Contents

11.0 Traffic and Transport

11.1 Introduction

This Chapter assesses the traffic and transport impacts and potential effects during the different phases of the proposed development with a particular focus on the construction phase.

It outlines the potential transport-related effects of the proposed development and sets out the adopted methodology for assessing them prior to, and following, the application of mitigation measures to reduce their potentially adverse effects. It also sets out the existing conditions as a baseline against which the effects of the proposed development are measured and assessed.

Potentially significant traffic related environmental effects may result from two forms of potential impacts:

- the transport configurations made for the movement of turbine components (including blades, tower sections, generator and nacelle), transported as abnormal loads. Abnormal loads are those which exceed the length, weight or height criteria defined in 'Abnormal Load Movements – A brief guide to Notification and Authorisation requirements' (Transport Scotland, June 2007); and
- the import of general construction materials transported via 'conventional' heavy goods vehicles (HGVs) and low loaders.

The assessment detailed within this Chapter is based around worst case assumptions made for the purpose of forming a robust assessment of the proposed development within the parameters identified in **Chapter 2: Proposed Development Description**.

The chapter is supported by **Figures 11.1 – 11.6,** and **Technical Appendices 11.1 – 11.3**, which are referenced in the text where appropriate.

The transport routes for the wind turbine components (WTCs) have been considered in a separate Abnormal Load Route Assessment (ALRA) report prepared by SLR (**Technical Appendix 11.1: Abnormal Load Route Assessment**), which includes swept path analysis and a detailed review of the preferred routes for access; the findings from the report have been reviewed to inform this Chapter.

The traffic impact assessment and reporting required for the preparation of this Chapter has been undertaken by SLR Consulting Ltd.

11.2 Policy and Guidance

A review of the national, regional and local planning policy and guidance relevant to this Chapter is summarised below. **Chapter 4: Climate Change, Renewable Energy and Planning Policy** provides a more detailed overview of the relevant planning policy and guidance relevant to the project.

11.2.1 Planning Policy

- National Planning Framework 4 (2023); and
- Moray Local Development Plan 2020.

11.2.2 Guidance

- Moray Onshore Wind Energy (MOWE) Non-Statutory Guidance 2020;
- Moray Wind Energy Landscape Capacity Study 2017;
- Moray Wind Energy Landscape Sensitivity Study 2023;
- Scottish Executive Development Department. Planning Advice Note 75;
- Transport Assessment Guidance (Transport Scotland, 2012),;

- Institute of Environmental Management and Assessment (IEMA) 'Guidelines for the Environmental Assessment of Traffic and Movement' (IEMA, 2023), and other departmental design standards; and
- Design Manual for Roads and Bridges, Highways Agency (1997), now Standards for Highways.

11.3 Scope and Consultation

A Scoping Report was submitted to Scottish Ministers in November 2021 which was consulted on with key stakeholders including Moray Council (MC) . The Scoping Report included reference to the transport assessment methodology, abnormal load assessment, Construction Traffic Management Plan (CTMP) and impact on the trunk road network.

11.3.1 Consultation

A scoping opinion was received in March 2022. **Table 11-1** presents a summary of the key points from the relevant scoping responses received and details of how comments have been addressed in the EIA Report.

Table 11-1: Key Issues

Consultee	Summary of Issues	Where Addressed in Chapter
Transport Scotland response to Scoping (Roads Directorate), dated 17/12/2021	Measured flows should be used where available and new surveys commissioned by agreement where such data do not exist.	Section 11.6.1
	Base traffic should be factored to the construction year using National Road Traffic Forecasts (NRTF) low growth.	Section 11.8.2
	To ensure size of turbines proposed can negotiate the turbine delivery route and that their transportation will not have any detrimental effect on structures within the trunk road route path.	Technical Appendix 11.1
	ALRA required to identify key pinch points on the trunk road network, with swept path analysis undertaken and details provided with regard to any required changes to street furniture or structures along the route.	Technical Appendix 11.1
	Any proposed changes are to be discussed and approved by the appropriate Area Managers via a technical approval process.	Technical Appendix 11.1
Moray Council response to Scoping, dated 20/01/2022	Traffic counts to be commissioned for B9016 and the U72L. Bridges and culverts along route to be checked by Council structures team. Swept Path Analysis (SPA) required along U72L minor road to site.	Count data for the B9016 is set out in Section 11.6.1. The U72L is no longer included within the study area due to the inclusion of a dedicated new access point for the proposed development directly from the B9016. SPA in Technical Appendix 11.1.

Where relevant, the issues raised by each consultee have been used to develop the scope of assessment and identify any specific matters that warrant more detailed analysis.

11.3.2 Effects Scoped Out

11.3.2.1 Operational Phase

It is estimated that the operational phase of the proposed development would generate no more than five vehicle trips in any one day. Typical duties onsite would include routine maintenance, such as safety checks and repairing faults. These visits would normally require Light Goods Vehicles (LGV) or similar vehicles and would use the same routes as those used during construction.

The trips generated by the operational activities on site would be no greater than those expected and accounted for in background variations to the existing traffic flows. The operation and maintenance traffic requirements will be minimal in comparison to the construction phase and therefore the construction phase traffic requirements are considered to represent the worst-case potential effects on Traffic and Transport receptors. As such, no assessment of the operation and maintenance phase is included as it is anticipated that operation and maintenance effects will be much less than those during construction.

11.3.2.2 Construction Effects on A98/A96

The traffic generated by the construction of the proposed development (with the exception of the transport of turbine components already assessed in the ALRA) is expected to travel along the B9016 to be distributed to the wider network via the A98 and the A96 in an assumed 50/50 split. Considering the temporary nature of the construction phase and the splitting of the construction traffic to both highway links to the wider transport network, it is believed any potential effects will be reduced. As such, the A98 and the A96 have not been included in the assessment.

11.4 Approach and Methodology

11.4.1 Scope of Assessment

This Chapter takes an appropriate and topic specific approach to assessment of the proposed development as described within **Chapter 2: Proposed Development Description**. The approach for the assessment of Site access traffic and transport effects has been to define the level of traffic anticipated to access the proposed development during its construction phase. This estimated traffic flow will be calculated from first principles and distributed over an anticipated construction programme.

The effects of the construction phase traffic have then been assessed against the measured baseline in terms of existing traffic levels and then compared to standard practice criteria in **section 11.6.1**.

The assessment is detailed against two worst-case assumptions:

- all construction materials are assumed to be sourced from offsite locations (i.e. outside of the application Site boundary), including all aggregate required for track construction. This will ensure that the estimated level of trip generation has been considered as a worst case with the maximum number of vehicles predicted for construction materials. In reality it is likely that the majority of the aggregate will be sourced from onsite borrow pits; and
- future traffic increases associated with the proposed development are measured against existing traffic flows, with no allowance for any growth in baseline traffic, thus ensuring that the highest level of impact has been assessed.

11.4.2 Baseline Characterisation

11.4.2.1 Study Area

The Site (as defined by the application boundary) is located within the Aultmore Forest within the administrative boundary of Moray Council, approximately 7km south of the coastal town of Buckie and approximately 6km north of the settlement of Keith in north-east Scotland. The Site area covers

approximately 2,400 hectares of forest and heathland and would be accessed via new and upgraded access tracks which connect the B9016 on the western extents of the Site.

The study area defined for this assessment comprises the B9016 which extends west of the Site from its junction with the A98 in the northbound direction to its junction with the A96 in the south. This is shown on **Figure 11.1.**

