Chapter 12

Access, Traffic and Transport

SCOTTISHPOWER RENEWABLES

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Chapter 12
Access, Traffic and Transport

12.1 Introduction

1. This Chapter of the Hollandmey Renewable Energy Development (RED) (hereafter the proposed Development) Environmental Impact Assessment (EIA) Report assesses the potential effects of the proposed Development on the highway network (in transport terms) and its users. This Chapter should be read in conjunction with **Chapter 3: Proposed Development**.

2. The Chapter describes the assessment methodology that has been adopted and identifies how baseline conditions have been established. The access, traffic and transport receptors have been identified within a defined assessment area (the 'study area') which has the potential to be adversely or positively impacted by the proposed Development.

3. Potentially significant access, traffic and transport related environmental effects may result from two forms of potential impacts:

- transport configurations made for the movement of turbines including blade, tower sections, and nacelle of the wind turbines that are 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
- import of general construction materials transported via 'conventional' heavy goods vehicles (HGVs) and low loaders.

4. The assessment detailed within this Chapter includes worst case assumptions made for the purpose of forming a robust assessment of the proposed Development within the parameters identified in **Chapter 3: Proposed Development** in addition to a more realistic scenario.

5. For a worst-case assessment, the following assumptions have been made:

- all construction materials are assumed to be sourced from offsite locations (i.e. outside of the application boundary), including all aggregate required for track construction, thus ensuring that the estimated level of trip generation is considered as a maximum worst case. This is an unlikely situation as onsite borrow pits are likely to be used, but has been included as scenario 1 to ensure a robust assessment; and
- future traffic increases associated with the construction of the proposed Development have been measured against baseline flows with a low National Road Traffic Forecast (NRTF) growth factor applied.

6. The offsite delivery routes of the wind turbine components have been considered in an Abnormal Loads Route Assessment, which includes swept path analysis and a detailed review of the potential routes for access, concluding that the potential routes to site would be suitable for turbine transport with the inclusion of temporary mitigation measures. The assessment within this Chapter considers the potential access, traffic and transport effects of the proposed Development, during its construction on the road network associated with staff transport (cars or staff minibuses); construction equipment and materials, deliveries of machinery and supplies such as aggregate for access tracks and ready mixed concrete; abnormal load deliveries of the turbine components and their associate escort vehicles. Where the potential for significant effects has been identified, mitigation measures have been identified.

7. Traffic effects during the operational phase of the proposed Development are likely to be insignificant as expected traffic flows will be less than 6 vehicle movements per week, far below the recognised thresholds for triggering a formal transport assessment. As such, the effects during the construction phase are scoped out of the assessment.

8. The consent application seeks planning permission in perpetuity, as such traffic effects during the decommissioning phase have been scoped out of the assessment. Should this not have been the case, as elements of the proposed Development are likely to remain in-situ (for example cable trenches, access tracks, etc), the traffic flows associated with the decommissioning works would be lower than those associated with the construction phase. The construction phase therefore represents a worst-case assessment.

12.2 Approach to Assessment and Methods

9. A desk study was undertaken to inform this assessment, which included reviews and identification of the following:

- relevant transport planning policy;
- accident data;
- sensitive locations;
- any other traffic sensitive receptors in the area (core paths, routes, communities, etc.);
- OS plans;
- potential origin locations of construction staff and supply locations for construction materials to inform extent of local area roads network to be included in the assessment; and
- constraints to the movement of AIL through a Route Survey including swept path assessments.

10. The desk study was supplemented by field surveys which comprised of the following:

- Site visit; and
- Collection of traffic flow where not publicly available.

11. The scope of the assessment has been informed by consultation responses summarised in **Table 12.1** and the following guidelines/policies:

- Institute of Environmental Assessment, Guidelines for the Environmental Assessment of Road Traffic (1993);
- LA104, Environmental assessment and monitoring, Design Manual for Roads and Bridges (DMRB) (Standards for Highways, 2020);
- Scottish Government, Transport Assessment Guidance (2012); and
- The Highland Council, Guidance on the Preparation of Transport Assessment.

