VOLUME 2: CHAPTER 12 – TRANSPORT AND ACCESS

Figure (Volume 3 of this EIA Report)

Appendices (Volume 4 of this EIA Report)

12. TRANSPORT & ACCESS

12.1 Introduction

12.1.1 This chapter considers the potential effects of the Proposed Development on transport and access. The assessment includes potential effects on traffic, and the users of the roads within the study area.

12.1.2 The specific objectives of the Chapter are to:

- describe the baseline (including desk-based studies and field surveys);
- describe how consultation has informed the scope of the assessment;
- describe the assessment methodology and significance criteria used in assessing effects on ornithological features;
- describe the mitigation measures proposed to address potential significant effects (if required); and
- assess the residual effects remaining following implementation of mitigation.

12.1.3 An assessment of the effects of the traffic movements has been considered in accordance with the Institute of Environmental Management and Assessment (IEMA) publication, "Environmental Assessment of Traffic and Movement". The document is referred to as the IEMA Guidelines in this chapter.

12.1.4 This chapter presents information relevant to the Proposed Development. It should be read in conjunction with **Chapter 3: Description of the Proposed Development** of the EIA Report for full details of the Proposed Development.

12.1.5 The assessment was undertaken by Pell Frischmann Consultants Limited. It has been undertaken and reviewed by a Chartered Transport Planner with relevant memberships of the Chartered Institution of Highways and Transportation and the Chartered Institute of Logistics and Transport. Further details can be found in **Chapter 2: The EIA Report.**

12.1.6 The chapter is supported by **Appendix 12.1 Transport Assessment**. This is referenced in the chapter, where relevant.

12.2 Scope of the Assessment

Effects Assessed in Full

12.2.1 The assessment has fully considered the transport and access issues arising from the construction phase of the Proposed Development. This chapter considers effects on the following:

- Direct effects during construction on traffic flows in the surrounding study area;
- Direct effects upon local road users;
- Effects upon local residents due to an increase in construction traffic; and
- Cumulative effects during construction.

12.2.2 Where the effects meet the criteria set out in the IEMA Guidelines, a review of the effects with reference to severance, driver delay, pedestrian delay, non-motorised user amenity, fear and intimidation, road safety, road safety audits and large loads has been undertaken.

Effects Scoped Out

12.2.3 Once operational, it is envisaged that the level of traffic associated with the Proposed Development would be minimal. Regular
maintenance visits would be made to the Proposed Development typically using Light Goods Vehicles (LGV) or 4x4 vehicles. It is considered that the effects of operational traffic would be negligible and therefore no detailed transportation assessment of the operational phase of the development is proposed.

12.2.4 The traffic generation levels associated with the decommissioning phase are predicted to be less than those associated with the development phase. As such, the construction phase is considered the worst-case assessment to review the impact on the study area. An assessment of the decommissioning phase has therefore not be undertaken, although a

commitment to reviewing the impact of this phase would be made immediately prior to decommissioning works proceeding.

Study Area

12.2.5 The study area is based upon routes that would be used by construction traffic accessing the Proposed Development. The proposed construction route comprises Moatmill Road for incoming traffic and the U322, Emmock Road for outgoing traffic and would be used for bulk material deliveries, staff movements and component transport.

12.2.6 The study area assessed is as follows:

- Emmock Road (from the Emmock Roundabout through to the Site access junction);
- Moatmill Road;
- A90 (between Forfar and Dundee);
- A90 Kingsway West; and
- A972 Kingsway East.

12.2.7 The study area is illustrated in **Figure 5.1** of **Appendix 12.1: Transport Assessment**.

12.3 Assessment Methodology

Legislation, Policy and Guidance

Legislation

12.3.1 The assessment is carried out in accordance with the principles contained within the following legislation:

- The Town and Country Planning Act (Environmental Impact Assessment) (Scotland) Regulations 2017.

Policy

12.3.2 The following policies of relevance to the assessment have been considered:

- National Planning Framework 4 (2023); and
- Renewable and Low Carbon Energy Development (2017), Angus Council Local Plan Supplementary Guidance.

Guidance

12.3.3 This assessment is carried out in accordance with the principles contained within the following documents:

- Institute of Environmental Assessment, Environmental Assessment of Traffic and Movement (IEMA), 2023;
- Planning Advice Note (PAN) 75 (2005);
- Transport Assessment Guidance (2012); and
- Onshore Wind Turbines, Online Renewables Planning Advice (2014), in terms of generic advice on the construction of energy projects and managing abnormal and indivisible loads (AIL).