11.4.2.2 B9016

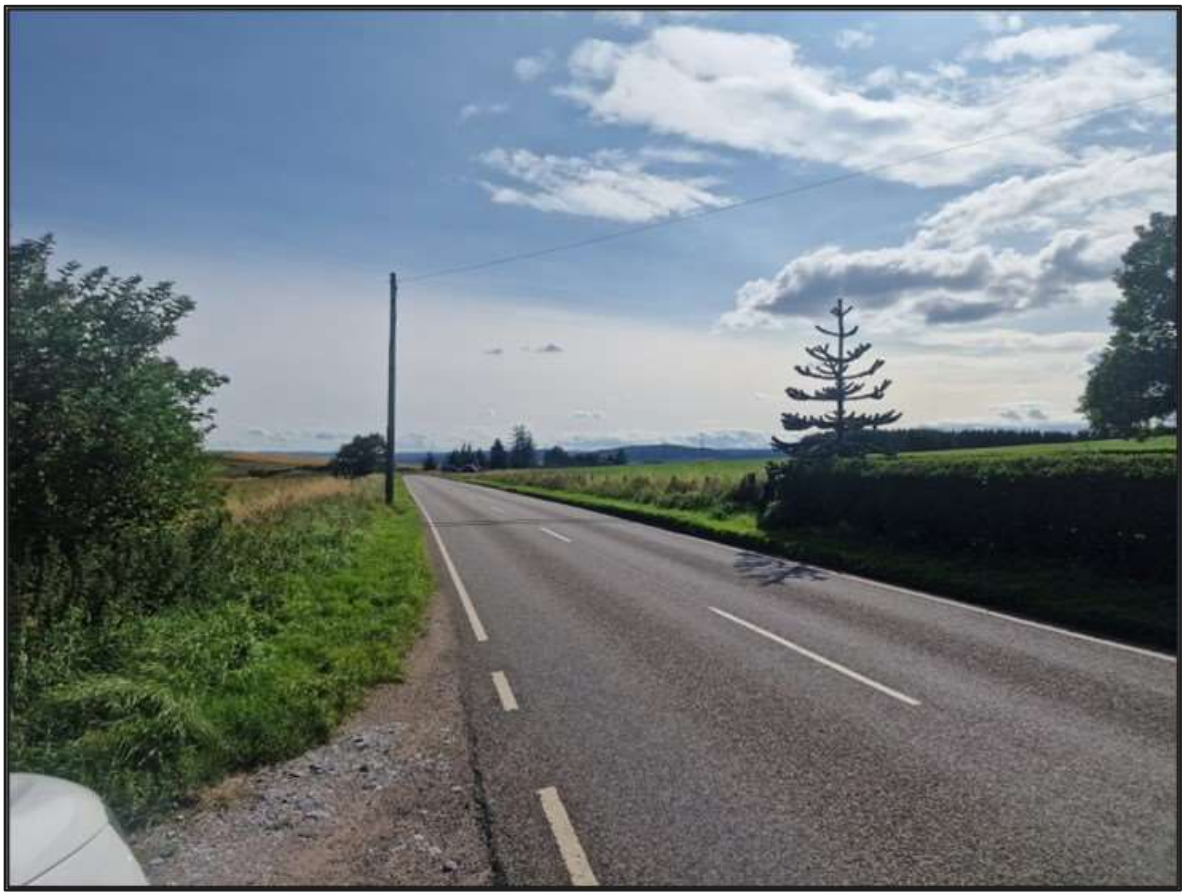
The B9016 is a single carriageway road of approximately 5.6m in width which forms a north-south link between the A98 and the A96. The B9016 is subject to the national speed limit of 60mph on most sections, including in the section where the proposed Site access is located, but transitions to a 40mph speed limit at the village of Aultmore in the vicinity of the distillery on the approach to the A96. There are a limited number of properties fronting the B9016.

The junction with the A98 to the north is a standard priority junction; the priority junction of the A990 which connects north to Buckie is located 56m to the east. The junction of the B9016 with the A96 to the south is a priority junction with a ghost island right turn lane. There are bus stops located along the A96 to the east of the junction.

11.4.2.3 Information and Data Sources

To determine the baseline conditions against which the effects of the proposed development have been assessed, continuous data from 24-hour automatic traffic counters (ATCs) placed for seven consecutive days were obtained from 22 August 2023 to 28 August 2023. The ATCs captured vehicle flows and speeds along the B9016 near the western boundaries of the Site. The location of the counter is shown on **Plate** and in **Plate 11-1**.

Plate 11-1: ATC Location



Road Traffic Collision (RTC) data for the five-year period from 2013 - 2017 has been obtained from Transport Scotland (TS). Ideally, data from the most recent five-year period will be used for the assessment, however, TS has confirmed that there haven't been any collisions recorded between 2017 and 2023 - necessitating a backward review of five years from the year of the last record held. Additionally, Crashmap online resource has been referenced for the period 2018 – 2022[1] where no records are available from TS.

11.4.2.4 Desk Study / Field Survey

An understanding of the existing situation and baseline conditions within the study area has been established through a visual inspection of the road network via a desktop study using tools available on the Internet, as follows:

- Crashmap website - https://www.crashmap.co.uk/; and
- Google Earth aerial imagery.

11.5 Assessment Methods

The likely significance of the potential effects from the proposed development that relate to Site access, traffic and transport have been determined by considering the magnitude of change in traffic movements and the sensitivity of the receptors which would be affected by these changes. This has been undertaken in accordance with the IEMA guidance (2023) and standard good practice, based on the experience of the assessor.

The IEMA guidance suggests that a day-to-day traffic flow variation of + or – 10% is to be expected in the baseline situation and that projected traffic flow increases of less than 10% would be imperceptible to the general public and would create no discernible environmental impact. Therefore, increases in traffic levels below 10% are considered insignificant.

Based on the IEMA guidance, the following factors have been identified as being the most discernible potential environmental effects likely to arise from changes in traffic movements. These are therefore considered in the assessment as potential effects which may arise from changes in traffic flows resulting from the proposed development:

- **Severance of communities** – severance is the perceived division that can occur within a community when it becomes separated by major transport infrastructure separation of people from places and other people.
- **Road vehicle driver and passenger delay** – traffic delays to non-development traffic which may occur at various locations depending on the type and scale of development.
- **Pedestrian and non-motorised user delay** – possible delays and increased severance to non-motorised users of the roads affected, predominantly related to the crossing of roads.
- **Non-motorised user amenity** – the impact to the 'pleasantness' of a journey, taking into account pedestrian fear and intimidation.
- **Road user and pedestrian safety** – the potential effect on road users, but in particular vulnerable users of the road (e.g. pedestrians/cyclists); and
- **Hazardous/large loads** – the potential effect on road users and local residents caused by an increase to the number of hazardous and large loads, to include the movement of Abnormal Indivisible Loads (AILs).

In addition to the effects listed above, human health effects are considered in transport terms in reference to pedestrians within the vulnerable road user and road safety effects.

[1] 2022 data represents the most recent records on crashmap.co.uk for the study area.

The significance of the likely effect has been determined by consideration of the sensitivity of receptors to change, taking account of the specific issues relating to the study area, and then the magnitude of that change.

11.5.1 Assumptions, Limitations and Confidence

The assessment of the potential impacts to the baseline traffic relies on the accuracy of the traffic flow data. The traffic counts have been undertaken by traffic survey specialists, Paul Castle Associates, and the available Department for Transport (DfT) data are considered to be reliable.

The potential effects of seasonality have not been included as part of this Chapter's assessment due to the timing of the traffic surveys. The surveys were undertaken at the end of August, and while not within the peak summer period, the data was collected during the summer season. As such, there is considered to be sufficient information to provide an accurate baseline for the assessment of effects.

11.5.2 Significance of Effect

Criteria for the determination of sensitivity (e.g. 'high', 'medium', or 'low') or of importance (e.g. 'international', 'national', 'regional', or 'authority area') have been established based on prescribed guidance, legislation, statutory designation and/ or professional judgement.

The significance of the likely effect has been determined by consideration of the sensitivity of receptors to change, are they able to adapt and recover from the effects, taking account of the specific issues relating to the study area, and then the magnitude of that change.

The potential sensitivity of receptors to changes in traffic levels has been determined by considering the study area and the presence of receptors in relation to each potential impact.

The IEMA guidelines suggest two thresholds when considering predicted increase in traffic, whereby a full assessment of the impact is required:

- Include road 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
- Include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.

The IEMA (2023) guidelines are intended for the assessment of environmental effects of major new developments, as opposed to short-term construction. In the absence of alternative guidance these guidelines have been applied to assess the short-term construction phase of the proposed development.

Where existing traffic levels are generally low (e.g. rural roads and some unclassified roads), any increase in traffic flow may result in a predicted increase that would be higher than the IEMA (2023) guideline thresholds. In these situations, it is important to consider any increase in terms of overall traffic flow in relation to the capacity of the road, before making a conclusion on whether the effect is significant as defined under the EIA Regulations.

Any change in traffic flow which is greater than the thresholds set out in the IEMA (2023) guidelines would be subject to additional mitigations. The magnitude of potential impacts will be identified through consideration of receptor sensitivity against the degree of predicted change to baseline conditions, the duration and reversibility of this change, considered with professional judgement.

11.5.3 Sensitivity of Receptors

Each receptor has been assessed individually to determine its sensitivity and the criteria used to define sensitivity are shown in **Table 11-2.** The ability of a receptor to adapt to change, tolerate the impacts or recover from the impacts is key in assessing its vulnerability to the impact.