12. The following bullets outline the steps taken in the assessment to establish the effects on road users due to traffic associated with the construction of the proposed Development:

- an assessment of the existing baseline conditions based on Department for Transport (DfT) traffic data and additional automatic traffic count data;
- an assessment of the surrounding road network to determine its suitability to accommodate the anticipated volume of construction traffic e.g. HGVs;
- an assessment of the increase in traffic compared to baseline traffic flows for the opening year of construction, which is assumed to be 2024, for the roads included in the study area. The approach for this has been to define the level of traffic anticipated to access the proposed Development during its construction phase, calculated from first principles and distributed over an anticipated construction programme of 22 months; and
- an assessment of operational traffic. This would only be brief, as a development of this type would typically not produce any daily trips, other than occasional maintenance visits typically once or twice per week, as a worst-case scenario.

12.2.1 Study Area

13. The Site is located within The Highland Council (THC) administrative boundary.

14. The study area for the assessment of traffic and transport is predicated on the proposed routes to the Site from the external road network and incorporates the likely sources of construction materials and their potential routes to the Site. The A836 is a principal road connecting Dornoch-Tongue-John O'Groats via Thurso and serves as part of the North Cost 500 Route (along with the A9 through Thurso and A99), to which the Site lies to the south of. As such, the study area includes the section of the A836 between Thurso and Mey, which would enable connections to the Site from the wider road network.

15. From the A836 to the Site, there are two local routes which have been assessed for their suitability: C1033 Everley-Crockster Toll Road, U1633 East Lodge Road, and Charleston Farm Road (not a public road), which are within the offsite area of the application boundary.

16. It is anticipated that Wick, to the south east of the Site may function as a key location for the transport of resources. Given the potential challenges of some of the more direct routes to the Site from Wick, the A99 has been assessed between Wick and Latheron and the A9(T) between Latheron and Thurso as an alternative, whilst the more direct route from Wick, via the A882 to Georgemas has also been assessed.

17. It is likely that the majority of general construction traffic would approach from Thurso due to the expected locations of site personnel, the potential sourcing of material from the nearby Ruther, Spittal and Bower quarries and the source of other components.

18. As vehicles travel away from the proposed Development, they would be distributed across the wider highway network. Beyond the study area, professional judgement suggests that effects relating to the site access, traffic and transport would be unlikely to be significant.

19. The study area highlighting routes to the Site is illustrated by **Figures 12.1**.

12.2.2 Information and Data Sources

20. To determine the baseline conditions against which the effects of the proposed Development have been assessed, three temporary automatic traffic counters (ATCs) were placed on A836, C1033 Everley-Crockster Toll Road, Charleston Farm Road and U1633 East Lodge Road to obtain traffic data for these roads. As these roads generally experience relatively low traffic flows as evidenced by an existing survey site on the C1037 Hastigrow to Upper Gills Road, it was concluded that despite COVID-19 restrictions this traffic data would be reasonably representative.

21. For the wider road network, baseline traffic data in the form of Average Annual Daily Traffic (AADT) for the A99, A9(T), A882 and A836 was obtained from the DfT database (available at https://www.dft.gov.uk/traffic-counts).

22. The location of the traffic data census points is illustrated by **Figure 12.2**.

23. In addition to the above, road traffic collision data for the most recent five-year period from 2015-2019 was obtained from the DfT (available at https://www.gov.uk/government/collections/road-accidents-and-safety-statistics). The location of the accidents in the study area is illustrated by **Figure 12.3**.

12.2.3 Effects Scoped Out

24. It is estimated that the operational phase of the proposed Development would generate no more than 6 two-way vehicular trips in any one day and zero trips on most days. Typical duties onsite would include routine maintenance, such as planned servicing, safety checks, and repairing faults. These visits would normally require light vans or similar vehicles and would use the same routes as those used during construction.

25. The trips generated by the operational activities onsite would be no greater than those expected and accounted for in the background variations to the existing traffic flows. As such, negligible traffic flows would be indistinguishable from normal daily traffic flows and, therefore, assessment of operational effects has been scoped out of this assessment.

26. As the operational impacts of the proposed Development on the study area is indiscernible, the operational cumulative effects have not been assessed.