Consultation

In undertaking the assessment, consideration has been given to the consultation responses which have been received as detailed in **Table 12.1: Summary of Consultation.**

Table 12.1: Summary of Consultation

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
Angus Council (05/07/23)	The Council was consulted on the site selection process.	No specific transport issues raised.	None
Angus Council Development Standard Committee March 2024	Formal pre-application consultation	A main consideration in the determination of the planning application for the Proposed	The assessment considers the effects of the Proposed

Consultee and Date	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		Development will be the impacts on infrastructure including the public road network.	Development upon the public road network.
Transport Scotland (22/06/23)	Transport Scotland was consulted on the site selection process	The impact of the proposed substation on the trunk road network needs to be considered.	Noted. The impact on the A90 and A972 is included in the assessment.
		An abnormal load review is required.	Noted. A Route Survey Report is provided in **Appendix 12.1: Transport Assessment**.
		Any changes to the trunk road network must be discussed and approved via a technical approval process.	Noted. No physical mitigation is required. The need for a speed limit and traffic management would be agreed via a suitably worded planning condition.
Community feedback (including Tealing Community Council), July 2024	Feedback from consultation process	Concerns were expressed at potential traffic volumes associated with the construction phase and how these could be safely accommodated on the road network.	The assessment details the finalised traffic volumes and details how these can be safely accommodated to minimise traffic impact as far as possible during the construction phase.
British Horse Society (BHS)	Feedback from consultation process	Concerns were expressed about how construction traffic and activities will interact with horse riders and owners.	The Construction Traffic Management Plan (CTMP) proposals included as mitigation will outline how horse riders can be safely accommodated during the construction process.

Desk Based Research and Data Sources

12.3.4 The desk study included reviews and identification of the following:

- Relevant transport policy;
- Accident data;
- Sensitive locations;
- Any other traffic sensitive receptors in the area (core paths, routes, communities, etc.);
- Ordnance Survey (OS) plans; and
- Potential origin locations of construction staff and supply locations for construction material to inform extent of local area roads network to be included in the assessment.

Field Survey

12.3.5 The following field surveys were carried out to inform the assessment:

- Collection of traffic volumes using Automatic Traffic Counts (ATC) (see **Figure 12.4: Traffic Survey Locations**)

Assessing Significance

Criteria for Assessing the Sensitivity of Receptors

12.3.6 Recent guidance published by the IEMA, namely 'Environmental Assessment of Traffic and Movement' (2023) (the IEMA Guidelines) provides an update to the previously used guidance, 'Guidelines for the Environmental Assessment of Road Traffic' (1993) 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 IEMA Guidelines intend to complement professional judgement and the experience of trained assessors.

12.3.7 In terms of transport and access impacts, the receptors are the users of the roads within the study area and the locations through which those roads pass.

12.3.8 The IEMA Guidelines include 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 12.2: Classification of Receptor Sensitivity**.

Table 12.2 Classification of Receptor Sensitivity

	Sensitivity			
Receptor	**High**	**Medium**	**Low**	**Negligible**
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 restrictions, traffic calming measures.	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 traffic management measures.	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.	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.
Users / Residents of Locations	Where a location is a large rural settlement containing a high number of community and public services and facilities.	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.	Where a location is a small rural settlement, few community or public facilities or services.	Where a location includes individual dwellings or scattered settlements with no facilities.

12.3.9 Where a road passes through a location, road users (pedestrian, cyclists, drivers, etc.) are considered subject to the highest level of sensitivity defined by either the road or location characteristics.

Criteria for Assessing the Magnitude of Change

12.3.10 The following rules, also taken from the IEMA Guidelines are used to determine which links within the study area should be considered for detailed assessment:

- Rule 1 – include highway links where traffic flows are predicted to increase by more than 30% (or where the number of heavy goods vehicles is predicted to increase by more than 30%); and
- Rule 2 – include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.

12.3.11 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 Guidelines 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 IEMA 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 Guidelines 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 crossroads. 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 Guidelines 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 IEMA 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 Guidelines, 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 Abnormal Indivisible Loads (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 Mitigation During Construction section.

12.3.12 While not specifically identified as a more vulnerable road user, cyclists, active travel users and equestrians are considered in similar terms to pedestrians.

12.3.13 It is not anticipated that any vehicle movements will be carrying hazardous loads (materials as defined by the United Nations Economic and Social Council's Committee of Experts on the Transport of Dangerous Goods and their relevant classification) (with the exception of small amounts of fuel for the construction plant and compound generators) to or from the Site during the construction phase.

Criteria for Assessing Significance

12.3.14 The Design Manual for Roads & Bridges (DMRB) defines four levels against which the magnitude of impacts should be assessed as follows:

- Major: These effects are considered to be material in the decision-making process;
- Moderate: 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;
- Minor: 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.

12.3.15 To determine the overall significance of effects, the results from the receptor sensitivity and magnitude of impact assessments are correlated and classified using a scale set out in the DMRB LA 104 Environmental Assessment and Monitoring (Revision 1) and summarised in **Table 12.3: Matrix for Determination of Significance of Effects**.

Table 12.3 Matrix for Determination of Significance of Effects

Magnitude of Change	Sensitivity of Receptor / Receiving Environment to change				
	High	**Medium**	**Low**	**Negligible**
High	Major	Major/ Moderate	Moderate / Minor	Minor
Medium	Major/ Moderate	Moderate	Minor	Minor/ Negligible
Low	Moderate / Minor	Minor	Minor	Minor/ Negligible
Negligible	Minor	Minor	Minor/ Negligible	Negligible

12.3.16 In terms of the EIA Regulations, effects would be considered of significance where they are assessed to be major or moderate. Where an effect could be one of Major/Moderate or Moderate/Minor, professional judgement would be used to determine which option should be applicable.

