



Vale of Leven Wind Farm Limited

Vale of Leven Wind Farm

Environmental Impact Assessment Report (Volume 1)

Chapter 9 -Traffic and Transportation

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9 TRAFFIC AND TRANSPORT

9.1 Introduction

9.1.1 This chapter considers the likely significant effects on receptors along the transport routes as a result of vehicle movements associated with the construction, operation and decommissioning of the proposed Vale of Leven Wind Farm ('the Proposed Development'). This chapter has been prepared by Pell Frischmann.

9.1.2 The specific objectives of the chapter are to:

- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the traffic, and transport baseline conditions (including future baseline);
- describe any likely impacts and effects of the Proposed Development on the receptors identified through the baseline assessment;
- describe the mitigation measures proposed to address any likely significant adverse effects;
- assess the residual effects remaining following the implementation of mitigation; and
- describe any likely cumulative effects of the Proposed Development combining and interacting with the residual environmental effects of committed development/s.

9.1.3 The chapter is supported by **Technical Appendix 9.1: Transport Assessment** and the following figures:

- **Figure 9.1 – Study Area**
- **Figure 9.2 – Traffic Count Locations**
- **Figure 9.3 – Personal Injury Accident Locations**
- **Figure 9.4 – Abnormal Load Delivery Routes**

9.1.4 The assessment has been informed by the embedded mitigation measures which form part of the Proposed Development. Please refer to **Chapter 2: Proposed Development** for further details.

9.2 Scope and Methodology

9.2.1 This chapter reports on the following:

- the existing baseline transport conditions of the study area surrounding the Proposed Development;
- the likely infrastructure requirements necessary to enable the Proposed Development;
- the likely effects and changes associated with the imposition of construction traffic on the local road network; and
- the measures that would be required to mitigate against any potential significant effects of the temporary construction traffic.

Scope

Effects Scoped in Full

9.2.2 The following effects were identified at the scoping stage for consideration in this assessment:

- direct effects during construction on traffic flows in the surrounding study area;
- direct effects upon local road users; and
- direct effects on local residents.

Effects Scoped Out

9.2.3 The traffic effects during the operational phase of the Proposed Development are not considered to give rise to significant effects as flows will be below accepted thresholds. The expected traffic flows would be less than five vehicle movements per week, far below the recognised thresholds for triggering a formal Transport Assessment (TA). As such, the effects during the operational phase are scoped out of the assessment as agreed in the scoping opinion.

9.2.4 As elements of the Proposed Development are likely to remain in-situ (such as access tracks), the traffic flows associated with the decommissioning works would be lower than those associated with the construction phase. The construction phase therefore represents a worst case assessment and as such, no further assessment of the decommissioning phase has been considered and has been scoped out of the assessment.

Baseline Studies

9.2.5 To inform the baseline assessment and to establish the nature of the surrounding road and footway infrastructure, the following desktop reviews and survey work have been undertaken:

- site visits;
- review of relevant transport planning policy;
- consideration of potential origin locations of construction staff and potential supply locations for construction materials to inform extent of local area roads network to be considered in the assessment;
- collection of traffic flow and speed data;
- review of the relevant roads hierarchy;
- review of sensitive locations;
- review of accident data;
- review of any other traffic sensitive receptors in the area (routes, communities, buildings etc); and
- review of Ordnance Survey (OS) plans to derive a study area roads network.

Value of Receptors

9.2.6 The Institute of Environmental Management and Assessment (IEMA) 'Guidelines for Environmental Impact Assessment' (2005) [Ref. 9-1] notes that the separate IEMA Guidelines should be used for characterising the environmental traffic and transport

effects (off-site effects) and the assessment of significance of major new developments. Recent guidance published by the IEMA, namely 'Environmental Assessment of Traffic and Movement' (2023) [Ref. 9-2] provides an update to the previously used guidance, 'Guidelines for the Environmental Assessment of Road Traffic'(1993) [Ref. 9-3] document, that should be used to characterise the environmental traffic and transport effects (off-site effects) and the assessment of significance of major new developments. The guidelines intend to complement professional judgement and the experience of trained assessors.

- 9.2.7 In terms of traffic and transport impacts, the receptors are the users of the roads within the study area and the locations through which those roads pass.
- 9.2.8 The IEMA Guidelines includes guidance on how the sensitivity of receptors should be assessed. Using that as a base, professional judgement was used to develop a classification of sensitivity for users based on the characteristics of roads and locations. This is summarised in **Table 9.1**.

Table 9.1: Receptor Value and Sensitivity

Value and sensitivity	Description
High	<p>Users of Roads – Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs. Includes roads with traffic control signals, waiting and loading.</p> <p>Users / Residents of Locations – Where a location is a large rural settlement containing a high number of community and public services and facilities.</p>
Medium	<p>Users of Roads – Where the road is a local A or B class road, capable of regular use by HGV traffic. Includes roads where there is some traffic calming or restrictions, traffic calming measures traffic management measures.</p> <p>Users / Residents of Locations – Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.</p>
Low	<p>Users of Roads – Where the road is Trunk or A-class, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures.</p> <p>Users / Residents of Locations – Where a location is a small rural settlement, few community or public facilities or services.</p>
Negligible	<p>Users of Roads – Where roads have no adjacent settlements. Includes new strategic trunk roads that would be little affected by additional traffic and suitable for Abnormal Loads and new strategic trunk road junctions capable of accommodating Abnormal Loads.</p> <p>Users / Residents of Locations – Where a location includes individual dwellings or scattered settlements with no facilities.</p>

- 9.2.9 Where a road passes through a specific location or settlement for example, users are considered subject to the highest level of sensitivity defined by either the road or location characteristics.

Magnitude of Impact

9.2.10 The following rules, also taken from the 1993 and 2023 IEMA Guidelines, were used to determine which links within the study area should be considered for detailed assessment:

- Rule 1 – Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles (HGV) will increase by more than 30%); and
- Rule 2 – Include highway links of high sensitivity where traffic flows have increased by 10% or more.

9.2.11 The IEMA Guidelines identify the key impacts that are most important when assessing the magnitude of traffic impacts from an individual development: the impacts and levels of magnitude are discussed below:

- Severance – the IEMA Guidance advises that, *“The Department for Transport has historically set out a range of indicators for determining the significance of severance. Changes in traffic flow of 30%, 60% and 90% are regarded as producing ‘slight’, ‘moderate’ and ‘substantial’ changes in severance respectively. Although these thresholds no longer appear in Department for Transport guidance, they have not been superseded by subsequent changes to guidance and are established through planning case law. However, caution needs to be observed when applying these thresholds as very low baseline flows are unlikely to experience severance impacts even with high percentage changes in traffic.”* (Para 3.16). The Guidelines acknowledge that changes in traffic flows should be used cautiously, stating that *“the assessment of severance should pay full regard to specific local conditions, e.g. sensitivity of adjacent land uses, prevalence of vulnerable people, whether or not crossing facilities are provided, traffic signal settings, etc.”* (Para 3.17).
- Driver delay – the IEMA Guidelines note that these delays are only likely to be *“significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system”* (Para 3.20).
- Pedestrian delay (incorporating delay to all non-motorised users) – the IEMA Guidance advises that *“pedestrian delay and severance are closely related effects and can be grouped together. Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. In general, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend on the general level of pedestrian activity, visibility and general physical conditions of the development site.”* (Para 3.24). Furthermore, the guidance advises that *“...it is not considered wise to set down definitive thresholds. Instead it is recommended that the competent traffic and movement expert use their judgement to determine whether pedestrian delay constitutes a significant effect.”* (Para 3.26).
- Non-motorised user amenity - the IEMA Guidance advises that, *“The 1993 Guidelines suggest that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or HGV component) is halved or doubled. Although these thresholds no longer appear in Department for Transport guidance, they have not been superseded by subsequent changes to guidance and are established through planning case law.”* (Para 3.30).
- Fear and intimidation – there are no commonly agreed thresholds for estimating levels of fear and intimidation, from known traffic and physical conditions. However, as the impact is considered to be sensitive to traffic flow, changes in traffic flow of 30%, 60% and 90% are regarded as producing minor, moderate

and substantial changes respectively in the guidelines. (Para 2.19). As such, this has been used to assess the potential impacts associated with construction activities around fear and intimidation on people in close proximity to the Proposed Development.