27. The traffic generated from the replacement of wind turbines has also been scoped out. When wind turbines are replaced, it is currently expected that the following elements would lead to future traffic movements:

- dismantling and removal of turbine components; and
- the installation of new turbines.

28. Trip generation associated with these activities would not exceed the levels presented in the assessment of construction impacts and therefore has been scoped out of this assessment.

29. As the application is for planning in perpetuity, decommissioning has not been considered as part of this assessment. However, should decommissioning be required, any effects of decommissioning would be less than those resulting from construction of the proposed Development.

12.2.4 Consultation

30. As part of the scoping phase of the environmental assessment, an Access, Traffic and Transport EIA Scoping Topic Information Sheet (July 2020) was prepared to set out the proposed approach to undertaking the environmental assessment in respect of the proposed Development, including the identification of assessment methodologies for each of the assessment topic areas to be assessed. The information and advice received from THC and other Consultees during the scoping process regarding Traffic and Transport is summarised in **Table 12.1.** Where relevant, the issues raised by each of the consultees has been used to develop the scope of the assessment and identify any specific matters that warrant more detailed analysis.

Table 12.1: Summary of consultation responses

Consultee and date	Summary of key issues	Action taken
The Highland Council Pre-application Advice 6 March 2019	The local roads (C1033 Everley-Crockster Toll Road and C1085 Gills West Branch Road) are generally weak and considered unsuitable in their present form to withstand construction traffic. The proposed access to the site should be clearly detailed on dimensioned drawings related to OS data; and include confirmation of geometry, construction and drainage, as well as junction and forward visibility splays.	A meeting was held between RSK, the Applicant and THC Transport Team on 25th August 2021 at the entrance to the site at the West Lodge Road and at various locations on the surrounding roads; with the main purpose of the meeting to discuss the suitability of minor roads, bridges and structures to carry the vehicle loadings and volumes predicted during the construction of the Hollandmey RED. THCs interest related to four local roads: C1085 Gills West Branch Road, C1033 Everley-Crockster Toll Road (both noted in their scoping response), C1010 Barrock-Ham-Brough Road, and the U1633 East Lodge Road. The former two routes are of a floating road over peat construction with general wear and tear commensurate to their flexible structure visible during the visit. Localised repairs as well as extensive sections of surface overlay/dressing were also observed. THC confirmed that they did not hold historic records of the construction of these roads which were built, it is estimated, in the 1960s. The conclusion of this visit and onsite discussions: • The Applicant would enter into a Section 96 (wear and tear) Agreement or a suitable alternative for the local adopted roads to be used by construction vehicles. A pre-construction works inspection of the roads would be carried out with both parties in attendance with their condition recorded. Following completion of construction of the proposed Development a further inspection would be carried by both parties with repairs being agreed to return the roads to their pre-construction condition to be carried out in a timely manner for approval by the THC. Notwithstanding, the Applicant would carry out regular monitoring of the carriageway condition during the construction of the proposed Development. Necessary repair works would be carried out in a timely manner to prevent further deterioration of the carriageway during the works. Priority would be given to any damage which would be dangerous to users of the road affected. • Routing of HGVs and heavier turbine components from the A836 via the U1633 East Lodge Road – C1033 Everley-Crockster Toll Road – Site in order to minimise the HGV vehicle mileage on the wear susceptible C1033; and • Routing of turbine blades via C1010 Barrock-Ham-Brough Road / Charleston Farm Road – C1033 Everley-Crockster Toll Road – Site. THC are content for suitable planning conditions to be attached to an emerging planning consent to secure the above bullets. For the purposes of the access, traffic and transport assessment of the EIA Report the use of the C1033, and U1633 have been assumed for general construction traffic. An indicative access junction layout has been included in **Technical Appendix 12.1: Draft Construction Traffic Management Plan**.
The Highland Council Scoping Response 17 September 2020	The Highland Council's interests will relate largely to the impact of the development on the Council maintained road network and its users during the construction phase of the project. The EIA Report must provide predicted traffic numbers by vehicle type for both the operational and decommissioning phases. It is likely that the Council will require the developer to enter into a Wear and Tear Agreement, with a suitable financial road bond being provided. The EIA Report must establish the current condition of the roads (structural strength of the carriageway, road surface condition and profile, assessment of structures and any weight restrictions, road widths, vertical and horizontal alignment and provision of passing places and details of adjacent communities). The EIA Report must detail the traffic resulting from the proposed Development (including: numbers of light and heavy vehicles, abnormal loads, long loads trial runs and duration of works). The EIA Report must detail current traffic flows (including use by school buses, refuse vehicles, commercial users, pedestrians, cyclists and equestrians) and the impact of proposed traffic, including: • Impacts on carriageway, structures, verges etc. • Impacts on other road users • Impacts on adjacent communities • Swept path and gradient analysis where it is envisaged that the passage of traffic could be problematic	The Applicant would enter a 'Section 96' Wear and Tear Agreement. This EIA establishes the current condition of the roads in **Section 12.6.6.8**. This EIA details the traffic which would result from the proposed Development. A draft Construction Traffic Management Plan (CTMP) has been prepared and accompanies this Chapter as **Technical Appendix 12.1**. A separate assessment of cumulative impacts with other developments has been included in this Chapter. This EIA includes details of proposed mitigation measures. A detailed route analysis of the AIL delivery from Port of Entry has been carried out but does not form part of the EIA Report.