Table 11-2: Transport and Access Receptor Sensitivity

Receptor sensitivity	Definition
Very high	Receptor with no capacity to accommodate a particular effect and no ability to recover or adapt.
High	Receptor with very low capacity to accommodate a particular effect with low ability to recover or adapt.
Moderate	Receptor with low capacity to accommodate a particular effect with low ability to recover or adapt.
Low	Receptor has some tolerance to accommodate a particular effect or will be able to recover or adapt.
Negligible	Receptor is generally tolerant and can accommodate a particular effect without the need to recover or adapt.

11.5.4 Magnitude of Impact

The magnitude of an impact is based on a range of factors. The definitions provided in **Table 11-3** are for guidance only and may not be appropriate for all impacts. For example, an impact may occur in a very small area but at very high intensity for a long period of time. In such cases expert judgement is used to determine the most appropriate magnitude ranking and this is explained as part of the assessment.

Table 11-3: Magnitude Criteria

Magnitude	Criteria
High	The impact is very likely to occur or will occur frequently. The impact occurs over a large area, resulting in widespread changes to the baseline. These changes are long term or permanent and affect a large percentage of the receptor population.
Moderate	The impact is likely to occur or will occur at a moderate frequency. The impact will occur over a local to medium extent resulting in short to medium term changes to the baseline. A moderate percentage of the receptor population will be affected.
Low	The impact is unlikely to occur and will be localised, temporary or short term in nature. Change to baseline will be detectible and will affect a small percentage of the receptor population.
Negligible	The impact is very unlikely to occur, would be localised and short term with slight or imperceptible changes to the baseline. The small receptor population will recover fully.

11.5.5 Significance of Effect (Potential Effects)

Sensitivity and magnitude of change, as assessed under the criteria detailed above, have then been considered collectively to determine the significance of effect - as described in **Table 11-4**. The collective assessment is a considered assessment by the assessor, based on the likely sensitivity of the receptor to the change (e.g. is a receptor present which would be affected by the change), and then the magnitude of that change. Effects of 'major' and 'moderate' significance are considered to be 'significant' in terms of the EIA Regulations and additional mitigations may be required.

For the assessment of potential community severance and driver delay associated with the use of open trenching technology, the sensitivity of each link has been based on professional judgement and identified based on the following:

- The strategic importance of the road/highway hierarchy;
- The existing types of users of the road; and
- Availability of suitable alternative routes.

Table 11-4: Transport and Access Significance of Effects

Significance of Effects					
Sensitivity of Receptor	**Magnitude of Impact**				
	No Change	**Negligible**	**Low**	**Moderate**	**High**
Negligible	Negligible	Negligible	Negligible	Negligible	Minor
Low	Negligible	Negligible	Minor	Minor	Moderate
Moderate	Negligible	Minor	Minor	Moderate	Major
High	Negligible	Minor	Moderate	Major	Major
Very High	Negligible	Minor	Major	Major	Major

11.5.5.1 Potential Cumulative Effects

In accordance with the Pre-Application response and scoping response, an assessment of the cumulative effect on the study area of all relevant developments, including local wind farms, within a 25km radius of the Site (either in the planning system, consented or under construction – see **Figure 6.8**) which may utilise the same access routes as the proposed development has been undertaken.

11.5.5.2 Operational Cumulative Effects

As the operational impact of the proposed development on the study area is indiscernible, the operational cumulative effects have not been assessed.

11.5.5.3 Mitigation

The proposed development has been designed to include a range of measures to mitigate potential effects and the assessment assumed that general good practice would be deployed, with a detailed Construction Traffic Management Plan (CTMP) being secured prior to the commencement of development. An outline CTMP has been prepared and is found in Technical Appendix 11.2 of this EIAR.

11.5.5.4 Residual Effects

Following consideration of mitigation measures, an assessment of the residual effects has been made. Residual impacts are those likely to occur after mitigation measures have been incorporated into the scheme. Potential residual impacts include general wear and tear to roads and verges as a result of increased traffic, and temporary road closures caused by abnormal load deliveries.

11.5.5.5 Statement of Significance

A statement of significance is provided at the end of the Chapter which provides a summary of the complete assessment for each receptor, taking into consideration any proposed mitigation measures, and it reports the significance of the residual effects in compliance with the EIA Regulations.

11.6 Environmental Baseline and Potential Sources of Impact

This section details the baseline conditions that exist in the study area in relation to the existing road network, existing traffic flows and the current safety of the study area.

11.6.1 Current Baseline

11.6.1.1 Existing Road Network

The study area for this assessment has been defined as the B9016 extending north from the Site access to join the A98 via a priority junction in the northbound direction and extending southbound to join the A96. A new Site entrance will be provided from the B9016 as part of the proposed development along with 15.9km of upgraded existing tracks and 8.4km of new tracks.

11.6.1.2 Existing Traffic Flows

Baseline traffic flows have been obtained using an Automatic Traffic Counter (ATC) located along the B9016 as shown on **Plate .** The ATC was in place from the 22 August 2023 to 28 August 2023. The full traffic survey report is available in **Technical Appendix 11.3**. The survey recorded classified vehicle data and speeds; classifications were set out in line with the COBA (Cost Benefit Analysis) classification.

A summary of the average weekday (00:00 to 24:00) traffic obtained from the ATC is provided in **Table 11-5**. The data includes directional and two-way flows. HGVs numbers are those identified in the Ordinary Goods Vehicle 2 category.

Table 11-5: Average Weekday 24-Hour Traffic Flows (B9016)

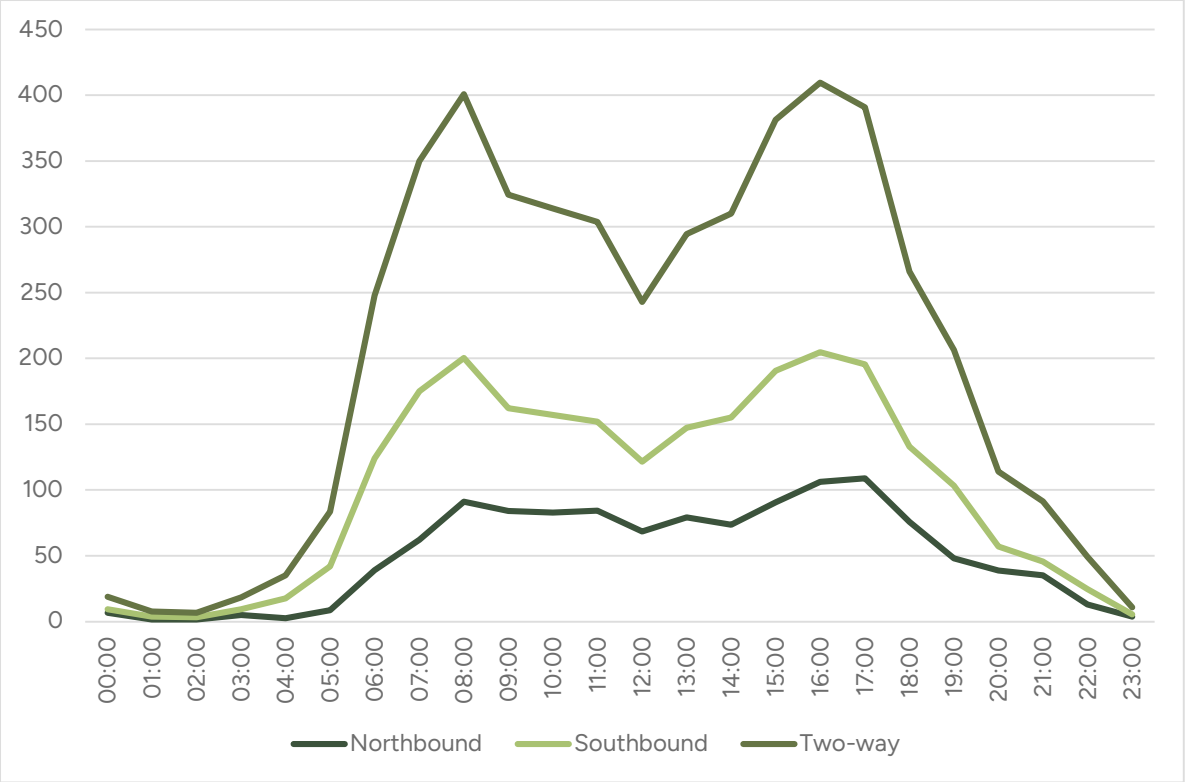
Period	Northbound			Southbound			Two- Way		
	Total	HGVs	%HGV	Total	HGVs	%HGV	Total	HGVs	%HGV
24 Hour	1210	33	3%	1229	44	4%	2439	77	3%
12 Hour	1007	21	2%	987	36	4%	1994	57	3%

Table 11-5 shows that the flow along B9016 is relatively balanced in both directions with an average weekday two-way flow of 2,439 vehicles including 77 HGVs. This reveals that there is a reasonable level of existing HGV traffic along the corridor supported adequately by the local transport network.