Assessment Assumptions and Limitations

Assessment Assumptions

12.3.17 The following assumptions have been made when undertaking the assessment of effects:

- The peak of construction traffic will occur in Quarter 2 of 2027;
- That bulk materials will be sourced from local quarries and that all required bulk materials will be imported to the Site;
- Low National Road Traffic Forecast (NRTF) assumptions have been used to develop future year baseline traffic flows;
- That a staff Travel Plan for the construction phase will be implemented.

Assessment Limitations

12.3.18 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 and external factors can impact upon activities on a day by day basis (weather conditions, availability of materials, time of year, etc.).

12.4 Baseline Conditions

Access Arrangement

12.4.1 Access to the Site will be taken from the public road network at the U322, Emmock Road, with material deliveries originating from the A90 corridor located to the east as noted in **Figure 12.1: Construction Access - Inbound** and **Figure 12.2: Construction Access - Outbound**. The proposed access junction for the Proposed Development is shown in Annex A of **Appendix 12.1: Transport Assessment**.

12.4.2 To accommodate traffic movements associated with the construction phase, inbound access to the Site will be taken from the A90 at the Moatmill access junction as noted in **Appendix 12.1: Transport Assessment**.

12.4.3 Access from the Moatmill junction has been successfully used for deliveries associated with the nearby Seagreen offshore wind farm grid connection works.

Transport Infrastructure Review

12.4.4 A review of pedestrian and cyclist facilities has been undertaken and is provided in Chapter 4 **of Appendix 12.1: Transport Assessment**, along with a description of the public road network.

Existing Traffic Conditions

12.4.5 A review of traffic flow has been undertaken using the Traffic Scotland traffic database and new Automatic Traffic Count (ATC) surveys.

12.4.6 ATC traffic surveys were undertaken at the following locations between the 16th and 22nd of April 2024:

- Emmock Road (near the location of the proposed substation access junction);
- Moatmill Road; and
- Emmock Road (at the A90 overbridge).

12.4.7 Traffic Scotland data for 2024 was obtained for the following locations:

- A90 to the south of Forfar (Count site JTC00063);
- A90 south of Moatmill Road (Count site JTC00064);
- A90 south of Emmock Roundabout (Count site JTC00555);
- A90 Kingsway West (Count site JTC00557); and
- A972Kingsway East (Count site JTC00554).

12.4.8 The locations of the survey points are illustrated in **Figure 12.4: Traffic Survey Locations** and summarised in **Appendix 12.1: Transport Assessment**. The two-way traffic flows for 2024 are summarised in **Table 12.4: 24 Hour Average Daily Traffic Flows (2024)**.

Table 12.4: 24 Hour Average Daily Traffic Flows (2024)

Site Ref.	Survey Location	Cars & LGV	HGV	Total
1	Emmock Road (Site Access)	716	6	722
2	Moatmill Road	108	14	122
3	Emmock Road	776	3	779
4	A90 Forfar	19,913	5,198	25,111
5	A90 south of Moatmill Road	19,371	3,392	22,763
6	A90 south of Emmock Roundabout	26,306	3,318	29,624
7	A90 Kingsway West	35,788	6,868	42,656
8	A972 Kingsway East	22,275	3,182	25,457

Accident Review

12.4.9 Road traffic accident data for the five-year period commencing 01 January 2018 through to the 31 December 2022 was obtained from the online resource crashmap.co.uk which uses data collected by the police about road traffic crashes occurring on British roads. Accident data recorded along the local roads within the study area, and in the vicinity of junctions joining the local road network, was analysed.

12.4.10 Transport Assessment guidance requires an analysis of the accident data on the road network in the vicinity of any development to be undertaken for at least the most recent 3-year period, or preferably a 5-year period, particularly if the site has been identified as being within a high accident area.

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

12.4.12 A review of accidents trends within the immediate study area (Emmock Road and the A90 between the Tealing Junction and Emmock Roundabout) has been undertaken using data from the online resource crashmap.co.uk.

12.4.13 In total, three accidents occurred on Emmock Road within the study period. These included two “Slight” accidents and one “Serious” accident. Of these three incidents, one “Slight” accident occurred during winter and involved one vehicle. The “Serious” accident involved a pedal cyclist and a motorcyclist, with the remaining “Slight” accident involving a young driver.

12.4.14 There were no recorded accidents at the junction of the A90 and Moatmill Road during the review period.

12.4.15 Whilst the A90 Tealing junction it is not proposed to be used for construction traffic associated with the Proposed Development, it has also been reviewed for consistency. Two accidents were noted, both occurring in winter months. One “Slight” accident and one “Serious” accident were recorded, the “Serious” accident involving a motorcyclist.

12.4.16 Six accidents were reported at the A90 Emmock Roundabout. Of these, three occurred during winter months and four involved single vehicles, indicating that driving style was the major factor. Two accidents were classified as “Slight” and four as “Serious”. HGV traffic was involved in one “Slight” and one “Serious” accident. One “Serious” accident involved one vehicle driven by a Young Driver and resulted in six injuries.