- Road safety – professional judgement would be used to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents. In line with the IEMA Guidance, those areas of collision clusters would be subject to detailed review.
- Road safety audits – It would be proposed to undertake any necessary Road Safety Audits (RSA) post consent and it is considered that this can be secured via a planning condition.
- Large loads – The movement of the AILs associated with the construction of the Proposed Development have been considered in full, within a separate route survey assessment, which identifies physical mitigation measures required to accommodate the predicted loads. Additional mitigation in terms of addressing potential impacts on sensitive receptors are included as standard within **Section 9.10 ‘Mitigation’**.

9.2.12 While not specifically identified as more vulnerable road users, cyclists are considered in similar terms to pedestrians.

Nature of Effect

9.2.13 In addition to determining the significance of the effect, the assessment process also includes a qualitative description regarding the nature of the effect. These terms add additional information about how the effect would affect receptors and can be seen in **Table 9.2**.

Table 9.2: Assessment Descriptors

Term	Nature of Effect Descriptors
Adverse	An effect which has the potential to decrease receptor value or status relative to baseline conditions.
Beneficial	An effect which has the potential to increase receptor value or status relative to baseline conditions.
Short-term	Effects that persist only for a short time, e.g. during the construction (or decommissioning) phase only; includes reversible effects.
Medium-term	Effects that may persist until additional mitigation measures have been implemented and become effective.
Long-term	Effects that persist for a much longer time, e.g. for the duration of the operational phase (essentially until the development ceases or is removed/ reinstated); includes effects which are permanent (irreversible) or which may decline over longer timescales.
Temporary	A reversible effect where recovery is possible and for which effects would persist only for a short or medium-term.
Frequent	Refers to a recurring effect that occurs repeatedly; in some cases a lower level of impact may occur with sufficient frequency to reduce the ability of a receptor to recover effectively.

Determination of Significance

9.2.14 The approach to determine the significance of effects has been as follows:

- Identify the relevant receptors;
- Derive their value (sensitivity) based on the criteria set out in **Table 9.1**;
- Identify and consider the likely impacts from each activity as set out in **Para 9.2.11**;
- Determine the magnitude of impact (change) based on the criteria identified in **Para 9.2.11**;
- Assess the significance of any effects. Where likely significant effects are identified, develop secondary mitigation measures to reduce effects such that they are no longer significant; and
- Assess the significance of any residual effects following the implementation of secondary mitigation measures.

Significance Criteria

9.2.15 To determine the overall significance of effects, the results from the receptor sensitivity and magnitude of impact (change) assessments are correlated and classified using a scale set out in DMRB LA 104 Environmental Assessment and Monitoring (Revision 1) Table 3.8.1 [Ref. 9-4] and summarised in **Table 9.3**.

9.2.16 The DMRB defines the potential changes in effect as follows:

- Large: These effects are considered to be material in the decision-making process;
- Medium: These effects may be important but are not likely to be material factors in decision making. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a receptor;
- Small: These effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in improving the subsequent design of the project; and
- Negligible: No effects or those that are imperceptible.

Table 9.3: Classification of Significance

Sensitivity	Magnitude			
	Large	Medium	Small	Negligible
High	Major	Major	Moderate	Negligible / Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Negligible / Minor	Negligible	Negligible	Negligible

9.2.17 In terms of the Electricity Works (Environmental Impact Assessment)Regulations 2017 (the EIA Regulations), effects are considered to be significant where they are assessed to be Moderate or above.

Limitations of the Assessment

- 9.2.18 The assessment is based upon average traffic flows in one month periods. During the month, activities at the site may fluctuate between one day and another and it is not possible to fully develop a day by day traffic flow estimate as no Balance of Plant (BoP) contractor has been appointed and external factors can impact upon activities on a day by day basis (weather conditions, availability of materials, time of year, etc).

Design Bases and Assumptions

- 9.2.19 As presented in **Chapter 2: Proposed Development**, the proposed vehicular access to the wind turbines, construction compounds, and substation will be via access tracks which are to be constructed of a graded stone and will be 6 m in width.
- 9.2.20 The Proposed Development will be accessed via a new simple priority junction on the A813 Stirling Road, located immediately to the south of the access junction to Murroch Farm. The access junction will take the form of a priority junction which is designed to accommodate all predicted loads and traffic for both the construction and operational phases of the Proposed Development.
- 9.2.21 Key assumptions made to inform the assessment include the following:
- the assessment is based upon an assumed construction programme for the Proposed Development lasting 21 months. Alterations in this programme, may increase or decrease traffic flows per month, however on the information available at this time, it is considered a robust assessment;
 - traffic generation across the construction programme is based on the estimates of construction materials and staff working on-site as set out in **Technical Appendix 9.1**. Whilst this has been estimated as accurately as possible at this stage, any changes to staff numbers or material requirements may increase or decrease traffic flows per month. It is however considered a robust assessment;
 - assumptions on the origin points for materials have been made to provide a worst-case assessment scenario. Should these origin points change, the effects on surrounding areas may alter to those presented in the assessment;
 - it is assumed that concrete batching will be undertaken on-site;
 - access to the Proposed Development will be taken via a new simple priority junction on the A813 Stirling Road;
 - the distribution of Proposed Development construction traffic on the network would vary depending on the types of loads being transported. The assumptions for the distribution of construction traffic during the peak months are as follows:
 - all construction traffic enters the site via the proposed access on the A813 Stirling Road;
 - deliveries associated with concrete materials, such as cement powder, water and sand/aggregates will be sourced from local concrete suppliers, which for the purpose of this assessment will originate from the A82(T) to the south;
 - whilst it is anticipated that on-site borrow pits will be able to meet up to 100% of the aggregate requirements, for the purpose of this assessment it is proposed that 50% of track and hardstanding aggregate and 100% of concrete aggregate requirements will be sourced from local quarries, which will originate from the A82(T) to the south. The Balance of Plant (BoP) contractor will confirm final quarry and material sourcing with West

- Dunbartonshire Council in the final Construction Traffic Management Plan (CTMP);
 - HGV deliveries associated with cabling and associated materials, etc. will arrive predominantly from the Central Belt and will travel to the site via the A82(T);
 - staff working at the site are likely to be based locally. It is assumed that 90% will come from the A82(T) to the south and 10% from the north, from the Balloch area; and
 - general site deliveries will arrive predominantly from the south via the A82(T).
- 9.2.22 The Future Baseline Year being assessed as part of the traffic and transport assessment is 2028 as this is the anticipated first year of construction, should the Proposed Development get planning consent.
- 9.2.23 Whilst some information gaps have been identified, it is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and assessment of likely significant environmental effects on access, traffic and transport.

9.3 Consultation Undertaken

9.3.1 **Table 9.4** summarises the consultation responses received regarding traffic and transport matters and provides information on where and / or how they have been addressed in this assessment. The following organisations made comment on transport matters:

- West Dunbartonshire Council (as local roads agency);
- Transport Scotland (as trunk roads agency) and
- Kilmaronock Community Council.

Table 9.4: Summary of Scoping Responses

Consultee	Key issues raised	Actions in response to consultee comments
West Dunbartonshire Council 10 June 2022	Whilst a detailed assessment may not be required, the ongoing maintenance and refurbishment of the turbines should still be considered.	Comment noted, consideration in relation to this is provided within the chapter .
	Access roads within the site serving the turbines should be designed to meet the turbine manufactures haulage route guidelines, or in the absence of such information at this time it should be ensured that the gradient of accesses is appropriate.	Comment noted, the Applicant can confirm that the on-site infrastructure will be constructed in line with the relevant guidelines for the selected turbine manufacturer.
	Road condition surveys will be required with supporting evidence to determine the state of the road network that will be used to access the	The methodology of the road condition surveys is included within Technical Appendix 9.1 , and this would be agreed in full with West Dunbartonshire Council post