Consultee and date	Summary of key issues	Action taken
	• Cumulative impacts with other developments in progress and committed developments The EIA Report must include the proposed mitigation measures to address the impacts identified above, including: • Details of the proposed site access • Carriageway strengthening • Strengthening of bridges and culverts • Carriageway widening and/or edge strengthening • Provision of passing places • Road safety measures • Traffic management including measures to be taken to ensure that development traffic does not use routes other than those approved. • Details of residual effects	
Transport Scotland Scoping Response 20 August 2020	Road links should be assessed if: • Traffic flows will increase by more than 30%, or • The number of HGVs will increase by more than 30%, or • Traffic flows will increase by 10% or more in sensitive areas. Transport Scotland will require to be satisfied that the size of turbines proposed can negotiate the selected route and that transportation of the components will not have any detrimental effect on structures within the trunk road route path. We note that there are known existing pinch points along the public road network, and that a Blade Lift Adapter vehicle will likely be required to transport blades through these pinch points. If the Blade Lifter technology is to be utilised on the trunk road, significant work will be required in order to satisfy Transport Scotland that the proposals can work technically, and do not represent any risk to the safe and efficient operation of the trunk road network.	This Chapter provides an assessment of road links in accordance with IEMA and Scottish Government guidance. A draft CTMP has been prepared and accompanies this Chapter as embedded mitigation and is presented as **Technical Appendix 12.1.** Preliminary assessment of access to the Site by AIL has been undertaken but does not form part of the EIA Report.
Scotways Scoping Response 8 September 2020	It is advisable to set back all wind turbines a minimum distance, equivalent to the height of a blade tip, from the edge of any public highway (road or other public right of way) or railway line.	The location of the nearest wind turbine to the edge of any public highway, right of way or railway line is greater than the maximum height to the blade tip.
British Horse Society (BHS) Scoping Response 17 September 2020	Key issues raised by the British Horse Society: • Drivers of all vehicles visiting the site should be alerted to where they are most likely to meet horses. • All vehicles should be required to slow down or stop when meeting walkers, cyclists and particularly horses. • Where construction traffic must cross an equestrian route, this should be at right angles to the path or track, with warning notices for both vehicle drivers and horse riders/carriage drivers. Construction traffic should give way to recreational users. • A Temporary Traffic Regulation Order (TTRO) should be in place before closure of any core path or promoted route. • Traffic movement which may impact on equestrian access should be planned to allow horse riders and carriage drivers to continue to ride safely in the early morning, evening, at the weekend and on bank holidays. • Where there is no alternative to using the line of a core path or promoted route as an access track during the construction phase, the route should be widened, and a fence erected to segregate vehicles from horses using the route. • Where wind farm development or turbine erection results in loss of previously unsurfaced, firm beaten earth tracks enjoyed by horse riders and carriage drivers, BHS expects developers to provide substitute routes of similar length, gradient and character. • BHS encourages developers to identify in their proposals what, if any action, is proposed to ameliorate the surface of construction tracks on completion of construction. Where traffic movement and natural consolidation with earth or mud is insufficient to blind sharp stone, dressing with whin dust or similar material may be necessary. • BHS does not expect paths or tracks with a past history of multi-use or intended for future multi-use to be surfaced with tarmac.	There are no core paths, promoted routes or bridleways that traverse the Site. Control of the potential impacts of construction traffic associated with the proposed Development will be managed by the implementation of a CTMP. A draft CTMP has been prepared as embedded mitigation and is presented as **Technical Appendix 12.1**.