Table 11-5 further shows that the average weekday traffic between 07:00 – 19:00 accounts for approximately 82% of the total 24-hour average weekday traffic flow along the segment of the B9016.

Traffic flow profiles showing the northbound and southbound traffic flows on the B9016 over a 24-hour period have been provided in **Figure 11.3** which shows average weekday vehicle numbers recorded at the traffic count location.

Figure 11.3: 24 Hour Average Weekday Traffic Profile (All Vehicles) along B9016



The traffic profile shown in **Figure 11..3** reveals clear traffic peak periods of between 08:00 – 09:00 for the AM period and 16:00 – 17:00 for the PM period with flows dominant in the southbound direction towards the A96 through the average weekday. This would suggest that the B9016 supports slightly heavier flow traffic in the southbound direction through the average weekday.

Table 11-6 shows a summary of the speed performance of the B9016 for a weekday average traffic flow.

Table 11-6: Speed Summary along B9016

	Northbound Traffic	Southbound Traffic	Two-Way Traffic
85th Percentile Speed	61.6	63	62.4
Average Speed	52.2	54.2	53.3

Table 11-6 shows that the 85th percentile speed taken from the vicinity of the western boundaries of the Site along the B9016 is marginally higher than the national speed limit (60mph) to which the road is subject.

11.6.1.3 Seasonality Traffic Flows

It is recognised that the area is likely to experience fluctuations in traffic associated with visitor numbers, in particular during the summer months. The traffic survey was conducted slightly out of the peak summer season when Scottish schools had already returned from the summer break, and so the data may not be entirely representative of the busiest tourist periods. The traffic survey data are considered to represent the normal situation and so provide a suitable baseline for the assessment.

11.6.1.4 Network Capacity Performance

The capacity performance of the B9016 has been calculated from Design Manual for Roads and Bridges, Volume 5, Section 1 TA 46/97, and compared against the existing 24-hour baseline traffic flows. The spare capacity has then been calculated and presented in **Table 11-7.**

Table 11-7: Existing Capacity of B9016

Road	Baseline Flow (24-hr)	Capacity	Spare Capacity	Spare Capacity %
B9016	2439	24,013	21,574	90%

From **Table 11-7,** the B9016 has been demonstrated to have 90% spare capacity to accommodate development traffic.

11.6.1.5 Collision Records

A review of the Personal Injury Collision (PIC) records within the study area has been carried out using data obtained from TS and Crashmap in the following way:

- Transport Scotland data: Five-year period dating back from the last held record along the B9016 (i.e., 2013 – 2017); and
- Crashmap data: The most recent five-year period available (i.e., 2018 – 2022).

The data includes the location, severity and number of vehicles and casualties involved in each collision; additional details including the vehicle type, weather/road conditions and the potential reasoning for cause of collision have not been provided.

The collision analysis is used to inform the review of the proposed route where any deficiencies in the road layout and condition may be identified and to confirm locations where clusters of collisions have been recorded.

For clarification, those collisions recorded which result in slight injury indicate that the victim was likely to suffer from slight shock with occurrences of sprains or bruises from the collision, whereas a serious collision accounts for breakages, lacerations, concussion, or hospital admittance. **Table 11-8** presents a summary of collision data obtained for the B9016 from Crashmap and **Table 11-9** presents the summary of the PIC data from Transport Scotland.

Table 11-8: Most Recent Five-Year Collision Data Summary (2018 - 2022) – Crashmap

Year	Number of Recorded Collisions			
	Slight	Serious	Fatal	Total
2022	0	1	0	1
2021	0	0	0	0
2020	0	0	0	0
2019	0	0	0	0
2018	0	1	0	1
Total	0	2	0	2

Table 11-8 shows there have been two collisions recorded within the study area. Both collision incidents were recorded at the A96/B9016 junction with one occurring on the 31st of March 2022 on the A96 and the other occurring on the 4th of February 2018 on the B9016 arm of the junction. Both incidents resulted in serious injuries. No pedestrians nor cyclists were involved, and no fatalities were recorded for this period.

Table 11-9 presents a summary of the historic collision data obtained from Transport Scotland.

Table 11-9: Five-Year Collision Data Summary (2013 - 2017) – Transport Scotland

Year	Number of Recorded Collisions			
	Slight	Serious	Fatal	Total
2017	1	0	0	1
2016	0	0	1	1
2015	0	1	0	1
2014	3	0	1	4
2013	0	0	0	0
Total	4	1	2	7

Table 11-9 shows a total of seven personal injury collisions were recorded within the five-year period considered including four slight injury collisions, one classified as being of serious severity and two fatal collisions. However, no personal injury collisions after 2017 have been recorded by this data source.

The locations of recorded collisions for both sources/periods are shown on **Figure 11.4.** An overall look at the trend of injury collisions within the study area from combining records from both sources covering the period 2013 – 2022 shows a decline in recorded incidents following a peak in 2014 before a noticeable sharp decline sustained until 2022.

11.7 Future Baseline

All elements of the proposed development are described in **Chapter 2: Proposed Development Description** of this EIAR.

11.7.1 Site Access and Onsite Tracks

The proposed development will be accessed via a new access junction from the B9016. A bellmouth junction with the B9016 will link to a 7m wide access track which will be constructed to road authority standards for the first 15m; the access has been designed in outline to include the required visibility splays in both directions from a set-back distance of 4.5m. The access will be gated which will exclude any traffic unrelated to the proposed development during the operational phase.

An additional 8.4km of new tracks will be provided as part of the proposed development including 2km of internal spine road with an approximate width of 7m. All tracks would be unpaved and constructed of a graded local stone. It is proposed that the majority of the stone required for construction of the tracks and hardstanding areas could be won from onsite borrow pits. However, a worst-case scenario on sourcing of construction materials as established in **section 11.4.1** is adopted throughout this Chapter**.**

11.7.2 Wind Turbines

Consent is being sought for the installation and operation of up to 16 three-bladed horizontal axis wind turbines. The wind turbines would be delivered in component parts, assumed to be up to eight per turbine, and are treated as abnormal loads.

The specific turbine model has so far not been selected, however, to inform modelling and assessment, a wind turbine up to a maximum blade tip height of 200m above ground level with a blade length of approximately 83.3m has been assumed.

Turbine foundations would be designed to suit Site specific ground conditions and accommodate the candidate wind turbines. The final design specification for each foundation would depend on the findings of detailed ground investigation of the land on which each turbine would be located. Turbine foundations would be constructed in reinforced concrete, with concrete batched onsite using imported cement and imported aggregates where higher grade material is required. Water

required for concrete-batching will most likely be taken from onsite boreholes necessitating no additional traffic.

The proposed abnormal load route to the Site is shown on **Figure 11.5** and is assessed within **Technical Appendix 11.1:ALRA**. In summary the route would begin at the Port of Inverness and end on the B9016 (at the Site entrance). Whilst it may be possible in the future to deliver some turbine components from Buckie, this assessment is based on the currently known road configuration and so the assumption is that all AILs will be delivered from Inverness.

From the port the AILs will travel along Stadium Road and onto the A9, then onto the A96 before travelling eastwards until the junction with the B9006 at Brackley. From here AILs will travel along the B9006 / B9090 through Cawdor, then onto the B9101 before crossing the A939 and continuing to Auldearn. From Auldearn the AILs will turn left onto the B9111 for a short distance before rejoining the A96 and continuing east until Fochabers, where the AILs will take the A98 for approximately 5.8km where they will turn onto the B9016 and head south, to the newly constructed Site entrance.

11.7.3 Battery Energy Storage System

In order to help match the Site electricity generation to network energy demand, and to minimise potential grid constraint requirements, the proposed development will also include a battery energy storage system (BESS). The associated traffic impacts of this element of the proposed development have been included in the traffic predictions and assessment below.

11.7.4 Construction Programme

An indicative 18-month construction programme has been prepared and is set out in the construction timeline shown in **Chapter 2: Proposed Development Description** and in **Table 11-10**. The main construction works will be undertaken during months six to 12. The wind turbine components are expected to be delivered during months 10 to 15.