12.4.17 Based on professional judgement, there are no apparent accident trends that would be exacerbated by the proposed construction traffic.

Summary of Sensitive Receptors

12.4.18 A review of sensitive receptors has been undertaken within the study area. **Table 12.5: Summary of Receptor Sensitivity** details the receptors and their sensitivities for use within the following assessment. A justification for the sensitivity has also been provided, based upon the details contained in **Table 12.2: Classification of Receptor Sensitivity**.

Table 12.5: Summary of Receptor Sensitivity

Receptor	Sensitivity	Justification
Emmock Road Users	High	A minor rural road, not constructed to accommodate frequent use by HGV traffic.
Emmock Road Residents	Negligible	Area with individual dwellings or scattered settlements with no facilities.
Moatmill Road Users	High	A minor rural road, not constructed to accommodate frequent use by HGV traffic.
Moatmill Road Residents	Negligible	Area with individual dwellings or scattered settlements with no facilities.
A90 Users	Low	An A-class road, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures.
A972 Users	Low	An A-class road, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures.
Residents living alongside the A90 outwith Dundee	Negligible	Area with individual dwellings or scattered settlements with no facilities.
Residents living alongside the A90 within Dundee	Medium	Communities with some community facilities, noting that properties are set back from the road.
Residents living alongside the A972	Medium	Communities with some community facilities, noting that properties are set back from the road.

12.4.19 Based on these classifications, Emmock Road and Moatmill Road users along the A90 and A972 in Dundee would be classed as sensitive receptors using the guidelines described previously. As such, these will be subject to IEMA "Rule 2" assessments, where the traffic increase is equal to or in excess of 10%.

12.4.20 All other locations within the study area are subject to "Rule 1" and are assessed if traffic flows (or HGV flows) on highway links are anticipated to increase by more than 30% as a result of the construction of the Proposed Development.

Future Baseline in the Absence of the Proposed Development

12.4.21 Construction of the Proposed Development is expected to commence in 2026, if consent is granted, and is anticipated to take approximately four years. The peak of construction traffic activities is expected to occur in Q2 2027 and this has been used as the future assessment year.

12.4.22 To assess the likely effects during the construction and typical operational phase, base year flows were forecast by applying a NRTF low growth factor to the 2024 flows. The NRTF low growth factor for 2024 to 2027 is 1.016. The resultant future baseline traffic flows are illustrated in **Table 12.6: 24 Hour Average Daily Traffic Flows (2027)**.

Table 12.6: 24 Hour Average Daily Traffic Flows (2027)

Site Ref.	Survey Location	Cars & LGV	HGV	Total
1	Emmock Road (Site Access)	727	7	734
2	Moatmill Road	109	14	124
3	Emmock Road	788	3	792
4	A90 Forfar	20,232	5,281	25,513
5	A90 south of Moatmill Road	19,681	3,446	23,127
6	A90 south of Emmock Roundabout	26,727	3,371	30,098
7	A90 Kingsway West	36,361	6,977	43,338
8	A972 Kingsway East	22,631	3,233	25,864

Please note that rounding errors can occur.

Implications of Climate Change for Baseline Conditions

12.4.23 If the Proposed Development did not proceed, traffic growth will occur and the links within the study network will experience increased traffic flows resulting from other development pressures, tourism traffic and population flows.

12.4.24 The climate change projections for the United Kingdom, highlight that summer and winter temperatures are likely to be greater than the current baseline, with winter rainfall increasing and summer rainfall decreasing.

12.4.25 It is considered that climate change projections will not have a discernible impact on the baseline conditions for road traffic within the timescales of the Proposed Development.

12.4.26 It is assumed that, at the regional level, appropriate measures will be put in place to ensure flood risk is managed and does not have long term effects on transport infrastructure.

12.5 Mitigation and Monitoring

Access Arrangement

12.5.1 Access from the A90 at the Moatmill Junction, with a new extension on private land through to Emmock Road, will be used to enable access to the Site from the A90.

12.5.2 Traffic management will be used to ensure that the Moatmill junction is only used by construction traffic as a Left In junction. This is being proposed to ensure that traffic does not try to turn over the A90 dual carriageway mainline lanes.

12.5.3 To cater for traffic exiting the Site, it is proposed that all traffic will exit the Site and use Emmock Road to connect back to the A90 at Emmock Roundabout. The roundabout will also allow traffic originating from the north to safely U-turn and access the Moatmill junction.

12.5.4 No construction traffic will be permitted to access the Site via Tealing or outbound via Moatmill. In addition, the section of Emmock Road running south to Dundee and Old Glamis Road will be barred for Heavy Goods Vehicle (HGV) traffic.

Embedded Mitigation

12.5.5 Topic specific embedded mitigation (mitigation achieved through design) is outlined below.

- TA1: Basic traffic management measures, including the provision of direction signage at the proposed Site access junction; and
- TA2: Provision of the new access track between Moatmill Road and Emmock Road.