Consultee	Key issues raised	Actions in response to consultee comments
	development prior to works commencing.	consent and secured by condition. A Section 96 Agreement or similar agreement on the road to cover Wear and Tear will be agreed with West Dunbartonshire Council to ensure the road does not deteriorate as a result of the proposed construction traffic.
Kilmarnock Community Council (KCC) 23 June 2023	<u>Traffic and Transportation</u> Scoping Question: Is the proposed methodology considered acceptable? KCC Response: No objection.	Comment noted.
	Scoping Question: Are the methods proposed for obtaining traffic flow data acceptable? KCC Response: No objection as long as seasonal considerations are taken into account.	Comment noted. Average Annual Daily Traffic (AADT) flows have been used to inform the assessment, which is standard practice. No specific seasonal considerations have been taken in to account or specific traffic surveys undertaken during peak tourist season. Undertaking surveys during peak tourist season would provide higher baseline traffic flows on the road network and thus dilute the potential impacts of the Proposed Development. The assessment undertaken using DfT data is therefore considered suitably robust.
	Scoping Question: Is the use of Low NRTF acceptable for the whole of the study? KCC Response: No. As a major gateway to the highlands and LLTNP the traffic flows for holiday seasons are vastly different	The use of Low NRTF is considered acceptable, has not been disputed by West Dunbartonshire Council and has therefore been applied to the assessment. Furthermore, using a higher growth rate for the baseline traffic flows would dilute the

Consultee	Key issues raised	Actions in response to consultee comments
	<p>than for out of season local traffic.</p> <p>Scoping Question: What cumulative traffic flows from committed development should be included in the assessment?</p> <p>KCC Response: The likelihood is that a new access road will need to be constructed from A813 around Bellsmyre or A82 around Milton.</p> <p>Traffic disruption from such a construction must be assessed especially with concerns to peak holiday periods when the volume of traffic is significant and easily disrupted.</p> <p>Even though A82 is dualled at this location a bottle neck at Stonemollen (north bound) can feed back to the Renton turnoff in normal holiday traffic.</p> <p>Out of season, local traffic is easily interrupted due to limited routes A814, A82 & A813.</p>	<p>potential impacts of the Proposed Development.</p> <p>The assessment undertaken using DfT data is therefore considered suitably robust.</p> <p>Comment noted. The assessment undertaken has taken account of peak construction activities, not in relation to a specific construction activity, for example constructing the proposed site access junction. The assessment is a worst case assessment, in terms of construction activities and therefore considered robust.</p> <p>The construction of the proposed access junction would be undertaken in line with construction best practice and in full agreement with West Dunbartonshire Council. Appropriate traffic management measures would be implemented to mitigate the impact of the works.</p> <p>This would be given further consideration following the Proposed Development gaining planning consent and would be agreed in full with West Dunbartonshire Council, and secured by way of a planning condition if necessary.</p>
<p>Transport Scotland 24/05/2022</p>	<p><u>Assessment of Environmental Impacts</u></p> <p>Section 4.2 – Traffic and Transportation presents the proposed methodology for the assessment of transport and access issues. This states that the Transport and Access Chapter of the forthcoming Environmental Impact Assessment Report (EIAR) will be supported by a Transport Assessment report, Abnormal</p>	<p>Comments noted. The assessments has been undertaken as per the 'IEMA' Guidelines.</p> <p>The access location has now changed from that detailed during the scoping exercise, with updated access information provided within the chapter Para 9.2.20.</p>

Consultee	Key issues raised	Actions in response to consultee comments
	<p>Load Route Survey report and technical figures.</p> <p>It also indicates that that the thresholds as indicated within the Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Road Traffic are to be used as a screening process for the assessment.</p> <p>These specify that road links should be taken forward for assessment if:</p> <ul style="list-style-type: none"> • Traffic flows will increase by more than 30%, or • The number of HGVs will increase by more than 30%, or • Traffic flows will increase by 10% or more in sensitive areas. <p>This approach is considered acceptable, and we are content that no further assessment is required if the above thresholds are not exceeded.</p> <p>We note that the development will be accessed directly from Murroch Farm to the south-west of the site using a purpose-built access junction. As this forms part of the local road network, Transport Scotland has no comment to make on the access junction itself.</p>	
	<p><u>Base Traffic</u></p> <p>The SR states that baseline traffic count data will be obtained from a new Automatic Traffic Count (ATC) survey located on one or more appropriate locations on the local road network (once the proposed access route is defined). It also states that further traffic data for the local</p>	<p>Comments noted. New traffic surveys were not considered necessary for the assessment as DfT data was available on the A813 in the vicinity of the proposed site access.</p> <p>With regards to the A82(T) and other surrounding roads, all data was sourced from the DfT database for the same year</p>

Consultee	Key issues raised	Actions in response to consultee comments
	<p>road network will be obtained from Department for Transport (DfT) traffic count data, the Traffic Scotland database or from specifically commissioned traffic surveys. We would advise that Transport Scotland has a good database of available count information for the trunk road network so the applicant should seek data for the A82(T) from Transport Scotland in the first instance.</p>	<p>(2019) to ensure that a consistent approach was used.</p> <p>With regards to any significant impacts on the trunk road network, the assessments has been undertaken as per the 'IEMA' Guidelines.</p>
	<p>Transport Scotland will require to be satisfied that the traffic generated by the construction of the wind farm will not have any significant environmental issues on the trunk road network, therefore, we would ask that the A82(T) be included within the screening exercise to determine the requirement for any further assessment of impacts on the trunk road network and its adjacent receptors.</p>	<p>Comment noted, the A82(T) has been included within the assessment, which has been undertaken as per the 'IEMA' Guidelines.</p>
	<p>We note that National Road Traffic Forecasts (NRTF) Low Growth factors will be applied to baseline count data to determine future year traffic flows to coincide with the expected construction traffic peak. Transport Scotland considers this acceptable in this instance.</p>	<p>Comment noted and Low Growth factors have been applied as part of the assessment.</p>
	<p>The SR states that traffic accident data will be obtained from Crashmap UK to inform the accident review for the immediate road study area. We note that it is proposed to use three years' worth of data. Transport Scotland would request that five years' worth of data be considered for the assessment and, again, accident data for the A82(T) is available directly from Transport Scotland.</p>	<p>Comment noted, five years personal injury accident data has been reviewed as requested.</p>
	<p>It is noted that any impacts associated with the operational and</p>	<p>Comment noted.</p>

Consultee	Key issues raised	Actions in response to consultee comments
	decommissioning phases of the development are to be scoped out of the EIAR. We would consider this to be acceptable in this instance.	
	<p><u>Abnormal Loads Assessment</u></p> <p>We note that it is proposed that turbine components will originate from King George V Docks in Glasgow. A detailed Route Survey Report will support the application and will identify the necessary access improvements that will be required to enable loads to access the site from the A813 corridor. Transport Scotland is satisfied with this approach but would add that any proposed changes to the trunk road network must be discussed and approved (via a technical approval process) by the appropriate Area Managers.</p>	<p>Comment noted, a full Route Survey Report is included as Appendix A in Technical Appendix 9.1: Transport Assessment.</p> <p>The proposed POE has changed from that previously advised during the scoping exercise. Full details are provided in the Route Survey Report.</p>

9.4 Statutory and Planning Context

- 9.4.1 A high-level overview of the effect of traffic movements has been considered in accordance with the Institute of Environmental Management and Assessment (IEMA) (2023) Environmental Assessment of Traffic and Movement [Ref 9.2]. The document is referred to below as the IEMA Guidelines.
- 9.4.2 An overview of relevant transport planning policies and guidance has been undertaken and is summarised below for national and local government policies.

Planning Policy

National Planning Framework (NPF4) (2023)

- 9.4.3 The National Planning Framework (NPF4) [Ref. 9.5] 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.
- 9.4.4 NPF4 puts the climate and nature crises at the heart of the Scottish planning system and was adopted in February 2023.

West Dunbartonshire Local Plan (2010)

- 9.4.5 The West Dunbartonshire Council Local Plan [Ref. 9.6] was adopted in March 2010 and sets out the Council's aspirations on how it wishes the area to be promoted and protected in terms of development and use of land and property until the year 2015.
- 9.4.6 Policy T4 – Accessibility to New Development states that: “...*New roads, footpaths and cycleways built by developers will normally require to conform to the design and construction standards required by the Council.*”

West Dunbartonshire Local Development Plan 2 (2020)

- 9.4.7 On 15 March 2023, the West Dunbartonshire Council Planning Committee took a decision that the Council would not adopt the LDP2 [Ref. 9.7]. The Proposed LDP2, incorporating the recommended modifications of the Examination Report received on 22 April 2020, which were accepted by the Planning Committee of 19 August 2020, remains the Council's most up to date spatial strategy and is therefore afforded significant weight in the assessment and determination of planning applications.
- 9.4.8 The LDP2 does not contain any specific transport policy guidance for the Proposed Development, as a wind farm development in relation to traffic and transport. Policy CON1 in relation to Transportation Requirements for New Developments, however, makes reference to matters applicable to the Proposed Development, namely that “...*The Council requires development proposals to accord with Designing Streets, the National Roads Development Guidelines, and be in alignment with the provisions of the Regional and Local Transport Strategies.*”

Guidance

Planning Advice Note (PAN) (2005)

- 9.4.9 Planning Advice Note (PAN) 75: Planning for Transport [Ref. 9.8] 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.”*

Onshore Wind Turbines; Online Renewables Planning Advice (2014)

- 9.4.10 The most recent Scottish Government advice note regarding onshore wind turbines was published in 2014 [Ref. 9.9]. 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.