Table 11-10: Indicative Construction Programme

Activity/Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. Establish Temporary Compound																					
2. Install Welfare Services & Establish Water Supply																					
3. Borrow Pit Development and Operation																					
4. Establish Central Laydown Area & Procure Materials																					
5. Create Site Access Entrance at B9016																					
6.. Wind Farm Tree Felling																					
7. Construct Access Tracks																					
8. Import Materials (Road Capping, etc.)																					
9. Construct Turbine Foundations & Hardstandings																					
10. Construct Buildings & External Equipment																					
11. Internal Fit																					
12. Install Wind Farm Cabling																					
13. Erect WTGs																					
14. Commission WTGs																					
15. WTG/WF Reliability Run & Grid Compliance																					
16. Take Over																					
17. Site Restoration																					

11.7.4.1 Construction Working Hours

The construction working hours for the proposed development would be 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 on Saturdays. No working is proposed on Sundays or on bank holidays.

It should be noted that out of necessity some activities, for example abnormal load deliveries, concrete deliveries during foundation pours, the lifting of the turbine components, dust suppression and any emergency works may occur outside the specified hours stated.

Any other construction activities would not be undertaken outside the stated working hours without prior approval from Moray Council.

11.7.4.2 Proposed Development – Construction Materials

The proposed development would require the transportation of a range of construction materials to the Site. The key elements of construction work which would result in trip generation have been summarised in **Table 11-11.**

Table 11-11: Construction Activities Requiring Vehicle Trips

Key Work Element	Details and Assumptions	Conventional HGVs	Abnormal Loads
Site Establishment	Delivery of Site cabins and plant for construction activities at commencement of construction and later removal from Site.	Yes	No
Borrow Pit	Delivery of plant associated with establishing the borrow pit.	Yes	No
Access track upgrade and construction	Up to 8.4km of new onsite tracks and 15.9km of upgraded tracks including turning heads.	Yes	No
Turbine foundations, crane hardstandings, blade fingers	Delivery of plant associated with construction of crane hardstandings. Delivery of plant and materials including concrete, aggregate and reinforcement materials for turbine foundations.	Yes	No
Control Building and Substation Compound	Delivery of material for construction of building foundations, structure and finishings. Delivery of electrical equipment.	Yes	Yes
Electrical Installation	Delivery of sand and cables to connect turbines to substation.	Yes	No
Wind Turbine Delivery	Delivery of turbine components to Site. Bringing in of crane equipment to erect turbines. Includes escort vehicles associated with movement of abnormal loads.	Yes	Yes

The precise quantities of construction materials required for the proposed development would depend on the presence and productivity of onsite borrow pits. While there are up to four borrow pit search areas onsite, a robust assessment of a worst-case scenario is to be included, with the assumption that a greater volume of material is imported to Site.

An estimation of the aggregate material quantities for all elements of the proposed development has been made. **Table 11-12** provides a summary of the material quantities (aggregates only) required onsite.

Table 11-12: Estimated Aggregate Material Quantities for Proposed Development

Proposed Infrastructure	Volume of Aggregate Required (m^3)	Approximate Tonnages of Aggregate Required
Site Tracks (upgraded and new)	123,169	246,338
Site access and transit layby	1,670	3,340
Turbine bases (formation only)	4,232	8,464
Aggregate for Turbine Concrete[2]	4,752	9,504
Fill above turbine bases (Backfill)	21,296	42,592
Hardstandings	7,680	15,360
Substation and BESS	16,000	32,000
Temporary Construction Compounds	8,000	16,000
Batching plant	2,000	4,000
Total	188,799	377,598

Table 11-13 provides material quantities for all other non-aggregate materials. Concrete batching production would take place onsite; the cement and sand have been included in the material quantities below. Water for the concrete batching would be sourced onsite.

Table 11-13: Estimated Material Quantities (Excluding Aggregate)

	Infrastructure	Material Quantities	
Turbine Foundations	Installation 6N Structural Fill	3,157m^3	6,314t
	Blinding	452m^3	904t
	Installation of Can/Bolts	16no	
	Reinforcement	998t	
	Plinth Shutter	60t	

[2] It is assumed that 1m^3 of concrete requires 1 tonne of aggregate. Aggregate required for concrete assumed at 1.75 tonne per 1m^3. Other aggregate assumed at 2 tonne per m^3.

	Infrastructure	Material Quantities	
	Base Slab Perimeter Shutter	140t	
	Ducts (200mm diameter)	96no	
	Ducts (75mm diameter)	96no	
	Transformer Plinths	16no	
	Step Plinth	16no	
Electrical Connection	Sand Layer – 0.5m x 0.3m x 8,400m	1,260m^3	1,764t
	Cable – Drums hold 500m	17 drums	
Cement **Sand**	16 turbines 8,320m^3 concrete For mixing concrete	2,912t 8,320t	
Control Building	Reinforcement	43t	
Substation and BESS Compound	Imported type 1 running surface	571m^3	1,142t
	Imported 6F2 Capping	1,143m^3	2,286t
	Class 1C1 Roadbox bulk fill	2,857m^3	5,714t
	Class 1 general fill	7,649m^3	15,298t

11.7.4.3 Trip Generation

HGV Trip Generation

The total number of HGV trips predicted to arise during the construction phase of the proposed development has been calculated based on the estimated aggregate material quantities provided in **Table 11-12**. These have then been doubled to provide the two-way movements that would occur from delivery and then returning vehicles, as shown in **Table 11-14.**

Table 11-14: Total Number of HGV Trips (Aggregates)

Item	Load Size	No. of loads	Two-way
Access Tracks	20t	12,317	24,634
Site access and Layby	20t	167	334
Turbine Bases – formation only	20t	424	848
Aggregate for Turbine Concrete	20t	475	950
Fill Above Turbine Bases	20t	2,130	4,260
Hardstandings	20t	768	1,536

Item	Load Size	No. of loads	Two-way
Substation and BESS compound	20t	1,600	3,200
Temporary Construction Compound	20t	800	1,600
Batching plant	20t	200	400
Total		18,881	37,762

The material quantities identified in **Table 11-13** have been applied as transport loads, doubled to confirm two-way movements. These figures have been set out in **Table 11-15.**

Table 11-15: Total Number of HGV Trips (Non-aggregates)

Item		Load Size	No of Loads	Two-Way
Felling (assume 2)		-	2	4
Turbine Foundations	Installation 6N Structural Fill	20t	316	632
	Blinding	20t	45	90
	Installation of Can/Bolts	-	1	2
	Reinforcement	20t	50	100
	Plinth Shutter	-	1	2
	Base Slab Perimeter Shutter	-	1	2
	Ducts (200mm diameter)	-	1	2
	Ducts (75mm diameter)	-	1	2
	Transformer Plinths	-	16	32
	Step plinth	-	16	32
Electrical Connection	Sand layer – 6m x 3m x 3,400m	20t	88	176
	Cable – drums hold 500m	-	17	34
Temporary Welfare Facilities		-	4	8
Cement **Sand**		20t 20t	146 416	292 832
Control Building	Reinforcement	20t	3	6
	Imported Type 1 running surface	20t	57	114

Item		Load Size	No of Loads	Two-Way
Substation and BESS Compound	Imported 6F2 capping	20t	114	228
	Class 1C1 Roadbox bulk fill	20t	286	572
	Class 1 General Fill	20t	765	1,530
Total Loads/Two-way Movements			2,344	4,688

The two-way movements for HGVs have been spread over the construction programme according to the relevant activity. The total two-way trip generation has been divided by the number of construction working days in each month (assumed 26) to provide daily two-way trip generation as shown in **Table 11-16.**

The key construction activities have been simplified to facilitate the application of the HGV numbers to each month of the programme (the final 6 months, not included, are reserved for the delivery of the turbines and for the commission of the turbines):

- Site establishment and restoration – this includes the first phases of the construction period, to include Site establishment, access road improvements and forest clearance. It has been agreed with Forestry and Land Scotland (FLS) that a keyholing technique will be employed which will reduce the level of clearance required and its associated traffic. It has been assumed the use of some aggregates will be included here. This also includes the deliveries associated with the management compound (welfare cabins etc). FLS will continue to use Braes of Enzie for their felling purposes during the construction phase;
- access tracks, hardstandings and layby – the tracks will require the majority of aggregates;
- turbine foundations – turbine bases, structural fill and ballast required for the turbine bases (aggregates), reinforcement bars, turbine transition element, concrete, formwork, earthing materials and all other materials required for the construction of turbine foundations. The delivery of the turbines is not included here;
- substation construction – this covers all materials and equipment associated with the construction of the substation including the aggregate, building materials and HV equipment;
- concrete – materials for concrete batching production in-situ, including the cement, aggregate and sand which would be imported; and
- cabling – electrical connection materials.