Applied Mitigation

12.5.6 Applied mitigation measures are detailed in **Table 12.7: Proposed Applied Mitigation**.

Table 12.7: Proposed Applied Mitigation

Mitigation Measure	Proposed Development Stage/Timing	Responsibility
• TA3: Provision of a basic Construction Traffic Management Plan (CTMP), incorporating simple measures such as road cleaning facilities at the Site access and basic warning signage. The plan will also include access routing to be observed by traffic. The CTMP will be a contractual requirement of the Principal Contractor and it is anticipated that it will be secured via a suitably worded planning condition.	Prior to start of construction	Principal Contractor

Additional Mitigation

- TA4: Temporary Traffic Regulation Order (TTRO) to provide a 40 miles per hour (MPH) speed limit at the A90 / Moatmill Road Junction; and
- TA5: Construction staff Travel Plan, to reduce the use of single occupancy travel to and from the Site.

Further Survey Requirements and Monitoring

12.5.7 Monitoring of the proposed mitigation measures will include those items noted in **Table 12.8: Monitoring Requirements**.

Table 12.8: Monitoring Requirements

Monitoring Measure	Proposed Development Stage/Timing	Responsibility
• The construction staff Travel Plan will be monitored to ensure that staff use van sharing or construction site minibuses to access the Site.	Throughout the construction phase	Principal Contractor
• The Principal Contractor will undertake checks to ensure that the proposed construction route is adhered to.	Throughout the construction phase	Principal Contractor

12.6 Assessment of Likely Residual Significant Effects - Construction

12.6.1 The assessment of effects identified above is based on the Proposed Development description as outlined in **Chapter 3: Description of the Proposed Development**. Unless otherwise stated, potential effects identified are considered to be adverse.

Estimation of Construction Traffic

12.6.2 During the construction period, the following traffic will require access to the to the Proposed Development:

- Staff transport, in either cars or staff minibuses;

- Construction equipment and materials, deliveries of machinery and supplies such as concrete and crushed rock; and
- AILs associated with the substation development.

12.6.3 At the peak of construction activity, 150 staff are expected on the Site. A Staff Travel Plan will be implemented to control access and it is assumed that 60% will access the Site via minibus, 30% by van, with the rest accessing using private car access.

12.6.4 The Principal Contractor has undertaken a preliminary design of the Proposed Development and estimated the resulting traffic generation by construction activity. The worst-case peak of daily construction traffic is predicted to occur in Quarter 2 of 2027 and will result in the following.

- Peak Car & LGV Movements (2 way): 84 vehicles;
- Peak HGV Movements (2 way): 128 vehicles;
- Peak Total Traffic (2 way): 212 vehicles.

12.6.5 Traffic levels will fall following the peak month. The assessment however has used the daily peak to ensure a robust assessment has been undertaken and that all relevant mitigation has been considered.

12.6.6 Using the traffic distribution described in Sections 6.1 and 6.2 of **Appendix 12.1: Transport Assessment**, the peak traffic generation during the construction phase is as illustrated in **Table 12.9: Peak Construction Traffic Flows** for the locations shown in **Figure 12.4: Traffic Survey Locations**.

Table 12.9: Peak Daily Construction Traffic Flows

Site Ref.	Survey Location	Cars & LGV	HGV	Total
1	Emmock Road (Site Access)	84	128	212
2	Moatmill Road	42	64	106
3	Emmock Road	42	64	106
4	A90 Forfar	8	26	34
5	A90 south of Moatmill Road	46	64	110
6	A90 south of Emmock Roundabout	76	102	178
7	A90 Kingsway West	38	20	58
8	A972 Kingsway East	38	82	120

Please note that rounding errors can occur.

Predicted Construction Effects

12.6.7 The peak month traffic data was combined with the future year (2027) traffic data to allow a comparison between the baseline results to be made. The increase in traffic volumes is presented below as predicted flows and in percentage increases for each class of vehicle in **Table 12.10: Peak Combined Traffic Flow and Construction Traffic Percentage Impact**.

Table 12.10: Peak Combined Traffic Flow and Construction Traffic Percentage Impact (vehicles per day)

Site Ref.	Survey Location	Cars & LGV	HGV	Total	% Car & LGV	% HGV	% Total Traffic
1	Emmock Road (Site Access)	811	135	946	11.6%	1959.8%	28.9%
2	Moatmill Road	151	78	230	38.4%	449.9%	85.8%
3	Emmock Road	830	67	898	5.3%	1917.2%	13.4%
4	A90 Forfar	20,240	5,307	25,547	0.0%	0.5%	0.1%
5	A90 south of Moatmill Road	19,727	3,510	23,237	0.2%	1.9%	0.5%

Site Ref.	Survey Location	Cars & LGV	HGV	Total	% Car & LGV	% HGV	% Total Traffic
6	A90 south of Emmock Roundabout	26,803	3,473	30,276	0.3%	3.0%	0.6%
7	A90 Kingsway West	36,399	6,998	43,397	0.1%	0.3%	0.1%
8	A972 Kingsway East	22,669	3,315	25,984	0.2%	2.5%	0.5%

Please note that rounding errors can occur.