Consultee and date	Summary of key issues	Action taken
	• Where it is necessary to erect or lock gates across a track to restrict illegal vehicular access, a suitable gap, bridle gate or horse stile should be maintained alongside.	

12.2.5 Approach to Assessment of Effects

31. The approach to this assessment is based upon the IEA guidelines, referring to the varying criteria depending on the type of impact being assessed. The assessment is primarily based upon the change in total traffic flows or the change in HGV flows along a specific section of road. Professional judgement must also be taken into account, particularly where the baseline traffic flow may be low and therefore a small increase in traffic may result in a high proportional increase. The absolute value must be considered in the overall assessment of significance.

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

33. 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. Therefore, these are considered in the assessment of potential effects which may arise from changes in traffic flows resulting from the proposed Development:

- driver severance and delay – the potential delays to existing drivers and their potential severance from other areas;
- community severance and delay – the potential delays to pedestrians in their movements and ability to cross roads;
- pedestrian delay and amenity – the potential impact of local amenity and delay in movement around and between communities;
- noise and vibration – the potential effect caused by additional traffic on sensitive receptors, which in this case relate to residential properties near the road. This is considered by separate assessment contained in **Chapter 13: Noise**;
- vulnerable road users and road safety – the potential effect on vulnerable users of the road (e.g. pedestrians and cyclists);
- hazardous and dangerous loads – the potential effect on road users and local residents caused by the movement of abnormal loads;
- dust and dirt – the potential effect of dust, dirt and other detritus being brought onto the road; and
- transportation of abnormal load movements during the day, however, given that the proposed route is a key route for both local and national traffic movements, movement of abnormal loads at night or on Sunday may be proposed subject to approval by Police Scotland.

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

35. The significance of likely effects 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.

12.2.5.1 Sensitivity of Receptors

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

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

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

38. In this context, the IEMA guidelines do not define the value placed on the receptors and therefore their sensitivity; therefore, the assessor makes a professional judgement based on experience and the nature of the study area. Each receptor has been assessed individually to determine its sensitivity and the assessment criteria chosen are shown in **Table 12.2** below.

Table 12.2: Receptor sensitivity

Sensitivity	Description
High	Typically, receptors with high importance and rarity on an international and national scale and with limited potential for substitution. To include large rural settlements containing a high number of community and public services and facilities, areas with traffic control signals, waiting and loading restrictions, traffic calming measures and minor rural roads not constructed to accommodate frequent use by HGV.
Medium	Typically, receptors with high or medium importance and rarity on a regional scale and with limited potential for substitution. To include intermediate sized rural settlements containing some community or public facilities and services, areas with some traffic calming or traffic management measures and local A or B class roads, capable of regular use by HGV traffic.
Low	Typically, receptors with low or medium importance and rarity on a local scale (onsite or neighbouring the Site). To include small rural settlements with few community or public facilities or services, areas with little or no traffic calming or traffic management measures and trunk or A-class roads, constructed to accommodate significant HGV composition.
Negligible	Typically, receptors with little importance and rarity. To include very small settlements and roads with no adjacent settlements including new strategic trunk roads or motorways that would be little effected by additional traffic and suitable for abnormal loads.

39. Based on the above criteria, the receptors associated with the roads within the study area are considered to be of **'Low'** or '**Medium'** sensitivity.

40. **Table 12.3** summarises the receptor sensitivities applicable to the assessment of effects to Community Severance and Delay, Pedestrian Delay and Amenity and Vulnerable Road Users and Road Safety.