Table 11-16: Daily Two-Way HGV Trip Generation by Construction Month

Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Site Establish	16	16	16	16	16	16	16							
Access tracks etc			162	162	162	162	162	162						
Turbine foundations					33	33	33	33	33	33	33			
Substation			24	24	24	24	24	24	24	24	24			
Concrete						11	11	11	11	11	11	11	11	11
Cabling etc								1	1	1	1	1	1	1
Daily total	16	16	202	202	235	245	245	231	69	69	69	12	12	12

HGV Trip Summary

The majority of construction activities would incur HGV trip generation which would be spread over the middle months of the construction phase, as defined in the construction programme, with the

final four months predominantly comprising light vehicle trips for snagging and restoration activities, followed by takeover. The predictions for HGV traffic generation have focused on the busiest construction months.

The maximum level of two-way trip generation is expected to occur in months six and seven, with 245 two-way movements per day. These peak months occur when the material imports for the different construction activities coincide. **Table 11-17** provides a summary of the two-way trip generation for the worst-case day (maximum trip generation) and an average hour.

Abnormal Loads Trip Generation

Each wind turbine typically consists of up to eight abnormal load deliveries: three blades, three tower sections, the nacelle and the generator. Other loads would be associated with the delivery of the hub, cranes and drilling rigs, which would not be considered to be abnormal loads; these, however, would be delivered at a similar time. Towers would be carried in a 4+7 clamp adaptor style abnormal load trailer, whereas loads such as the hub, nacelle housing and top towers would be carried on a six-axle step frame abnormal load trailer.

All components would be transported under suitable traffic management procedures.

On the premise that the 128 components would be delivered in convoys of three, the abnormal loads could be completed within 43 days. Over the six-month period allocated for the erection of the turbines, this would equate to an average of approximately one to two days of abnormal load deliveries per week. These will be delivered at night or early morning hours to further reduce the potential effects on the local transport network.

To ensure a robust assessment, it has been assumed that three abnormal load transport vehicles would deliver wind turbine components in a day (24-hour period) during the 'worst case' month, with an additional two HGV deliveries included for the crane and drilling rigs; this gives an additional five HGV deliveries.

Light Goods Vehicle Trip Generation

Light vehicles which consist of smaller vehicles such as cars and vans, typically associated with the workforce, have also been calculated to provide total two-way vehicle movements predicted to arise from the proposed development. It is envisaged that a maximum of 40 personnel would be required on the Site at any one time. Based on the conservative assumption that 20% of workers would car share, this would equate to 32 vehicle trips per day (64 two-way movements per day).

Accumulative Trip Generation

Table 11-17 provides the calculated daily and hourly two-way movements, with the HGVs and five abnormal loads included. To ensure a robust assessment of the impacts, the light vehicles have been included within the average hour, although in reality these would be likely to arrive and depart separately. These figures are the maximum trip generation that would be expected during the peak construction period.

Table 11-17: Trip Generation Summary (Two-Way)

	HGV/AIL	LGV	Total
Daily	250	64	314
Average hour	21	64	85

11.7.4.4 Trip Distribution

All construction vehicles (with the potential exception of some initial deliveries of plant machinery) would enter the Site from the B9016, having travelled the length of the B9016 from either its junction with the A98 in the north or A96 in the south. It is assumed, based on a worst-case scenario that all of the aggregates will be sourced from outside of the Site and transported from the locations shown in **Figure 11.6**. The nearest quarries are located at Keith (Cairdshill Quarry) and

Buckie (various) and will see vehicles laden with aggregate materials from then accessing the Site through the new Site entrance from the B9016.

Other construction and delivery vehicles will travel via either the A98 or A96 to the B9016 assuming a 50/50 split.

Light vehicle trip generation would see a maximum of 64 two way trips each day during the worst-case months. It is also assumed that the light vehicles accessing the site will come from both north (A98) and south (A96) directions to turn into the B9016 resulting essentially in a 50/50 split as well.

11.8 Potential Sources of Impact

11.8.1 Assessment of Potential Effects

The proposed development has been designed to include a range of measures to mitigate potential effects. Included within this are the design of the site entrance to include radii and width suitable for ease of abnormal indivisible load access. All such measures are described fully in **Chapter 2: Proposed Development Description**.

11.8.2 Construction Effects

11.8.2.1 Assumptions of the Assessment – Proposed Development

The assessment has been undertaken under the assumption that good construction practice would be deployed, including the following:

- all vehicles delivering plant and materials to the site would be roadworthy, maintained and sheeted as required;
- suitable traffic management would be deployed for the movement of HGVs and other site traffic;
- banksmen and police escort would be deployed for the movement of abnormal loads as required; and
- HGV loads would be managed to ensure that part load deliveries would be minimised where possible, to limit the overall number of loads.

The predicted increases in traffic levels against the baseline levels have been calculated in this section, and then an assessment of the significance of the effect has been made against the criteria described in **Table 11-2, Table 11-3 and Table 11-4.**

The IEMA guidelines provide two thresholds when considering predicted increases in traffic, whereby a full assessment of impact would be required:

- where the total traffic would increase by 30% or more (10% in sensitive areas); and/or
- where the HGV traffic would increase by 30% or more (10% in sensitive areas).

Although there are possible sensitive receptors, e.g. residential properties, present within the study area, these properties are limited in number and are set back from the road. As such the study area in its entirety is not considered to be sensitive, and therefore the threshold of 30% has been applied.

The construction working hours for the proposed development would be 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 on Saturdays other than in exceptional circumstances.

It should be noted that out of necessity some activities, for example abnormal load deliveries, concrete deliveries during foundation pours, the lifting of the turbine components, dust suppression and any emergency works may occur outside the specified hours stated. Any other construction activities would not be undertaken outside the stated working hours without prior approval from Moray Council.

The impact of the proposed development has been assessed over the average weekday period. TS advised that the assessment should include the application of the National Road Traffic Forecast

(NRTF) low growth to the construction year. In Section 11.10 the assessment includes a cumulative assessment; the inclusion of these developments is considered to account for any potential growth in background traffic flows.

Table 11-18 shows the predicted daily total and HGV traffic increases. The baseline traffic flows are those observed on an average weekday over a 24-hour period.

Table 11-18: Predicted Daily Increases in Traffic (Average Weekday)

Road Link	Baseline		Development		Baseline + Development		Increase %	
	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs
B9016	2,439	77	314	250	2,753	327	13%	325%

From **Table 11-18** it can be seen that the development generated traffic will result in a 13% increase to the total flow of traffic on the B9016 and an increase of 325% to the number of HGVs on the B9016. While the overall traffic will not exceed the IEMA thresholds, the increase in HGVs requires further consideration to determine the impacts in line with IEMA guidelines. The assessment is set out in the following paragraphs.

Table 11-19 confirms that the addition of the construction generated traffic would not have a material impact on the capacity of the B9016 within the study area; the B9016 will retain 89% capacity.

Table 11-19: Capacity of the B9016 with Development

Road	Baseline Flow (24-hr)	Capacity	Development (worst case)	Spare Capacity	Spare Capacity %
B9016	2,439	24,013	314	21,260	89%

11.8.2.2 Potential Effects - Construction

Effect on Severance of Communities

The IEMA guidance identifies severance as "the perceived division that can occur within a community when it becomes separated by a major traffic artery". As an example, a road that passes through a community such as a town or village, where perhaps amenities are located on one side of the road and residential properties are located on the other side, causes severance to the movements between those places. The degree of severance depends on the traffic levels on the road and the presence of adequate crossing opportunities.

The B9016 has been assessed to have significant reserve capacity to accommodate additional traffic owing to the proposed development. Considering the nature of the surrounding area of the site of the proposed development which is predominantly agricultural land with little pockets of residential dwellings and farm steads, it is expected that the sensitivity of any receptors within the study area will be of **negligible sensitivity**.

Table 11-17 shows that a maximum of 314 two-way vehicle movements would be added to the daily flow on the B9016, resulting in an increase of 13%; this is well below the threshold of 30%. It is recognised that the increase in HGVs will be significant with a 325% increase. While this significant increase is only predicted for a short period of time, an increase in HGVs of this scale would be detectable. As such, it is considered that the magnitude of the effect will be of a **low magnitude**.

Using the criteria outlined in **Table 11-2** and **Table 11-3**, community severance is considered to be of negligible sensitivity as the limited number of receptors would be expected to tolerate the increase in traffic and the effects will be short lived. The potential overall effects, in line with **Table 11-4** are assessed as **negligible and not significant** (less than 30% vehicular increase on the local highway and well within the maximum theoretical capacity of the road network).

