	42

Please note minor variances due to rounding may occur.

6.2 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 public road network than the construction or operational phases as it is considered likely that elements of infrastructure such as access tracks would be left in place and structures may be broken up onsite to allow transport by a reduced number of HGV.

7 Traffic Impact Assessment

7.1 Construction Impact

The peak month traffic data was combined with the future year (2026) 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 11.

Table 12 2026 Peak Month Daily Traffic Data

No.	Location	Cars & LGV	HGV	Total	Cars & LGV % Increase	HGV % Increase	Total Traffic % Increase
1	A7(T), south of A7(T) / Auchenrivock Road priority junction (south)	3,274	753	4,027	1.29%	20.04%	4.34%
2	A7(T), south of Canonbie	4,254	664	4,918	0.99%	23.35%	3.53%
3	A7(T), west of Crofthead	3,734	493	4,227	1.13%	34.22%	4.13%
4	A6071, west of Gaitle	3,098	833	3,931	1.37%	17.77%	4.45%
5	A74(M), northbound between Jct 21 and 22	12,444	6,112	18,556	0.17%	1.04%	0.45%
6	A74(M), southbound between Jct 21 and 22	12,309	5,998	18,307	0.17%	1.06%	0.46%
7	A7(T), north of A7(T) / Auchenrivock Road priority junction (south)	3,274	627	3,901	1.29%	0.00%	1.08%
8	A7(T), north of Langholm	1,956	387	2,343	2.18%	0.00%	1.82%

Please note minor variances due to rounding may occur.

The total traffic movements are not anticipated to increase by more than 30% on all of the study area. Total traffic levels are all below an increase of 5%, which is less than what is generally accepted as daily variation in traffic flows (i.e. 10%).

The total HGV traffic movements will increase on the A7(T). Whilst this increase is statistically significant, it is generally caused by the relatively low HGV flows on the A7(T) and will see an additional 126 HGV journeys per day (63 inbound and 63 outbound). The represents an additional 13 HGV journeys every hour during construction activities, which is not significance in terms of overall traffic flows.

It should also be noted the construction phase is transitory in nature and the peak of construction activities is short- lived.

A review of existing road capacity has been undertaken using the Design Manual for Roads and Bridges, Volume 15, Part 5 “The NESA Manual”. The theoretical road capacity has been estimated for each of the road links for a 12-hour period that makes up the study area. The results are summarised in Table 12.

Table 13 2026 Daily Traffic Data

No.	Location	2026 Future Baseline Flow	2026 Base + Development Flows	Theoretical Road Capacity (12 hr)	Spare Road Capacity %
1	A7(T), south of A7(T) / Auchenrivock Road priority junction (south)	3,860	4,027	36,000	89%
2	A7(T), south of Canonbie	4,751	4,918	28,800	83%
3	A7(T), west of Crofthead	4,060	4,227	28,800	85%
4	A6071, west of Gaitle	3,764	3,931	21,600	82%
5	A74(M), northbound between Jct 21 and 22	18,472	18,556	68,400	73%
6	A74(M), southbound between Jct 21 and 22	18,223	18,307	68,400	73%
7	A7(T), north of A7(T) / Auchenrivock Road priority junction (south)	3,860	3,901	36,000	89%

8	A7(T), north of Langholm	2,302	2,343	28,800	92%

Please note minor variances due to rounding may occur.

The results indicate that there are no road capacity issues with the proposed development and ample spare capacity exists within the public croad network to accommodate construction phase traffic.

8 Proposed Traffic Mitigation Measures

8.1 Construction Phase

The following measures would be implemented through a Construction Traffic Management Plan (CTMP) during the construction phase. The CTMP would be agreed with DGC prior to construction works commencing:

- Where possible the detailed design process would minimise the volume of material to be imported to 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) should be sheeted to reduce dust and stop spillage on public roads;
- Specific training and disciplinary measures should be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- Wheel cleaning facilities may be established at the site entrance, depending the views of DGC;
- Normal site working hours would be limited to between 07:00 and 19:00 (Monday to Saturday), although component delivery and wind turbine erection may take place outside these hours;
- Appropriate traffic management measures would be put in place on the U251A and Auchenrivock Road in order to avoid conflict with general traffic, subject to the agreement of DGC, Typical measures would include HGV turning and crossing signs and / or banksmen at the site access and warning signs.
- It is proposed that signage is also located in the vicinity of the A7(T) / Auchenrivock Road priority junction (south) to highlight to construction traffic that there is an informal bus stop located 150m to the south of the junction. Signage will also be provided on the A7(T) to direct construction traffic to use the A7(T) / Auchenrivock Road priority junction (south) to access and egress from the site. The provision of signage will be subject to the agreement of the DGC;
- 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 would 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.

A CTMP will be prepared prior to works commencing and will confirm all of the measures proposed for the site. Should any assumptions in material supply vary as a result of the commercial tendering process, the CTMP will address these, as per standard practice. The need for the CTMP will likely be required by planning condition and the applicant would welcome draft text on a suggested condition from DGC.

DGC may require an agreement to cover the cost of abnormal wear and tear on the C70A, U251A and Auchenrivock Road.