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

Transport Assessment Guidance (2012)

- 9.4.12 Transport Scotland's (TS) Transport Assessment Guidance [Ref. 9.10] was published in 2012. It aims to assist in the preparation of Transport Assessments (TA) for development proposals in Scotland such that the likely transport impacts can be identified and dealt with as early as possible in the planning process. The document sets out requirements according to the scale of development being proposed.
- 9.4.13 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.

West Dunbartonshire Council Renewable Energy Local Development Plan (Proposed Plan) Planning Guidance (2016)

- 9.4.14 In terms of planning for Wind Energy, the planning guidance [Ref. 9.11] notes that with regards to impacts on the adjacent roads and road traffic:

"All proposals are required to fully consider the impact of the development on West Dunbartonshire's road network, with consideration given to:

- *The structural and physical ability of roads and bridges to accommodate the additional traffic generated, including abnormal loads;*
- *The need to minimise disturbance to local communities and businesses.*

Early contact should be made with the Councils Roads Department to agree the scope and extent of a Transport Assessment and Construction Traffic Management Plan."

9.5 Existing Environment

Study Area Determination

- 9.5.1 The Study Area has been based on those 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.
- 9.5.2 It is estimated that the majority of construction personnel will access the site from the south. Personnel would likely travel to the site via the A82(T)/A898 from the Glasgow area, travelling through to the site access on the A813 Stirling Road. It is possible that some construction personnel may reside in local accommodation, for example in the Dumbarton or Alexandria areas during the working week, in which case the traffic effect on the wider road network would be reduced.

- 9.5.3 Wherever practical, construction materials will be sourced from south of the Proposed Development from local suppliers, thus minimising the number of HGVs passing through settlements to the north.
- 9.5.4 The likely Port of Entry (POE) used for the discharging of turbine components will be Clydebank Dock on the north of the River Clyde. Abnormal Indivisible Loads (AILs) are likely to travel through to the Site via the Cart Street, Glasgow Road, B814 Duntocher Road, A82(T) and A813 Stirling Road. Full details of the AIL routes are provided in the Route Survey Report (RSR) which is appended to **Technical Appendix 9.1**.
- 9.5.5 The Study Area for the assessment has therefore been assumed to be as follows:
- A82(T) between the A988/Erskine Bridge and the Lomondgate Roundabout;
 - A82(T) between the Lomondgate Roundabout and the A818 Roundabout;
 - A811 between the A82(T) junction and the western extents of Balloch; and
 - A813 Stirling Road, between the A811 and the A82(T).
- 9.5.6 The Study Area can be seen in **Figure 9.1**.

Pedestrian and Cyclist Networks

- 9.5.7 Within the vicinity of the Site access, there are footways located along the western side of the A813. The footways are complemented by lighting columns and dropped kerbs with tactile paving. A pedestrian refuge island is located on the A813 Stirling Road to facilitate safe crossing to the existing bus layby which is located at the proposed site access. A combination of paths and footways, as well as crossing facilities are provided along the A813, to the north, in the vicinity of settlements.
- 9.5.8 Along the A82(T), north of Stonymollan Roundabout, there is footway along a section of the eastern side of the A82(T) which provides a connection to the bus stop located on the A82(T) to facilities surrounding Loch Lomond via Lower Stonymollan Road.
- 9.5.9 For the majority of the A82(T) between Barloan Toll Roundabout and Dunglass Roundabout, there are footways on both sides of the road which are complemented by lighting columns and dropped kerbs (some including tactile paving). Along this section of carriageway, there are also dedicated crossing facilities by way of signalised crossings. Between Dunglass Roundabout and Mount Pleasant Drive footways are located on the southern side of the A82(T), and lighting columns are provided along this section of footway.
- 9.5.10 Between Stonymollan Roundabout and A811/Luss Road/Old Luss Road Roundabout there are no footways along the A811, however there are pedestrian crossing facilities on the A811 (west) arm of the roundabout which comprises crossing signals and dropped kerbs with tactile paving. Between the A811/Luss Road/Old Luss Road Roundabout and the Drymen Road/A811 priority junction, there are footways located on both sides of the carriageway, as well as signalised crossing points with dropped kerbs and lighting columns. North of the Drymen Road/A811 priority junction, a footway is located to the east of the A811.
- 9.5.11 A review of West Dunbartonshire's Core Path network indicates that a small section of Core Path 38 is located within the Site boundary.

- 9.5.12 A review of Sustrans' National Cycle Route (NCR) map does not show any national cycle routes in the immediate vicinity of the Proposed Development site, however, for approximately 100 m, the NCR 7 comprises an on-road route on the A811 at the northern section of the Study Area. The NCR 7 runs between Sunderland and Inverness and comprises a combination of traffic free and on-road routes.
- 9.5.13 There is a short section of shared footway / cycleway to the south linking the Aggreko Factory with the services area, with tactile paving and drop kerbs at crossing points.

Existing Road Network

A813 Stirling Road

- 9.5.14 The A813 Stirling Road is a short A-road within Dunbartonshire, running parallel to the A82(T) through Alexandria. At its southern extents, the road used to commence at Barloan Toll Roundabout; however it now starts at the Lomondgate Roundabout with the A82(T) to the west. The road runs in a broadly north/south direction passing the Bellsmyre housing estate on the east and the Aggreko Factory to the west, in addition to other industrial type land uses within the Vale of Leven Industrial Estate. The road continued north towards Balloch, passing through Bonhill and Jamestown before ending at its roundabout with the A811. The road is a single carriageway road, with one lane operating in each direction and is approximately 6.0 km in length.
- 9.5.15 There is a 30 miles per hour (mph) in place at its southern extents, rising to 40 mph in the vicinity of the Proposed Development. This then reduces again to 30 mph from the southern extents of Bonhill through to Balloch and the roundabout between the A813 Stirling Road and the A811.
- 9.5.16 The road is considered to be in good condition and maintained by West Dunbartonshire Council.

A82(T)

- 9.5.17 The A82(T) is part of the Scottish trunk road network and is managed and maintained by Amey between Balloch and the Erskine Bridge, and by Bear Scotland for the remainder of its length on behalf of Transport Scotland. The A82(T) runs from Glasgow to Fort William and Inverness, passing along the shores of Loch Lomond and Loch Ness. The A82(T) is one of the principal north/south routes in Scotland providing a key link between the central belt and the Highlands.
- 9.5.18 The section of the A82(T) closest to the Proposed Development, which runs through Dumbarton to the south is dual carriageway with two lanes operating in each direction. The speed limit on the A82(T) varies, however on the section that passes through Dumbarton it is 40 mph. To the east and north of Dumbarton, the national speed limit is in place.
- 9.5.19 The road is considered to be in good condition and maintained to a high standard by Bear Scotland.

A811

- 9.5.20 The A811 is an A-class road running from Stirling in the east to Balloch in the west. At its eastern extents, the road meets the A905 to the west of Stirling Castle, while in the east

it meets the A82(T) at the Stoneymollan Roundabout. The road is a single carriageway road, operating with one lane in each direction. The speed limit on the A811 varies, however to the west of Balloch to the north of the Proposed Development, the national speed limit is in place between Stoneymollan Roundabout and A811/Luss Road Roundabout, reducing to 40 mph as it passes through the centre of Balloch. To the east/north east of Balloch the speed limit increases to the national speed limit.

- 9.5.21 The road is considered to be in good condition and maintained by West Dunbartonshire Council in the vicinity of the Proposed Development.