Table 12.3: Community, pedestrian and vulnerable road user receptor sensitivity

Receptor	Description	Sensitivity
Watten (A882)	Small village with general store, hotel, churchyard and primary school. Pedestrian infrastructure adjacent to the route.	Low/medium
Castletown (A836)	Village with general store, hotel, churchyard, school, hot food takeaway, garden centre, PFS and employment. Extensive pedestrian infrastructure.	Medium
Dunnet (A836)	Small settlement with hotel, distillery and community hall. Limited pedestrian infrastructure adjacent to the route.	Low
Mey (A836)	Small settlement with hotel and community hall. Limited pedestrian infrastructure.	Low

41. The routes to the Site provide access to individual properties and small clusters of residential properties. These have been assessed as **'Low'** sensitivity receptors

12.2.5.2 Magnitude of Impact

42. The following are examples of the magnitude of impact criteria that will be used to inform the assessment of the significance of an effect:

- the location, physical /geographical scale of the impact (distance from the receptor, potential for direct/ indirect impacts);
- the duration/ frequency of the impact (i.e. temporary/ permanent); and
- the reversibility of the impact.

43. **Table 12.4** presents the general approach adopted for classifying the magnitude of impacts.

Table 12.4: Magnitude of impact

Magnitude	Description
High	Substantial or total loss of capability for movement along and across transport corridors, loss of access to key facilities, loss of safety and severe delays to users. (+90% increase in traffic)

Magnitude	Description
Medium	Moderate loss of capability for movement along and across transport corridors, loss of access to key facilities, loss of safety and severe delays to users. (60 – 90% increase in traffic)
Low	Some measurable loss of capability for movement along and across transport corridors, some measurable loss of access to key facilities, loss of safety and some measurable increase in delays to users. (30 – 60% increase in traffic)
Negligible	Very minor loss of capability for movement along and across transport corridors, very minor loss of access to key facilities, very minor loss of safety and increase in delays to users. (10 – 30% increase in traffic)
No Change	No loss or alteration of characteristics, features or elements. No observable impact in either direction. (0 – 10% increase in traffic)

12.2.5.3 Significance of Effect

44. Sensitivity and magnitude of change as assessed under the detailed criteria have then been considered collectively to determine the potential effect and their significance. The approach to determine the significance of effects has been as follows:

1. identify the relevant receptors;
2. derive their value and sensitivity based on the criteria set out in **Table 12.2**;
3. identify and consider the likely impacts from each activity;
4. determine the magnitude of change likely as a result of the impacts (**Table 12.4**); and
5. present the environmentally and ecologically '**Significant'** effects and then consider how additional mitigation may reduce negative effects.

45. In the professional opinion of the assessor, an effect is considered '**Significant'** if it meets any of the following criteria:

- it could lead to an exceedance of defined guidelines or widely recognised levels of acceptable change;
- it is likely that the consenting authority would reasonably consider applying a planning condition, requirement or legal agreement to the consent to require specific additional mitigation to reduce or overcome the effect;
- it threatens or enhances the viability or integrity of a receptor or receptor group of concern, or
- it is likely to be material to the ultimate decision about whether the planning application should be approved.

46. Environmental mitigation measures are necessary to address potentially '**Significant'** adverse environmental effects. The environmental effects of impacts can be referred to as either being before, or following establishment of, environmental mitigation.

47. The significance of an environmental effect has been established by way of reference to the importance/value of affected resources; the number and sensitivity of affected receptors; impact magnitude; duration, frequency and extent of effect; and the reversibility of effect.

48. Generic significance criteria have been applied across the environmental aspects to ensure identified environmental effects are assessed in a comparable manner. In terms of traffic and transport, a '**Significant'** effect, requiring mitigation, would be where the effect is considered to be **'Moderate'** or '**Major'**, as defined by **Table 12.5.**

Table 12.5: Significance of effect

Sensitivity of receptor	Magnitude of effect			
	Negligible	Low	Medium	High
Low	None	Slight	Slight	Moderate
Medium	Slight	Slight	Moderate	Major
High	Slight	Moderate	Major	Major

12.2.6 Potential Cumulative Effects

49. An assessment of the cumulative effect on the study area of all relevant developments, including local windfarms, within a 40 km radius of the Site (either in the planning system or under construction) which may utilise the same access routes as the proposed Development has been undertaken.