Effects on Road Vehicle and Pedestrian/Non-Motorised User Delay

The IEMA guidance states that delays to non-development traffic can occur at different locations on the roads surrounding the proposed development, including at the site entrance, on the roads passing the Site and at junctions on the route to the Site. The IEMA guidelines also state that there are only likely to be significant when traffic on the roads are already at or close to capacity. It has been demonstrated that the 13% increase to the total traffic on the B9016 would not result in link capacity issues. As such, any effects on driver delays are considered to be limited.

For pedestrians the delays are linked to severance and are most likely to be experienced in communities where pedestrians cross the road to access properties or services. As the study area is very lightly populated, with no locations where pedestrian crossings are present, it is considered that any receptor sensitivity to pedestrian delay would be negligible. The traffic survey data did not identify non-motorised users; while the nature of the road and the surrounding area suggests that there would not be a high number of non-motorised users along the length of the B9016, the effects from the increase in HGVs to any non-motorised users on the B9016 may be greater. As such, the sensitivity of non-motorised users in general is considered to be **low sensitivity**.

The increase in total traffic would be 13%, with the increase in HGVs exceeding the threshold of 30%. The construction activities would be short lived, with any effects temporary in nature. As such, the impacts will have a **low magnitude**.

The overall effects on driver and pedestrian/non-motorised user delay would be **minor and not significant.**

Effect on Non-Motorised User Amenity

Pedestrian amenity is defined in the IEMA (2023) guidelines as “the relative pleasantness of a journey”, which is generally affected by traffic flow and traffic composition, with pedestrian infrastructure also taken into account. In addition pedestrian fear and intimidation are also included.

As already discussed, the study area does not include many communities, with the exception of Aultmore. There is no pedestrian infrastructure along the B9016 within the study area and there are no areas which could be expected to accommodate high levels of frequent pedestrian movements. As such, the sensitivity of receptors to an increase in road traffic is considered to be a **negligible sensitivity**.

The proposed development flows have been confirmed as increasing by 13% above the base flows, which is well within the 30% threshold. As such, the magnitude of any effects are expected to be of **negligible magnitude**.

As such, and in line with **Table 11-4,** the overall effects on non-motorised amenity are assessed as **negligible and not significant**.

Effect on Road User and Pedestrian Safety

There are no general thresholds used when determining the significance of increased traffic on highway safety, therefore professional judgement is required to identify the potential road safety effects associated with the cumulative construction phase. The IEMA guidance confirms that existing road collision rates and professional judgement are needed to assess the implications of the cumulative construction traffic. It should be noted that this assessment does not constitute a road safety audit.

The collisions recorded within the study area are discussed in Section 11.6.1. TS data shows no records within the area after 2017. Data obtained from TS shows there have been seven incidents between 2013 and 2017 including four slight injury collisions, one serious injury collision and two incidents that resulted in fatalities. The most recent collisions within the study area were recorded

on the Crashmap website which shows a total of two incidents within the study area in the most recent five-year period data held dating from 2018 - 2022. Both incidents resulted in serious injuries to car drivers/passengers. No incident involved a HGV, a pedestrian nor any other road users.

While nine collisions in a ten-year period along a 10km section of road would not imply that there are serious road safety concerns, the occurrence of two fatalities is an indication that there is an issue along this shorter section of road in the vicinity of the Site access. Combined with the feedback on the safety performance of the B9016 which has been received as part of the consultation process, the receptors within the Study Area are considered to have a **moderate sensitivity** to road safety impacts. Road safety measures will be specifically factored into the mitigation measures being proposed in the CTMP. This will ensure development-specific measures are adopted reducing any safety concerns further

While the predicted number of HGV movements would be significantly greater than the 30% threshold on the B9016, it has been confirmed that the additional vehicles would be easily accommodated within the available capacity of the road. The traffic survey carried out shows a reasonable level of HGV activity on the B9016 which attests to its suitability for HGV traffic. In addition, it has been demonstrated that the B9016 has suitable theoretical capacity to accommodate additional traffic without significant impacts. Additionally, deliveries of large components such as those required for the substation and turbines would be moved under suitable traffic management procedures, including the provision of banksmen at the site access junction and appropriate warning signage, as set out in the Outline CTMP (**Technical Appendix 11.2**). As such, the impacts on road safety within the Study Area would have **low magnitude**.

In summary, the proposed development would result in a significant increase to HGV traffic levels within the study area but these levels would remain well within the design capacity of the local road network. While any number of injury collisions are considered to be unsatisfactory, the collision records for the Study Area are relatively low, with two collisions occurring over the most recent five-year study period.

In accordance with the criteria set out in **Table 11-4** the level of effect is considered to be **negligible and of minor significance** for the short duration of the construction phase.

Effects on Noise and Vibration

While the effects from noise are not listed specifically in the IEMA (2023) guidelines, they are relevant when considering traffic impacts as the effects from noise can be high in relation to sensitive receptors such when residential properties are located close to the road. As there are very few residential properties located close to B9016, noise has been classified as having **low sensitivity** in the study area.

The maximum traffic increase predicted for the proposed development would result in a 13% increase in total vehicle movements per day. Hence, the traffic noise effects are expected to have a **negligible magnitude** of impact within the study area. It is acknowledged that the property at Ryeriggs Croft may experience a higher level of noise impact due to its proximity to the Site access; the mitigation measures set out within the CTMP will be designed specifically to address such impacts in this location as far as practicable.

Therefore, the overall effects are considered to be **minor and not significant** in terms of the EIA Regulations. The full environmental effects of noise and vibration are assessed in **Chapter 12: Acoustic Assessment**.

Impact Caused by Movement of Abnormal Loads

The access route report for abnormal loads is provided in **Technical Appendix 11.1**. The assessments undertaken for the transportation of the abnormal loads has demonstrated a feasible route coming direct from the Port of Inverness along the A9, the A98 and onto the B9016 to the site entrance.

The route is considered suitable for such movements, subject to localised temporary works at junctions to facilitate movements. Any modifications to junction layouts would be confirmed through a trial run and further surveys, and any modifications or works required to accommodate

abnormal loads would be discussed with Moray Council and the necessary consents and permits would be obtained in advance of any works or delivery periods. It is anticipated that there would be a greater number of sensitive receptors along the turbine delivery route and so the **sensitivity will be moderate**.

Transportation of the turbine equipment would lead to the following effects:

- the rolling closures of roads and footways causing temporary driver and pedestrian delay; and
- the perceived effect to pedestrians and vulnerable road users caused by the movement of large turbine components in close proximity to property and infrastructure.

The severity of these impacts is considered as follows:

- delays to drivers due to lane/road closures would be inevitable, though abnormal loads could travel in convoy as described above and movements may be timed so as to avoid the peak hours. Abnormal load movements occurring outside of the peak hours would have a temporary minor adverse effect; and
- the perceived effect to residents is subjective and it is likely that the transport of abnormal loads close to properties could lead to local objection due to issues with disruption and delays. Residential properties/sensitive receptors within the study area include a limited number of residential properties along the B9016.

The route for the delivery of turbine components is not excessive and does not pass through large populated areas; as such the sensitivity is expected to be moderate. It is also important to note that the abnormal load movements would occur over a short period of time. As such there will be a **low magnitude** of impact.

Turbine deliveries would be undertaken in consultation with the relevant authorities, including Moray Council, Transport Scotland and Police Scotland and could include movements during the night which would reduce effects on road users at busier daytime periods. Deliveries would be scheduled where possible to avoid peak times of the day and school opening/closing times. The peak summer tourist month will also be avoided. Deliveries of AILs will be outwith Broadley Crematorium's core opening hours (09:00 – 17:00, Mondays to Fridays) to avoid disruption to this facility. The Crematorium is located approximately 100m west of the B9016 and 700m south of the A98/B9016 junction.

There would be an unavoidable impact associated with the delivery of turbine components, however with suitable public awareness the significance of effect would be moderate adverse on turbine delivery days (significant). The CTMP will ensure that the timing of every abnormal load delivery is communicated to all parties to raise public awareness.

The CTMP will also take into account the changes to highway network use during peaks associated with the tourist season, working to minimise disruption associated with deliveries. For this reason, in the event that consent is forthcoming the Outline CTMP would be reviewed to ensure that the tourist season is taken into account including the seasonal tourist traffic. Measures to mitigate any impacts during the busier peak season would include the transport of abnormal loads during the night, coordination with the police to ensure optimum management of deliveries and the use of a lay-down area or lay down areas. With the mitigation and management measures in place the effects from the movement of turbine components are assessed as **minor and not significant**.