Existing Traffic Conditions

- 9.5.22 In order to assess the impact of development traffic on the Study Area, traffic count data has been sourced from the Department for Transport (DfT) database [Ref 9.12] for seven locations on the local road network.

- 9.5.23 Traffic data for the year 2019 was obtained¹ from the DfT database, as these flows would be unaffected by Covid-related travel restrictions, including lockdowns and working from home. DfT traffic data allow the traffic flows to be split into vehicle classes. The data was summarised into Cars/Light Goods Vehicles (LGVs) and HGVs (all goods vehicles >3.5tonnes gross maximum weight).

- 9.5.24 Traffic data has been used for the following locations:

- Count Point 1: A82(T) Old Kilpatrick (Count site reference: 40766);
- Count Point 2: A82(T) east of Milton (Count site reference: 10764);
- Count Point 3: A82(T) Dumbarton (south) (Count site reference: 78551);
- Count Point 4: A82(T) Dumbarton (north) (Count site reference: 74285);
- Count Point 5: A813 Stirling Road (Count site reference: 1110);
- Count Point 6: A82(T) north of Balloch (Count site reference: 74335); and
- Count Point 7: A811 Balloch (Count site reference: 50954).

- 9.5.25 The above counts were all estimated counts, using previous years count information from the DfT database. The locations of the count points are shown in **Figure 9.2**.

- 9.5.26 **Table 9.5** summarises the Annual Average Daily Traffic (AADT) traffic data collected and used in this assessment.

Table 9.5: 24-hour Average Traffic Data (2019)

¹ 2019 data has been used as per the text, as this is unaffected by covid impacts during the pandemic, i.e. lockdowns. Whilst 2022 data is available this can also be affected by WFH and as such 2019 has been used. This is a standard approach.

Count Point	Survey Location	Cars/LGV	HGV	Total	% HGVs
1	A82(T) Old Kilpatrick	45,755	2,071	47,826	4.3%
2	A82(T) east of Milton	45,329	2,148	47,477	4.5%
3	A82(T) Dumbarton (south)	32,445	1,413	33,858	4.2%
4	A82(T) Dumbarton (north)	40,008	1,591	41,599	3.8%
5	A813 Stirling Road	11,205	485	11,690	4.1%
6	A82(T) north of Balloch	18,067	686	18,753	3.7%
7	A811 Balloch	12,164	488	12,652	3.9%

Please note that variances may occur due to rounding.

Accident Review

- 9.5.27 Personal Injury Accident (PIA) data for the five-year period covering 2017 to 2021 for the roads within the Study Area, was obtained from the online resource CrashMap [Ref 9.13] which uses data collected by the police about road traffic crashes occurring on British roads, where someone is injured.
- 9.5.28 TA Guidance requires an analysis of the PIA on the road network in the vicinity of any development to be undertaken for at least the most recent 3-year period, or preferably a 5-year period, particularly if the site has been identified as being within a high accident area.
- 9.5.29 The statistics are categorised into three categories, namely “Slight”, “Serious” and “Fatal”, for those accidents that result in a death. The locations and severity of the recorded accidents within the Study Area are summarised in **Table 9.6**, while **Figure 9.3** shows their locations.

Table 9.6: Personal Injury Accident Summary

Survey Location	Slight	Serious	Fatal	*HGV Incidents
A813 Stirling Road	9	6	1	2
A82(T)	44	23	3	9
A811	8	2	0	3
Total	61	31	4	14
Percentage	63.5%	32.3%	4.2%	14.6%

* HGV PIAs are included within the totals for slight, serious and fatal accidents

- 9.5.30 A summary analysis of the 5-year accident data indicates the following:
- PIAs recorded within the total Study Area*
- 9.5.31 A total of 96 PIAs were recorded within the Study Area within the last available five-year period.
- 9.5.32 Of those 96 PIAs, 61 were classified as slight (63.5%) and 31 were classified as serious (32.3%). Four fatalities were recorded within the study period.

PIAs recorded along A813 Stirling Road, within the Study Area

- 9.5.33 A total of 16 PIAs were recorded along the A813 Stirling Road, within the Study Area, of which nine were classified as slight and six were classified as serious. One fatality was recorded.
- 9.5.34 The fatal incident occurred approximately 50 m to the south of the Strathleven Substation access and was recorded as a single-vehicle collision involving a motorcycle.
- 9.5.35 Two PIAs involved cyclists, of which one was classified as slight and one was classified as serious. The two separate PIAs were recorded as multi-vehicle accidents also involving cars, and both occurred at the A813 Stirling Road/Burn Street priority junction.
- 9.5.36 A total of three incidents were recorded to involve pedestrians.
- 9.5.37 One incident which recorded a pedestrian PIA was recorded at the entrance arm to the Lomondgate Roundabout. The PIA was classified as slight and also involved a car. There are no pedestrian facilities at the location of the PIA.
- 9.5.38 A young pedestrian PIA was recorded at the A813 (north) crossing point at the A813/Bridge Street signalised junction. The PIA was classified as serious and involved a car.
- 9.5.39 A pedestrian PIA was recorded at Dalvait Road/A813/Davidson Road junction, approximately 20 m to the south of a signalised pedestrian crossing. The PIA was recorded as slight and involved an HGV.
- 9.5.40 A total of four PIAs were recorded at the A813/Burn Street priority junction, of which two separate incidents involved cyclists, as outlined above. Another incident was recorded as a multi-vehicle collision involving cars and was classified as slight. The remaining incident involved a single-vehicle collision and was recorded as serious. No information is provided on CrashMap regarding the vehicle type involved in this incident.
- 9.5.41 Young drivers (16-20) were involved in seven accidents, four were classified as slight, two were classified as serious, and one involved a fatality.

PIAs recorded along the A82(T), within the Study Area

- 9.5.42 A total of 70 PIAs were recorded along the A82(T), within the Study Area, of which 44 were classified as slight and 23 were classified as serious. Three fatalities were recorded.
- 9.5.43 A PIA which involved a fatality was recorded at the priority junction with the A82(T) which provides access to the Cruin. The collision involved a motorcycle and a car. Another separate accident was located at the same location which resulted in a serious casualty and involved a motorcycle and a car.
- 9.5.44 A fatal incident occurred along the A82(T), approximately 260 m north of the Overton Road underpass, which involved three vehicles including cars and a motorcycle.
- 9.5.45 A fatal incident was recorded along the A82(T), approximately 140 m to the north of the Strowan's Well Road northbound bus stop. The incident was recorded to involve cars.
- 9.5.46 Five separate PIAs were recorded involving cyclists, of which two incidents were recorded as slight and three incidents were recorded as serious.

- 9.5.47 A total of 11 PIAs were recorded to involve motorcycles, of which two were recorded as slight, seven were recorded as serious and two fatalities were recorded, as outlined in further detail above.
- 9.5.48 Five separate incidents involved pedestrians, of which two were recorded as slight and three were recorded as serious.
- 9.5.49 Nine PIAs were recorded to include HGVs, eight of which were classified as slight and one which was classified as serious.
- 9.5.50 One PIA involved a bus, which was classified as slight.
- 9.5.51 Two serious PIAs were recorded at the same approximate location on the Lomondgate Roundabout carriageway. One of the incidents was recorded as a single-vehicle collision involving a motorcycle and one incident involved a multi-vehicle collision involving cars.
- 9.5.52 Three incidents were recorded in the vicinity of the A82(T)/Strowan's Well Road/Greenhead Road crossroads, of which two incidents were classified as slight and one incident was classified as serious. A pedestrian casualty was involved in one of the incidents, which was classified as slight.
- 9.5.53 A total of four incidents were recorded along the A82(T) at the A82(T)/Glasgow Road priority junction, of which three were recorded as slight and one was recorded as serious. One of the incidents which was classified as slight was recorded as a multi-vehicle collision involving a car and a motorcycle.
- 9.5.54 Two PIAs were recorded at the access to Renault /Dacia of which one of the incidents was classified as slight and involved a cyclist, and one was classified as serious and involved a motorcycle and a car.
- 9.5.55 Three PIAs were recorded along the Dunglass Roundabout on the A82(T) eastbound exit arm, of which two were classified as serious and one was recorded as slight. The two separate incidents which were classified as serious were both recorded as multi-vehicle collisions involving a car and a motorcycle.
- 9.5.56 Young drivers (16-20) were involved in seven accidents, five were classified as slight and one was classified as serious and one resulted in a fatality.