12.2.7 Assessment Assumptions and Limitations

50. The assessment has been undertaken based on the assumption that good construction practices would be employed, 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 part-load deliveries would be minimised where possible, to limit the overall number of loads.

51. The predicted increases in traffic levels against the baseline levels have been calculated in this Section, then an assessment of the significance of the effect has been made against the criteria described in **Table 12.5.** As highlighted previously (Paragraph 33), the IEMA guidelines provide two thresholds when considering predicted increase in traffic.

52. Community, pedestrian and vulnerable road user receptor sensitivity has been assessed as **'Low'** to **'Medium'** given the nature of the settlements and form of residential development along the routes to be used by construction vehicles,, therefore the threshold of 30% has been applied.

53. The construction working hours for the proposed Development would be 7am to 7pm Monday to Friday with the potential for 7am to 4pm on Saturdays other than in exceptional circumstances. It should be noted that out of necessity some activity, for example: abnormal load deliveries; during large concrete pours; and during the lifting of the turbine rotors, may need to occur outside the specified hours stated, although they would not be undertaken without prior approval from the relevant authorities.

12.3 Baseline Conditions

54. This Section describes the baseline conditions relevant to the traffic and transport assessment, including providing more details regarding the data collection and analysis undertaken.

12.3.1 Site Location

55. The Site is located approximately 8 km south west of John o' Groats and 16 km east of Thurso, situated within the north eastern part of the Caithness and Sutherland area of the Highlands. The Site contains sections of agriculture and coniferous woodland plantation.

12.3.2 Existing Road Network

56. The primary access to the Site would be via the C1033 Everley-Crockster Toll Road, Charleston Farm Road, U1633 East Lodge Road and A836 which connects to the A9(T) to the west and A99 to the east. Some of these roads, including the A836, A9 (T) and A99 form part of the North Coast 500 route, a 516 mile scenic route around the north coast of Scotland. A description of the local road network that comprises the study area is outlined below.

12.3.2.1 A836 Thurso to Gills

57. The A836 connects Thurso to the A99 at John o'Groats and provides a key route for access to the Site which is located to the south of the village of Mey. Directly north of the Site access, West Lodge Road extends northwards to the A836. However, this is not suitable for construction traffic given its narrow width and poor forward visibility. Within the vicinity of the Site, the A836 is a two-lane single carriageway road, and is subject to a 40 mph speed limit through the village of Mey. Out with the village boundary the speed limit increases to the National Speed Limit. Pedestrian footway provision is limited to the main village centre, to the northern side of the carriageway extending from the Castle Arms Hotel eastwards to Royal Crescent. Street lightning is also limited to the main built-up area.

12.3.2.2 C1033 Everley-Crockster Toll Road

58. The C1033 Everley-Crockster Toll Road runs broadly parallel and south of the A836 in the vicinity of the Site and provides the Site access. It is of a rural single-track road construction with passing places. Distances between passing places/widened carriageway varies between 100-150 m and 400 m. The road has good forward visibility and is subject to the National Seed Limit. It is bounded by open rural land with intermittent field accesses. Frontage access is limited to the occasional single dwelling or small cluster of dwellings. There is no pedestrian infrastructure provision.

U1633 East Lodge Road

59. East Lodge Road connects the C1033 Everley-Crockster Toll Road to the A836 and is located around 1.3 km to the east of the site access. At the junction with the C1033, the U1633 incorporates a brick-built gateway associated with the East Lodge dwelling house. The road is of a rural single-track construction with passing places/widenings and wide verges. There is no pedestrian infrastructure provision.

Charleston Farm Road

Charleston Farm Road is a private access which connects the C1033 Everley-Crockster Toll Road to the A836 and is located around 2.4 km to the west of the site access. At the junction with the C1033, the farm road incorporates a brick-built gateway feature. The access is of a rural single-track construction with passing places/widenings and wide verges comprising compacted subbase material. There is no pedestrian infrastructure provision.