12.6.8 With the exception of Moatmill Road, the Proposed Development is not predicted to increase total traffic movements on the local road network by more than 30%. On Moatmill Road however, the Proposed Development is predicted to increase total traffic by 85.8%. Whilst this is statistically significant, the actual increase in traffic is 106 vehicles, which on average is an additional 9 vehicles per hour (assuming a 12-hour working period).

12.6.9 The increases in HGV flows listed above are not considered significant in terms of overall total flows and are high due to the low base HGV flows. It should also be noted the construction phase is transitory in nature.

Capacity Review

12.6.10 A review of existing road capacity has been undertaken using DMRB, 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 12.11: Theoretical Capacity Review**.

Table 12.11: Theoretical Capacity Review

Site Ref.	Survey Location	2027Baseline	Theoretical Capacity	2027 Base + Development Flows	Spare Capacity (%)
1	Emmock Road (Site Access)	734	3,360	946	71.86%
2	Moatmill Road	124	3,360	230	93.17%
3	Emmock Road	792	3,360	898	73.29%
4	A90 Forfar	25,513	81,600	25,547	68.69%
5	A90 south of Moatmill Road	23,127	81,600	23,237	71.52%
6	A90 south of Emmock Roundabout	30,098	72,000	30,276	57.95%
7	A90 Kingsway West	43,338	72,000	43,397	39.73%
8	A972 Kingsway East	25,864	72,000	25,984	63.91%

12.6.11 The results indicate there are no road capacity issues with the Proposed Development and ample spare capacity exists within the trunk and local road network to accommodate construction phase traffic.

12.6.12 With regards to “Rule 1” and “Rule 2” of the IEMA Guidelines, the impact will exceed the threshold 30% and 10% increases for users of Emmock Road and Moatmill Road. Both will be taken forward for further assessment in **Table 12.12: Construction Phase Effects Summary.**

12.6.13 Receptors on the A90 and A972 do not exceed the thresholds for either IEMA rule and as such, no further assessment is required.

12.6.14 The assessment for Emmock Road and Moatmill Road users has been undertaken using the criteria described previously in Section 12.3. The results of the assessment are provided in **Table 12.12: Construction Phase Effects Summary**.

Table 12.12: Construction Phase Effects Summary

Receptors	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
Emmock Road Users	Severance	Minor	Minor (Not Significant)	Increase in traffic is less than 30%. Increases below this are classed as minor.
	Driver Delay	Minor	Minor (Not Significant)	There is ample road capacity available.
	Pedestrian Delay	Minor	Minor (Not Significant)	There are limited pedestrian facilities available on the network and no obvious desire lines. The increase in traffic is circa an additional 18 vehicles per hour, which is unlikely to effect pedestrian movement in a significant manner.
	Non-motorised User Amenity	Medium	Major (Significant)	The increase in HGV traffic is high, resulting in a significant effect.
	Fear & Intimidation	Minor	Minor (Not Significant)	Increase in traffic is less than 30%. Increases below this are classed as minor.
	Road Safety	Medium	Moderate (Significant)	Recorded accidents on Emmock road include three accidents in the previous five year period.
Moatmill Road Users	Severance	Major	Major (Significant)	Increase in traffic is 89.2%. Increases at this level are classed as major.
	Driver Delay	Minor	Minor (Not Significant)	There is ample road capacity available.
	Pedestrian Delay	Minor	Minor (Not Significant)	There are limited pedestrian facilities available on the network and no obvious desire lines. The increase in traffic is circa an additional 10 vehicles per hour, which is unlikely to affect pedestrian movement in a significant manner.
	Non-motorised User Amenity	Major	Major (Significant)	The increase in HGV traffic is high, resulting in a significant effect.
	Fear & Intimidation	Major	Major (Significant)	Increase in traffic is less than 89.2%. Increases at this level this are classed as major.
	Road Safety	Medium	Moderate (Significant)	The classification is moderate, although accident levels on Moatmill Road are minor.

12.6.15 The assessment of significance suggests significant effects are predicted and that further mitigation measures will be required to accommodate the predicted peak construction traffic flows.

Additional Mitigation

12.6.16 Additional mitigation measures are required. The proposed measures are detailed in the following sections with a summary of the measures provided in **Table 12.13: Committed Additional Mitigation**.

Enhanced Construction Traffic Management Plan

12.6.17 The following measures would be implemented through a CTMP during the construction phase. The CTMP would be agreed with Angus Council 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 work site (including pick up and drop off times) would be implemented;
- 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 Angus Council;
- Appropriate traffic management measures would be put in place on Emmock Road at the Site access junction to avoid conflict with general traffic, subject to the agreement of Angus Council. Typical measures would include HGV turning and crossing signs and a banksmen at the Site access and warning signs;
- A 40 mph speed limit is placed on the A90 northbound to improve safety for all road users in the vicinity of the Moatmill Road junction. In addition, no Right Turn signs (known as diagram 612) would be placed at the junction to ban construction traffic from crossing A90 traffic streams. Diversion signs using Emmock Roundabout would be provided;
- Provide construction updates on the Proposed Development's website and or a newsletter to be distributed to residents within an agreed distance of the Site;
- Adoption of a voluntary speed limit of 20 mph for all construction vehicles travelling on the Emmock Road and Moatmill Road;
- 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 urban areas); and
  - Identification of the required access routes and the controls to ensure no departure from these routes.