Video footage of the pre-construction phase condition of the AILs access route and the construction vehicles route would be recorded to provide a baseline of the state of the road prior to any construction work commencing. This baseline would inform any change in the road condition during the construction stage of the proposed development. Any necessary repairs would be coordinated with DGC. Any damage caused by traffic associated with the proposed development, during the construction period that would be hazardous to public traffic, would be repaired immediately.

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

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

8.2 AIL Mitigation Works

The AIL Route Survey Report (RSR) highlights a number of constraint points which have been assessed within the report using swept path assessment software. The locations of the constraint points and the swept path drawings are included Appendix 10.2.

The RSR identifies key points and issues associated with the route that require mitigation works. Examples of the anticipated mitigation works include temporary removal of obstacles such as lighting columns, road signs and walls / fences, traffic management measures, utility searches, vegetation trimming, review of the vertical profile of roads to determine if tar wedges are required, provision of overrun areas and road widening. These works are to be agreed with DGC and other relevant stakeholders.

AIL mitigation works can be designed to be temporary in nature to enable the restoration to their original condition, if required by DGC.

Discussions with TS have been held to ascertain if a direct AIL only access (inbound only) onto the A7 can be provided. Discussions are at an early stage at present and, should this proposal proceed, the new arrangement would be included in a revised Route Survey Report that would be provided to both TS and DGC once the candidate turbine has been confirmed, post planning determination. The requirement for the updated Route Survey Report is a reasonably standard planning condition and the applicant would welcome a suitable condition on this matter.

8.3 Transport Management Plan

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

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

The majority of potential conflicts between construction traffic and other road users will occur with AIL 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.

Advance warning signs would be installed on the approaches to the affected public road network. Information signage could be installed to help assist drivers and an example is illustrated in Figure 9. Flip up panels (shown in grey) would be used to mask over days where convoys would not be operating. When no convoys are moving, the sign would be bagged over by the Traffic Management contractor.

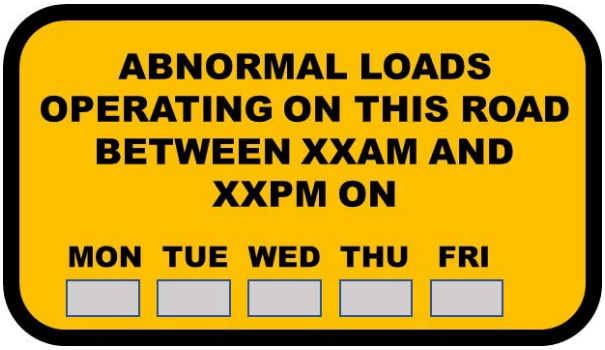

Figure 9 General Site Location

This signage will assist in helping improve driver information and allow other road users to consider alternative routes or times for their journey (where such options exist).

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

The Transport Management Plan would 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 / public interface with the applicant, the construction contractors, the local community, and if appropriate, the police forming the committee. This committee would form a means of communicating and updating on forthcoming activities and dealing with any potential issues arising.

8.4 Public Information

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

Information would relate to expected vehicle movements from the port of entry through to the site access junction. This will assist residents 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.

8.5 Convoy System

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

The AIL convoys would 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 need to be agreed with Police Scotland who have sole discretion on when loads can be moved.

8.6 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; and
- Car parking management.

8.7 Onsite Measures delivered using a Path Management Plan

Within the site, consideration has been given to pedestrians and cyclists alike due to potential interactions between construction traffic and users of the paths. A Path Planning Study will be conducted post consent and will be secured through a planning condition. Findings from the study will be used to formulate a set of measures into a Path Management Plan.

Users of the Core Paths will be separated from construction traffic through the use of barriers or other measures to be agreed with DGC. Crossing points will be provided where required, with path users having right of way. Appropriate Traffic Signs Manual Chapter 8 compliant temporary road signage would be provided to assist at these crossing 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 Core 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 makes drivers aware of local speed limits and reminding drivers of the potential presence of pedestrians and cyclists in the area. This will also be emphasised in the weekly tool box talks.

The British Horse Society has made general recommendations 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 panic if really frightened. Riders will do all they can to prevent this but, should it happen, it could cause a serious accident for other road users, as well as for the horse and rider.

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

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

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

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

8.8 Operational Phase Mitigation

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

9 Summary and Conclusions

Pell Frischmann (PF) has been commissioned by RES Ltd to undertake a Transport Assessment (TA) for the proposed development, to the south-west of Langholm.

Existing traffic data established a base point for determining the impact during the construction phase and was factored to future levels to help determine the effect of construction traffic on the public road network.

The construction traffic would result in a temporary increase in traffic flows on the public road network surrounding the proposed development. The maximum traffic effect associated with construction of the proposed development is predicted to occur in Month 2 of the construction programme. During this month, an average of 126 HGV movements is predicted per day and it is estimated that there would be a further 84 car and LGV movements per day to transport construction workers to and from the site.

A series of mitigation measures and management plans have been proposed to help mitigate and offset the impacts of both the construction and operational phase traffic flows.

No link capacity issues are expected on any of the roads assessed due to the additional movements associated with the proposed development. The effects of construction traffic are temporary in nature and are transitory.