PIAs recorded along the A811, within the Study Area

- 9.5.57 A total of 10 PIAs were recorded along the A811, within the Study Area, of which eight were classified as slight and two were classified as serious. No fatalities were recorded.
- 9.5.58 Two PIAs were recorded involving pedestrians.
- 9.5.59 One pedestrian PIA was recorded to the east of the A811/Carrochan Road and involved an HGV. This pedestrian PIA was classified as serious.
- 9.5.60 One pedestrian PIA was recorded 110 m to the south-west of the Country Store was classified as slight and also involved a car. There is a footway on the eastern side of the A811 at the recorded PIA location.
- 9.5.61 Two PIAs were recorded within the A811 study area, both of which were classified as slight.

- 9.5.62 A total of three PIAs involved an HGV, of which two were classified as serious and one was classified as slight. One of the PIAs involving an HGV also involved a Bus and was classified as serious.
- 9.5.63 Two PIAs involved motorcycles, both of which were classified as slight. One of the PIAs was recorded as a single vehicle collision, and one PIA was recorded as a multi-vehicle collision involving a motorcycle and a car.
- 9.5.64 Two accidents were recorded along the A811, near the minor road opposite the Country Store, one of which was the PIA involving an HGV and Bus, as described above.

Summary of PIAs

- 9.5.65 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 would be exacerbated by the construction of the Proposed Development. A single fatality was recorded approximately 50 m to the south of the proposed Site access junction, however this occurred in 2017 and was a single vehicle (motorcycle) incident. As such it is considered that there is no safety issues at this location.
- 9.5.66 In general, there are no locations within the Study Area where there are high numbers of accidents involving HGVs have been recorded.
- 9.5.67 Whilst it could be considered that a high number of PIA have been recorded in the Study Area as a whole, it should be noted that the roads are subject to high daily volumes of traffic and are key routes in the area, providing access to the central belt, highlands and west coast of Scotland. Furthermore, a large number of the PIA recorded on the wider Study Area occurred at locations on the road network where there is an increased level of vehicle interaction, for example at junctions or on approach to junctions.

Future Baseline Traffic Conditions

2028 Traffic Flows, excluding Committed Development Trips

- 9.5.68 Construction of the Proposed Development could commence during 2028 if consent is granted and is anticipated to take approximately 21 months depending on weather conditions and ecological considerations.
- 9.5.69 To assess the likely effects during the construction, base year traffic flows were determined by applying a National Road Traffic Forecast (NRTF) low growth factor to the surveyed traffic flows. The NRTF low growth factor for 2019 to 2028 is 1.054. This growth factor has been applied to the survey data to estimate the 2028 Base traffic flows, as shown in **Table 9.7**. This will be used in the Construction Peak Traffic Impact Assessment.

Table 9.7: 24-hour Average Traffic Data (2028)

Count Point	Survey Location	Cars/LGV	HGV	Total	% HGVs
1	A82(T) Old Kilpatrick	48,226	2,183	50,409	4.3%
2	A82(T) east of Milton	47,777	2,264	50,041	4.5%
3	A82(T) Dumbarton (south)	34,197	1,489	35,686	4.2%
4	A82(T) Dumbarton (north)	42,168	1,677	43,845	3.8%
5	A813 Stirling Road	11,810	511	12,321	4.1%
6	A82(T) north of Balloch	19,043	723	19,766	3.7%
7	A811 Balloch	12,821	514	13,335	3.9%

Please note that variances may occur due to rounding.

Do Nothing Scenario

9.5.70 In the absence of the Proposed Development, it is anticipated that there will be continuous traffic growth along the road links within the Study Area. These links will experience increased traffic flows from other development pressures, tourism traffic and population flows.

9.6 Assessment of Likely Significant Effects

9.6.1 A review of potential receptors has been undertaken and a summary of receptor sensitivities based upon the various criteria noted in **Table 9.1**. This summary is illustrated in **Table 9.8**.

Table 9.8: Summary of Sensitive Receptors in the Study Area

Receptor	Sensitivity	Justification
A813 road users	Medium	Where the road is a local A or B class road capable of regular use by HGV traffic.
A82(T) road users	Low	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition.
A811 road users	Medium	Where the road is a local A or B class road capable of regular use by HGV traffic.
Alexandria including Vale of Leven Estate, Bonhill, Jamestown and Balloch	High	Where a location is a large settlement containing a high number of community and public services and facilities.
Dumbarton	High	Where a location is a large rural settlement containing

Receptor	Sensitivity	Justification
		a high number of community and public services and facilities.
Milton	Medium	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.
Core Paths	High	Minor path used by walkers and cyclists, not constructed to accommodate HGV traffic flows.

Potential Construction Effects

9.6.2 During the construction phase, the following traffic will require access to the Site:

- staff transport, either cars or staff minibuses;
- construction equipment and materials, deliveries of machinery and supplies such as concrete raw materials;
- AILs consisting of the wind turbines sections and also a heavy lift crane(s); and
- escort vehicles for AIL deliveries.

9.6.3 Except for the turbine components, most traffic would be normal construction plant and would include grading tractors, excavators, high capacity cranes, forklifts and dumper trucks. Most would arrive at the site on low loaders.

9.6.4 The turbines are delivered in component sections for transport and would be assembled at the site. The nacelle, hub, drive train, blade, tower sections are classified as AIL due to their weight and/or length, width and height when loaded.

9.6.5 The components can be delivered on a variety of transport platforms with typical examples illustrated in **Technical Appendix 9.1**.

9.6.6 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 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.

9.6.7 The resulting traffic generation profile is attached in **Technical Appendix 9.1** (Table 12 Construction Traffic Profile) for review. The peak of construction in terms of vehicular movements will be 116 daily journeys (40 Car/Lights and 76 HGV journeys). This is estimated to occur in five of the months of the overall 21 month programme.

9.6.8 These figures on average indicate approximately an additional 6 two-way HGV movements per hour on the network at the peak of construction activities.

9.6.9 The distribution of construction traffic on the highway network will vary depending on the types of loads being transported. As part of the assessment, the assumptions for the distribution of construction traffic during the peak months is as follows:

- all construction traffic enters the site via the proposed access on the A813 Stirling Road;
- deliveries associated with concrete materials, such as cement powder, water and sand/aggregates will be sourced from local concrete suppliers, which for the purpose of this assessment will originate from the A82(T) to the south;
- whilst it is anticipated that on-site borrow pits will be able to meet up to 100% of the aggregate requirements, for the purpose of this assessment it is proposed that 50% of track and hardstanding aggregate and 100% of concrete aggregate requirements will be sourced from local quarries, which will originate from the A82(T) to the south. The BoP contractor will confirm final quarry and material sourcing with West Dunbartonshire Council in the final CTMP;
- HGV deliveries associated with cabling and associated materials, etc. will arrive predominantly from the central belt and will travel to the site via the A82(T);
- staff working at the site are likely to be based locally. It is assumed that 90% will come from the A82(T) to the south and 10% from the north, from the Balloch area; and
- general site deliveries will arrive predominantly from the south via the A82(T).

9.6.10 For the purposes of this assessment, it has been assumed that all abnormal load traffic will access the Proposed Development site via the following route:

- loads will exit the dock and continue north on Cart Street;
- loads will turn left onto Glasgow Road heading north west;
- loads will turn right onto Duntocher Road (B814);
- at Kilbowie Roundabout, loads will take the first exit to join the A82(T) heading west;
- loads will continue west on the A82(T) to the Lomondgate roundabout where they will head north on to the A813 Stirling road;
- immediately after the A82/A813 Stirling Road Roundabout, they will negotiate the roundabout which provides access to the Aggreko Factory and service area; and
- loads will continue north on the A813 Stirling Road for approximately 460 m to the proposed site access junction.

9.6.11 The proposed construction vehicle and AIL delivery routes are shown on **Figure 9.4**.

9.6.12 Following the distribution and assignment of traffic flows to the Study Area, the resultant daily traffic during the peak of construction is summarised in **Table 9.9**.