12.6.18 A pre-construction phase condition survey of the construction vehicles route would be undertaken 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 the Council. Any damage caused by traffic associated with the Proposed Development, during the construction period that would be hazardous to public traffic, would be repaired by the Principal Contractor immediately.

12.6.19 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.

12.6.20 The Principal Contractor would perform a daily 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.

Emmock Road Passing Areas

12.6.21 To improve access on Emmock Road, a series of passing places would be created. The indicative location and general design of these are illustrated on **Figure 12.2: Construction Access - Outbound** and in **Appendix 12.1: Transport Assessment**.

12.6.22 The passing places would allow for a 6 m wide passing area to be provided and would feature a minimum of 7 m long tapers at either end. The locations of the laybys would be agreed with Angus Council and secured via a suitably worded planning condition.

12.6.23 A layby is proposed at the Fithie Burn bridge to ensure safe access over this structure.

12.6.24 The proposed Site access junction would feature road widening to allow traffic to pass in safety. The junction from the private track connecting Moatmill Road and Emmock Road (to the north of Craigowl Farm) may require widening to allow passing traffic.

Public Information

12.6.25 The Applicant would also ensure information was distributed through its communication team via the Proposed Development's website, local newsletters and social media.

Pedestrian Management

12.6.26 The Principal Contractor would ensure that speed limits are always adhered to by its drivers and associated subcontractors. This is particularly important within close proximity to the core path and at crossing points. Advisory speed limit signage would also be installed on approaches to areas where core path users may interact with construction traffic.

12.6.27 Signage would 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 would also be emphasised in weekly tool box talks.

Abnormal Indivisible Load Management Measures

12.6.28 There are a number of traffic management measures that could help reduce the effect of the proposed six abnormal load convoys. **Figure 12.3: Abnormal Indivisible Load Access** shows the route to Site.

12.6.29 All abnormal load deliveries will 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 local road network. It is likely that the abnormal load convoys will travel in the early morning periods, before peak times while general construction traffic will generally avoid the morning and evening peak periods.

12.6.30 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.

12.6.31 Advance warning signs will be installed on the approaches to the affected road network. 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).

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

12.6.33 The Abnormal Load Transport Management Plan will also include:

- Procedures for liaising with the emergency services to ensure that police, fire, and ambulance vehicles are not impeded by the loads. This is normally undertaken by informing the emergency services of delivery times and dates, and agreeing communication protocols and lay over areas to allow overtaking;
- A diary of proposed delivery movements to liaise with the communities to avoid key dates;
- A protocol for working with local businesses to ensure the construction traffic does not interfere with deliveries or normal business traffic; and
- The Contractor will establish a Community Liaison Group. This will provide a public interface with the Applicant, the Principal Contractor, the local community, and if appropriate, the police. This committee will form a means of communicating and updating on forthcoming activities and dealing with any potential issues arising.

Convoy System

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

12.6.35 The abnormal loads convoys will be no more than one component 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.

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

Public Information

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

12.6.38 Information will 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.

12.6.39 The Applicant would also ensure information was distributed through its communication team via the Proposed Development's website, local newsletters and social media.

12.6.40 **Table 12:13: Additional Mitigation** details these mitigation measures.

Table 12.13: Additional Mitigation

Mitigation Measure	Rationale	Proposed Development Stage/Timing	Responsibility
TA6: Enhanced Construction Traffic Management Plan	To improve road safety, efficiency and management	Prior to start of construction	Principal Contractor
TA7: Emmock Road Passing Places	To improve road safety and traffic flow	Prior to start of construction	The Applicant
TA8: Public Information	To enhance the public's route choice and to enhance safety	During the construction phase	The Applicant
TA9: Pedestrian Management	To improve road safety	Prior to start of construction	Principal Contractor
TA10: AIL Management Plan	To improve road safety, efficiency and management	Prior to start of AIL movements	Principal Contractor and the police

Residual Construction Effects

12.6.41 An evaluation of the potential effects of the increase in traffic on the study area roads used for construction traffic has been considered. The summary of this assessment is provided in **Table 12.14: Summary of Residual Effects**.

12.6.42 The assessment confirms the significance of residual effects would be Minor in nature and therefore Not Significant. The traffic effects are transitory in nature. No long-lasting detrimental transport or access issues are associated with the construction phase of the Proposed Development.

12.7 Assessment of Likely Significant Effects - Operation

Predicted and Residual Operational Effects

12.7.1 The assessment of operational effects has been scoped out. No operational effects are anticipated.

12.8 Assessment of Likely Significant Effects - Decommissioning

12.8.1 The assessment of decommissioning effects has been scoped out, as traffic volumes will be lower than the construction phase. No operational effects are anticipated.