11.8.2.3 Decommissioning Phase

The proposed development has been designed with an operational life of up to 35 years. At the end of this period, the turbines would be decommissioned. The decommissioning period would last around a year. The decommissioning approach is to be agreed with Moray Council and other regulatory bodies through the preparation and agreement of a Decommission and Restoration Plan (DRP). It is currently anticipated that the decommissioning of the proposed scheme would comprise the following elements which would lead to future traffic movements:

- dismantling and removal of turbine components – the turbines will be disassembled and so the components will not be transported from the Site as abnormal loads;
- removal of all turbine foundations to a depth of one metre below ground level, with deeper infrastructure remaining in-situ;
- removal of hardstanding areas adjacent to turbines to a depth of one metre below ground level; and
- removal of substation compound to a depth of one metre below ground level.

The decommissioning phase traffic is expected to be less than or equal to the construction phase. As such construction traffic is considered to represent the worst-case potential effects on Traffic and Transport receptors. It is also difficult at this stage to ascertain what the decommissioning traffic will include as this will be detailed in a decommissioning plan submitted to Moray Council in advance of this stage, and as such, no detailed assessment of the decommissioning phase is included.

11.9 Mitigation

The assessment has been undertaken under the assumption that general good construction practice would be deployed.

A CTMP would be in place to actively mitigate the effects as discussed above and an Outline CTMP has been prepared at this stage and submitted as part of the application to outline the mitigation measures recommended during the construction stage. This is provided as **Technical Appendix 11.2: Outline CTMP**.

The purpose of the Outline CTMP is to provide preliminary details of proposed traffic management measures and associated interventions that would be implemented during the construction phase of the proposed development in order to minimise disruption and ensure safety. The Outline CTMP will be supplemented with additional information as appropriate by the applicant's appointed contractor(s), prior to commencement of construction activities. Should consent be granted, the Outline CTMP would be updated to a CTMP, the content of which would be agreed with Moray Council through consultation and enforced via a planning condition. The CTMP would be used during the construction phase of the proposed development to ensure traffic to, from and on the site is properly managed. It is possible that a collaborative approach with the assessed cumulative sites may be incorporated as part of the CTMP at a later date.

In addition to the use of general good practice an Abnormal Load Traffic Management Plan (ATMP) would be drawn up to secure permissions for the movement of abnormal loads and would include details of any required temporary widening and other road improvement measures, together with detailed consideration of vehicle swept paths, loadings, structural assessments (where required) and temporary street furniture removal details. The document would be prepared in consultation with the Roads Authority, Transport Scotland and the emergency services, including Police Scotland. An element of preparation of the ATMP would be a trial run, which would be undertaken in consultation with the Roads Authority and any other statutory bodies required; the required permissions would be obtained as identified in the ATMP.

Information, with regards to abnormal load movements, would be provided to local residents and users of amenities to alleviate disruption and delays.

Mitigation measures to reduce the potential for dust and dirt to make its way on to the local highway network would be undertaken including the cleaning of vehicle wheels during wet periods and the sheeting of aggregate lorries. Further mitigation details are discussed in the outline Construction Environmental Management Plan (**Technical Appendix 2.1**).

11.9.1 Residual Construction Effects

Residual effects are those that would still occur after mitigation measures have been incorporated into the scheme. Potential residual effects are likely to be those associated with delivery of the abnormal loads and resultant temporary road closures. On minor roads this may be more apparent as traffic flows are usually likely to be limited to private vehicles.

Significant residual effects in relation to the proposed development are unlikely as although the increase in HGV traffic along the B9016 will see a percentage increase greater than the 30% threshold, link performance will not be impacted as the road has a spare capacity of 89%.

11.10 Assessment of Cumulative Effects

Chapter 5: Approach to EIA provides further information on the approach to cumulative sites in the assessment process.

To assess the impacts associated with an accumulation of construction traffic, the timing of surrounding wind farms has been considered. Wind farms which are currently within the planning system (i.e. the subject of a live application) or have been given planning permission/consent, and are within 40km of the site are included in the assessment.

The predicted maximum daily two-way generation on the B9016 has been included. **Table 11-20** assumes the worst-case trip generation month for all the wind farms would occur at the same time, although in reality this is unlikely to occur.

Table 11-20: Cumulative Wind Farm Sites

Site Name	Distance (km)	Number of Turbines	Blade Tip Height	B9016 Daily Traffic (Two-Way)
Consented				
Clashindarroch II	23	14	180	None
Lurg Hill	5	5	130	None
In Planning				
Craig Watch	27	11	200	None
Clashindarroch Extension	25	22	200	None
Ourack	38	18	180	None
Total Cumulative				0

Table 11-20 shows that no additional two-way trips would be added to the B9016 should the identified developments be constructed at the same time, as all of the cumulative sites utilise other roads for access during the construction phase. As previously discussed, the B9016 currently operates significantly below capacity. With the addition of the cumulative assessment movements stated in **Table 11-20**, the B9016 would still operate significantly below capacity.

In the event that construction of the proposed development and any of the identified cumulative wind farm schemes occur concurrently, this would not lead to any additional environmental effect in transportation terms, beyond that already assessed, provided that:

- abnormal load movements are programmed in conjunction with Police Scotland and the Roads Authorities (Moray Council and TS) so as not to occur on the same day; and
- days of specific high density traffic movement (e.g. concrete pour days) are programmed so as not to occur on the same day (to be enforced through inclusion as a factor within the CTMP, and to be agreed with Police Scotland and the Roads Authority accordingly).

11.11 Summary

The effects associated with the proposed development are summarised in **Table 11-21.**

Table 11-21: Summary of Predicted Effects (Pre-Mitigation)

Type	Duration	Sensitivity	Magnitude	Significance
Community Severance	Temporary	Negligible	Low	Negligible & not significant
Road user and pedestrian delay	Temporary	Low	Low	Minor and not significant
Pedestrian amenity	Temporary	Negligible	Negligible	Negligible and not significant
Road user and pedestrian safety	Temporary	Moderate	Low	Minor and not significant
Noise and vibration	Temporary	Low	Negligible	Negligible and not significant
Abnormal loads	Temporary	Moderate	Low	Minor and not significant

Following the assessment of traffic impacts, the significance of potential effects that could occur during construction both before and after proposed mitigation measured are presented in **Table 11-22.**

Table 11-22: Summary of Predicted Effects (Pre and Post Mitigation)

Potential Impact	Pre-Mitigation Effects		Proposed Mitigation/Enhancement	Post-Mitigation Residual Effects	
	Magnitude	Significance		Magnitude	Significance
Community Severance	Negligible	Not significant	Traffic Management Plan for the movement of abnormal loads. Trial Run for abnormal loads prior to commencement of construction. Road condition survey (including assessment of existing structures as appropriate) prior to the commencement of construction and a similar assessment following completion of the works. Provision of information to local residents and users of amenities, to involve the community in the safe operation of the Traffic Management Plan and to alleviate stress and anxiety. Good construction practices including wheel wash and careful loading.	Negligible	Not significant
Road user and pedestrian delay	Minor	Not significant		Negligible	Not significant
Pedestrian amenity	Negligible	Not significant		Negligible	Not significant
Road user and pedestrian safety	Minor	Not significant		Negligible	Not significant
Noise and vibration	Negligible	Not significant		Negligible	Not significant
Abnormal loads	Minor	Not significant		Negligible	Not significant

11.12 References

Davis, S., Hoare, D., Howard, R., Ross, A. (2023) Institute of Environmental Management and Assessment (IEMA) Guidelines: Environmental Assessment of Road Traffic and Movement.

Highways Agency (1997). Design Manual for Roads and Bridges, Volume 5, Section 1 TA 46/97 – Traffic Flow Ranges for Use in the Assessment of New Rural Roads.

National Planning Framework 4. Available at: http://www.moray.gov.uk/downloads/file148989.pdf (Accessed: 07 September 2023).

The Scottish Government (2014). Scotland's Third National Planning Framework.

Parliament of the United Kingdom Roads Traffic Regulation (Scotland) Act 1984. https://www.legislation.gov.uk/ukpga/1984/27/contents.

Scottish Executive Development Department (2005). Planning Advice Note 75.Planning for Transport.https://www.gov.scot/publications/planning-advice-note-pan-75-planning-transport/

Scottish Government (2014). Scottish Planning Policy (SPP). https://www.gov.scot/publications/scottish-planning-policy/documents/.

Transport Scotland (2020) National Transport Strategy (NTS). https://www.transport.gov.scot/media/47052/national-transport-strategy.pdf

The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017. https://www.legislation.gov.uk/ssi/2017/102/contents/made.

Transport Scotland (2012). Transport Assessment Guidance. https://www.transport.gov.scot/media/4589/planning_reform_-_dpmtag_-_development_management__dpmtag_ref__17__-_transport_assessment_guidance_final_-_june_2012.pdf.