Table 9.9: Peak Construction Traffic

Count Site	Survey Location	Cars / LGV	HGV	Total	%HGV
1	A82(T) Old Kilpatrick	36	76	112	67.9%
2	A82(T) east of Milton	36	76	112	67.9%
3	A82(T) Dumbarton (south)	36	76	112	67.9%
4	A82(T) Dumbarton (north)	36	76	112	67.9%
5	A813 Stirling Road	36	76	112	67.9%
6	A82(T) north of Balloch	0	0	0	0.0%
7	A811 Balloch	4	0	4	0.0%

9.6.13 The construction traffic was compared against the future baseline (2028) traffic to estimate the increase in traffic associated with this phase of the Proposed Development. **Table 9.10** illustrates the potential traffic impact at the peak of construction activity.

Table 9.10: Peak Construction Traffic Network Impact

Count Site	Survey Location	Cars / LGV	HGV	Total	Cars / LGV % Increase	HGV % Increase	Total % Increase
1	A82(T) Old Kilpatrick	48,262	2,259	50,521	0.1%	3.5%	0.2%
2	A82(T) east of Milton	47,813	2,340	50,153	0.1%	3.4%	0.2%
3	A82(T) Dumbarton (south)	34,233	1,566	35,799	0.1%	5.1%	0.3%
4	A82(T) Dumbarton (north)	42,204	1,753	43,958	0.1%	4.5%	0.3%
5	A813 Stirling Road	11,846	587	12,434	0.3%	14.9%	0.9%
6	A82(T) north of Balloch	19,043	723	19,766	0.0%	0.0%	0.0%
7	A811 Balloch	12,825	514	13,339	0.0%	0.0%	0.0%

Please note that variances may occur due to rounding.

9.6.14 The highest total traffic movement increase within the Study Area is on the A813 Stirling Road, where it is predicted to increase by 0.9%. This is considered to be below daily traffic variation levels on the road network. On the rest of the public road network within the Study Area, the next highest total traffic increase (0.3%) is on the A82(T) in the vicinity of Dumbarton, to the south of the Proposed Development.

- 9.6.15 The total HGV traffic movements will increase by 14.9% on the A813 Stirling Road, where the proposed site access will be located. This is not considered to be a significant increase, with only 76 HGV movements per day predicted, which equates to approximately 6 two-way movements per hour over a typical 12 hour working day. On the rest of the public road network, the highest HGV traffic increase is 5.1%, which is on the A82(T) at Dumbarton, to the south of the Proposed Development.
- 9.6.16 It should be noted the construction phase is transitory in nature and the peak of construction activities is short lived, occurring over a relatively short timeframe when taking account of the whole construction programme.
- 9.6.17 A review of existing theoretical road capacity has been undertaken using the Design Manual for Roads and Bridges, Volume 15, Part 5 “The NESAs Manual” [Ref 9.14]. 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 9.11**.

Table 9.11: Theoretical Road Capacity

Count Point	Survey Location	2028 Baseline Flow (total traffic)	2028 Base + Development Flows (total traffic)	Theoretical Road Capacity (12hr)	Spare Road Capacity %
1	A82(T) Old Kilpatrick	50,409	50,521	72,000	29.8%
2	A82(T) east of Milton	50,041	50,153	72,000	30.3%
3	A82(T) Dumbarton (south)	35,686	35,799	72,000	50.3%
4	A82(T) Dumbarton (north)	43,845	43,958	72,000	38.9%
5	A813 Stirling Road	12,321	12,434	36,000	65.5%
6	A82(T) north of Balloch	19,766	19,766	72,000	72.5%
7	A811 Balloch	13,335	13,339	28,800	53.7%

Please note that variances may occur due to rounding.

- 9.6.18 The results indicate there are no road capacity issues with the addition of construction traffic associated with the Proposed Development and ample spare capacity exists within the trunk and local road network to accommodate all construction phase traffic.
- 9.6.19 Based on the information included in **Table 9.10** and **Table 9.11** above and taking cognisance of the guidance set out within the IEMA Guidelines [Ref. 9-2], to determine which links within the Study Area should be considered for detailed assessment, there

are no links within the Study Area that exceed the traffic increase threshold for either Rule 1 or Rule 2 (as detailed in **Para 9.2.10** of this chapter).

- 9.6.20 As such, in terms of the public road network, no further environmental assessment of the Proposed Development is required during the construction phase, and no significant effects are predicted within the Study Area road links.

9.7 Potential Effects

- 9.7.1 The significance of the potential effects on the above receptors has been determined using the rules and thresholds previously outlined in the Assessment of Significance section. **Table 9.12** summarises the significance on the receptors for the construction phase prior to mitigation measures being applied.

Table 9.12: Construction Phase Effects Assessment

Receptor	Severance	Driver Delay	Pedestrian Delay	Non-motorised user Amenity	Fear and Intimidation	Road Safety	Large Loads
Core Path	Major	Negligible /Minor	Major	Major	Major	Negligible/ Minor	N/A

- 9.7.2 The assessment of significance suggests that Core Path users are considered likely to experience Significant effects in terms of the EIA Regulations, prior to the application of mitigation measures.
- 9.7.3 It should be noted that the impacts relate solely to the peak of construction activities and that the construction period is short lived and the effects transitory in nature.

9.8 Cumulative Situation During Construction

- 9.8.1 As detailed in **Technical Appendix 9.1**, the review of committed development schemes (developments with extant planning permission) 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 is therefore considered that no cumulative assessment is required.

9.9 Decommissioning

- 9.9.1 The traffic effects during the decommissioning phase can only be fully assessed closer to that period, 35 years on from the completion of the Site. As elements of the Proposed Development are likely to remain in-situ (such as cable trenches, some access tracks, etc.), the traffic flows associated with the decommissioning works will be lower than those associated with the construction phase. The construction phase therefore represents a

worst-case assessment, and as such Decommissioning effects are considered to be less than or equal to, the predicted construction phase effects.

9.10 Mitigation

Construction Traffic Management Plan (CTMP)

9.10.1 During the construction period, a project website, blog or Twitter feed would be regularly updated to provide the latest information relating to traffic movements associated with vehicles accessing the site. This would be agreed with West Dunbartonshire Council.

9.10.2 The following measures would be implemented during the construction phase through the CTMP:

- agree AIL route modifications and improvements with West Dunbartonshire Council and other relevant stakeholders. Works which will be required to facilitate turbine deliveries are outlined in the respective delivery route options RSR, which are presented in **Technical Appendix 9.1** as **Appendix A**;
- 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);
- a Transport Management Plan for AIL deliveries;
- all materials delivery lorries (dry materials) should be sheeted to reduce dust and stop spillage on public roads;
- specific training and disciplinary measures should be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- wheel cleaning facilities may be established at the site entrance, depending on the views of West Dunbartonshire Council;
- normal site working hours would be limited to between 0700 and 1900 (Monday to Friday) and 0700 and 1300 (Saturday), though component delivery and turbine erection may take place outside these hours;
- appropriate traffic management measures would be put in place on the A813 Stirling Road leading through to the site, from its junction with the A82(T), to avoid conflict with general traffic, subject to the agreement of West Dunbartonshire Council. Typical measures would 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;
- adoption of voluntary reduced speed limits at locations to be agreed with West Dunbartonshire Council;
- all drivers would be required to attend an induction to include:
 - a toolbox talk safety briefing;
 - the need for appropriate care and speed control;
 - a briefing on driver speed reduction agreements (to slow site traffic at sensitive locations through the villages); and
 - identification of the required access routes and the controls to ensure no departure from these routes.

- 9.10.3 West Dunbartonshire Council are likely to request that an agreement to cover the cost of abnormal wear on its road network is made.
- 9.10.4 Video footage of the pre-construction phase condition of the abnormal loads access route and the construction vehicles route would be recorded to provide a baseline of the condition of the road prior to any construction work commencing. This baseline would provide evidence of any change in the road condition during the construction phase. Any necessary repairs would be coordinated with West Dunbartonshire Council's roads team. 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.
- 9.10.5 Damage to road infrastructure caused directly by construction traffic would be remediated, and street furniture that is removed on a temporary basis would be fully reinstated.
- 9.10.6 The proposed access junction would be used for both the construction and operational phases of the Proposed Development and will require the relocation of the existing bus stop and lay-by at this location. It is proposed that the bus stop and lay-by be relocated to the south of its existing location, to the area between the access to the electricity distribution site and Brackenhurt Cottage. It would be proposed to discuss this further with West Dunbartonshire Council and bus operators post consent.
- 9.10.7 There would be a regular road review, and any debris and mud would be removed from the carriageway using an on-site road sweeper to ensure road safety for all road users.
- 9.10.8 Before the AILs traverse the routes from the POE, the following tasks would be undertaken to ensure load and road user safety:
- ensure any vegetation which may foul the loads is trimmed back to allow passage;
 - confirm there are no roadworks or closures that could affect the passage of the loads;
 - check no new or diverted underground services on the proposed route are at risk from the abnormal loads; and
 - confirm the police are satisfied with the proposed movement strategy.