12.9 Sensitivity Assessment of Likely Future Development (In-Combination) Effects

Introduction

12.9.1 An assessment of the effects associated with potential future developments has been undertaken as a sensitivity assessment. Projects connected with the Proposed Development (identified as Associated SSEN Transmission Developments) and other developments (Other SSEN Transmission and 3rd party developments) that may use the study area road network have been considered and the potential effects are noted in **Table 12.14: Likely Future Development Sensitivity Review.**

12.9.2 It should be noted that traffic flows from both Associated SSEN Transmission Developments and Other SSEN and 3rd party developments can only be included to the baseline when the assessment is undertaken. As such, the percentage impact of the Proposed Development will be diluted by the inclusion of other projects. The only exception to this would be where effects are considered in congested networks. The results noted in **Appendix 12.1: Transport Assessment, Table 7.2: Theoretical Capacity Review**, indicate that none of the study area roads are congested.

Table 12.14: Likely Future Development Sensitivity Review

Potential Future Development	Associated SSEN Transmission Developments	Other SSEN Transmission and 3rd Party Developments	Sensitivity Review
Kintore to Tealing 400 kV OHL	x		This construction of the Kintore to Tealing 400 kV OHL is unlikely to generate construction traffic flows or HGV flows >30% of baseline flows within the study area. Moreover, it is unlikely to generate construction traffic at a level that, when combined with construction traffic generated by the Proposed Development, as set out in this chapter, would >30% of baseline flows. As such, no significant effects associated with the Proposed Development and OHL project are predicted.
Alyth to Tealing 275 kV OHL tie-in	x		The Alyth to Tealing tie-in Project involves the erection of seven new towers and the dismantling of 12 existing towers, over a 1-2km length. As such, the construction traffic associated with the works will be negligible, and no significant cumulative effects is predicted.
Westfield to Tealing 275 kV OHL tie-in	x		The Westfield to Tealing tie in Project involves the erection of two new towers and the repurposing of two existing towers. Construction traffic associated with the works, alone and in combination with the Alyth to Tealing tie-in Project would remain negligible.
2 x 275 kV OHL tie-backs between Emmock and Tealing	x		As above.
Tealing to Westfield 275 kV OHL Upgrade to 400 kV (west of Tower TW180		x	As above.
Alyth to Tealing 275 kV OHL Upgrade to 400 kV (west of Tower YT680		x	As above.
Fithie Energy Park		x	The grid connection date for the Fithie Energy Park project occurs after the completion of the Proposed Development. As such, no significant crossover of construction traffic

Potential Future Development	Associated SSEN Transmission Developments	Other SSEN Transmission and 3rd Party Developments	Sensitivity Review
			flows are predicted and no change in effects or mitigation is anticipated.
Balnuith BESS		x	The planning documents indicate that the Balnuith BESS will generate on average 15 vehicle movements per day at its peak of construction. The increase in traffic levels is minimal and it is concluded that there is no significant cumulative effect, should this development be constructed at the same time as the Proposed Development.
Myreton BESS		x	This development is located to the southeast of the Proposed Development. No traffic data has been issued for this development and no construction programme has been published and as such it is not possible to quantify if there is a cumulative impact. Should traffic flows coincide with that of the Proposed Development, then any cumulative measures will be addressed via the Myreton BESS CTMP.

Operation

12.9.3 The assessment of operational effects has been scoped out. No operational effects are anticipated.

Decommissioning

12.9.4 The assessment of decommissioning effects has been scoped out.

12.10 Summary of Significant Effects

12.10.1 **Table 12.14: Summary of Significant Effects** below summarises the predicted residual effects of the Proposed Development on transport and access matters prior to and following the application of additional mitigation.

Table 12.14: Summary of Significant Effects

Predicted Effects	Significance Prior to Additional Mitigation	Additional Mitigation	Significance of Residual Effects Following Additional Mitigation
Construction			
Emmock Road Users: Non-motorised User Amenity	Major (Significant)	Enhanced CTMP, Passing Place provision, public information plan, pedestrian management, AIL management plan. Proposed mitigation measures to be secured via planning conditions.	Minor (Not Significant)
Emmock Road Users: Road Safety	Moderate (Significant)	Enhanced CTMP, Passing Place provision, public information plan, pedestrian management, AIL management plan. Proposed mitigation measures to be secured via planning conditions.	Minor (Not Significant)
Moatmill Road Users: Severance	Major (Significant)	Enhanced CTMP, public information plan, pedestrian management, AIL management plan. Proposed mitigation measures to be secured via planning conditions.	Minor (Not Significant)

Predicted Effects	Significance Prior to Additional Mitigation	Additional Mitigation	Significance of Residual Effects Following Additional Mitigation
Moatmill Road Users: Non-motorised User Amenity	Major (Significant)	Enhanced CTMP, public information plan, pedestrian management, AIL management plan. Proposed mitigation measures to be secured via planning conditions.	Minor (Not Significant)
Moatmill Road Users: Fear & Intimidation	Major (Significant)	Enhanced CTMP, public information plan, pedestrian management, AIL management plan. Proposed mitigation measures to be secured via planning conditions.	Minor (Not Significant)
Moatmill Road Users: Road Safety	Moderate (Significant)	Enhanced CTMP, public information plan, pedestrian management, AIL management plan. Proposed mitigation measures to be secured via planning conditions.	Minor (Not Significant)
Operation			
None	None	N/A	None
Cumulative			
None	None	N/A	None