Abnormal Load Transport Management Plan

- 9.10.9 There are a number of traffic management measures that could help reduce the effect of abnormal load convoys.
- 9.10.10 All abnormal load deliveries would be undertaken at appropriate times (to be discussed and agreed with the road authorities and police) with the aim to minimise the effect on the local road network. It is likely that the abnormal load convoys would travel in the early morning periods before peak times while general construction traffic would generally avoid the morning and evening peak periods.
- 9.10.11 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.

- 9.10.12 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 the initial route section from Clydebank Docks through to A82(T) where the loads may straddle the centre line of the carriageway, for example along the A814 Duntocher Road;
 - on the A813 Stirling Road, from its junction with the A82(T) to the south, where contraflow measures will be introduced so that the loads can navigate through the two roundabouts;
 - at other 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 road junctions, requiring other traffic to be restrained on other approach arms; and
 - in locations where high speeds of general traffic are predicted.
- 9.10.13 Advance warning signs would be installed on the approaches to the affected road network. 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.
- 9.10.14 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).
- 9.10.15 The location and numbers of signs would be agreed post consent and would form part of the Traffic Management Proposal for the project.
- 9.10.16 The Abnormal Load 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 such as local events;
 - 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 group 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.

On-site Measures delivered using a Path Management Plan (PMP)

- 9.10.17 Within the site, consideration has been given to pedestrians and cyclists alike due to potential interactions between construction traffic and users of the paths and public roads. If required, 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 (PMP).
- 9.10.18 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.

- 9.10.19 The principal contractor will ensure that speed limits are always adhered to by their drivers and associated subcontractors.
- 9.10.20 Signage will be installed on the site exit that makes drivers aware of local speed limits and reminding drivers of the potential presence of pedestrians and cyclists in the area. This will also be emphasised in the weekly toolbox talks.
- 9.10.21 No scoping response has been received from The British Horse Society, however measures implemented on similar schemes will be given consideration as part of the Proposed Development. These measures are predominantly focused around the interactions between HGV traffic and horses. Horses are normally nervous of large vehicles, particularly when they do not often meet them. Horses are flight animals and will run away 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.
- 9.10.22 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.
- 9.10.23 The British Horse Society has previously recommended the following actions that will be included in the site training for all HGV staff:
- on seeing riders approaching, drivers must slow down and stop, minimising the sound of air brakes, if possible;
 - if the horse still shows signs of nervousness while approaching the vehicle, the engine should be shut down (if it is safe to do so);
 - the vehicle should not move off until the riders are well clear of the back of the HGV;
 - if drivers are wishing to overtake riders, please approach slowly or even stop in order to give riders time to find a gateway or lay by where they can take refuge and create sufficient space between the horse and the vehicle. Because of the position of their eyes, horses are very aware of things coming up behind them; and
 - all drivers delivering to the site must be patient. Riders will be doing their best to reassure their horses while often feeling a high degree of anxiety themselves.

Staff Travel Plan

- 9.10.24 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.

Operational Phase Mitigation

- 9.10.25 The site entrance will be gated, 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 the road surface in good condition and to ensure there are no adverse issues affecting the public road network.

9.11 Assessment of Residual Effects

Residual Construction Effects

- 9.11.1 This chapter presents the findings of the potential effects of the Proposed Development on traffic and transportation during the construction phase.
- 9.11.2 The Proposed Development will lead to a temporary increase in traffic volumes on the Study Area during the construction phase. Traffic volumes will fall considerably outside the peak periods of construction.
- 9.11.3 The peak of construction in terms of vehicular movements will be 116 daily journeys (40 Car/Lights and 76 HGV journeys). This is estimated to occur in five of the months of the overall 21 month programme. Over the course of a typical 12 hour working day on the site, this would equate to approximately 10 two-way HGV movements per hour.
- 9.11.4 No link capacity issues are expected on any of the roads assessed due to the additional movements associated with the construction of the Proposed Development.
- 9.11.5 A review of the road network has been undertaken to assess the feasibility of transporting turbines to the site and no significant issues have been noted.
- 9.11.6 An evaluation of the potential effects of the increase in construction traffic on the study area roads used for construction traffic was undertaken. The summary of this assessment is provided in **Table 9.13**.
- 9.11.7 With the implementation of appropriate mitigation, no significant residual effects are anticipated in respect of traffic and transport impacts. The residual effects are all assessed to be slight or insignificant, noting that they will occur during the construction phase only, they are temporary and reversible.

Table 9.13: Summary of Significant Effects

Description Effect	Significance of Potential Effects	Mitigation Proposed	Means of Implementation	Outcome / Predicted Residual Effect
Construction Phase				
Core Path Users				
Severance	Significant	Improved signage, temporary signage and public information provision.	Implementation of CTMP and provision of construction traffic road signage.	Not significant

Description Effect	Significance of Potential Effects	Mitigation Proposed	Means of Implementation	Outcome / Predicted Residual Effect
Construction Phase				
Core Path Users				
			Provision of an on-site Path Management Plan.	
Driver delay	Not significant	Improved signage, temporary signage and public information provision.	Implementation of CTMP and provision of construction traffic road signage. Provision of an on-site Path Management Plan if required.	Not significant
Pedestrian Delay	Significant	Improved signage, temporary signage and public information provision.	Implementation of CTMP and provision of construction traffic road signage. Provision of an on-site Path Management Plan if required.	Not significant
Non-motorised user Amenity	Significant	Improved signage, temporary signage and public information provision.	Implementation of CTMP and provision of construction traffic road signage. Provision of an on-site Path Management Plan if required.	Not significant
Fear and intimidation	Significant	Improved signage, temporary signage and public information provision.	Implementation of CTMP and provision of construction traffic road signage. Provision of an on-site Path Management Plan if required.	Not significant
Road Safety	Not significant	Improved signage, temporary	Implementation of CTMP and provision of	Not significant

Description Effect	Significance of Potential Effects	Mitigation Proposed	Means of Implementation	Outcome / Predicted Residual Effect
Construction Phase				
Core Path Users				
		signage and public information provision.	construction traffic road signage. Provision of an on-site Path Management Plan if required.	
Large Loads	N/A	N/A	N/A	N/A
Operational Phase				
None	None	None	None	None
Decommissioning Phase (if required)				
None	None	None	None	None

9.12 References

Ref. 9-1: The Institution of Environmental Management and Assessment (2005), Guidelines for Environmental Impact Assessment

Ref. 9-2: The Institution of Environmental Management and Assessment (2023), Environmental Assessment of Traffic and Movement

Ref. 9-3: The Institution of Environmental Management and Assessment. (1993), Guidelines for the Environmental Assessment of Road Traffic

Ref. 9-4: Highways England, Transport Scotland, Welsh Government & Department for Infrastructure (2020), LA104, Environmental assessment and monitoring, the Design Manual for Roads and Bridges (DMRB)

Ref. 9-5: Scottish Government (2023), National Planning Framework 4

Ref. 9-6: West Dunbartonshire Council (2010), West Dunbartonshire Local Plan

Ref. 9-7: West Dunbartonshire Council (2020), West Dunbartonshire Local Development Plan 2

Ref. 9-8: Scottish Government (2005), Planning Advice Note (PAN) 75

Ref. 9-9: Scottish Government (2014), Onshore Wind Turbines; Renewables Planning Advice

Ref. 9-10: Transport Scotland (2012), Transport Assessment Guidance

Ref. 9-11: West Dunbartonshire Council (2016), Renewable Energy Local Development Plan (Proposed Plan) Planning Guidance

Ref. 9-12: Department for Transport, traffic count data. Available at: <https://roadtraffic.dft.gov.uk/#6/55.254/-6.053/basemap-regions-countpoints>

Ref. 9-13: CrashMap accident data. Available at: <https://www.crashmap.co.uk/>

Ref. 9-14: Department for Transport (2013), Design Manual for Roads and Bridges, Volume 15, Part 5 “The NESAs Manual”.