12.3.2.3 A9(T) Latheron to Thurso

60. The southern end of the A99 connects to the A9(T) at Latheron at a simple priority junction. Modifications have been made to this junction historically to cater for the transport of wind turbine generator (WTG) components. The approach to the junction from the south includes a diverge taper layout. This two-lane single carriageway trunk road proceeds north west towards Thurso with intermittent overtaking restrictions. Around 28 km to the north of Latheron, it meets the A882 at priority junction at Georgemas. The A9(T), which forms the minor southern arm, continues in a north westerly direction as the northern part of the major arm of the junction. The road then continues north into the town of Thurso where it is routed through the centre and out to the west.

61. The road is a two-lane single carriageway, subject to the National Speed Limit, although on entering Thurso from the south, the speed limit reduces to 30 mph before connecting to the A836 at a signalised junction, then continuing through the town. On the northern outskirts of the town, the speed limit increases to 40 mph.

62. Within Latheron, there are limited pedestrian facilities, with just a short section of footway present on the A9 (T). There is also a short section of footway on the A9 (T) between Mybster and Spittal, with the addition of street lighting throughout Spittal. When the A9 (T) reaches Thurso, there are footways on both sides of the carriageway and street lights throughout the town.

12.3.2.4 A882 Wick to Georgemas

63. From Wick, the A882 heads west through the village of Watten and on to the junction with the A9 (T) at Georgemas. The road is single carriageway with generally good visibility and flanked by verges on both sides. There are relatively few residential dwellings along the road with the exception of a cluster within the village of Watten that also notably includes Watten Primary School which is set well back from the carriageway. On entering Wick, the A882 passes a small stretch of residential dwellings before terminating at a crossroad junction with Newton Road and Bankhead. In rural areas the road is subject to the National Speed Limit. Within Watten, there is a footway present on the A882 and on the A882 within Wick there are footways on both sides of the carriageway for pedestrians.

12.3.3 Baseline Traffic Flows

64. The baseline traffic data has been obtained from DfT count points (2019 data) and ATCs undertaken on the road sections within the study area over a one-week period between 25 - 31 October 2020. Further ATCs were undertaken in September 2021 following discussions with THC on the U1633 East Lodge Road and Charleston Farm Road.

65. Background traffic flows are predicted to increase in the study area regardless of the proposed Development. This assumption is based on the forecast growth in the volume of traffic as described in the Department of the Environment, Transport and the Regions (DETR) (1997) publication '*National Road Traffic Forecasts* (NRTF) *(Great Britain) 1997*'. Therefore, the anticipated traffic flows of the application (2020) and opening year of construction (2024) have been forecast utilising NRTF 'low' growth, given the rural nature of the area and widespread reduction in trips due to the pandemic.

66. This provides a growth factor of 1.008 which has been applied to the 2019 DfT traffic data to scale to 2020 and a factor of 1.024 which has been applied to all 2020 traffic data for the construction year of 2024. The 2024 baseline AADT flows are presented in **Table 12.6**.

Table 12.6: Baseline 2024 AADT

Count location	Source	Direction	Total	HGV	HGV%
A99 Cliff Road, Wick	DfT count	2-way	7982	220	2.8%
A99 Blackness	DfT count	2-way	2348	163	6.9%
A9 (T) Achavanich	DfT count	2-way	1058	155	14.6%
A9 (T) Banniskirk	DfT count	2-way	1539	97	6.3%
A9 (T) Sordale	DfT count	2-way	3581	311	8.7%
A9 (T) Thurso Centre	DfT count	2-way	14687	280	1.9%
A882 Haster	DfT count	2-way	2953	119	4.0%
A882 Oldhall	DfT count	2-way	1953	98	5.0%
A836	DfT count	2-way	3712	190	5.1%
C1033 Everley-Crockster Toll Road	ATC	2-way	84	32	38.0%
U1633 East Lodge Road	ATC	2-way	74	1	0.01
Charleston Farm Road	ATC	2-way	11	1	0.1

67. THC Transport Planning and Transport Scotland have noted that there are not presently any planned road works or improvements schemes within the study area.

12.3.4 Public Transport Accessibility

68. Given the location of the proposed Development and nature of the operations on Site, public transport is unlikely to be a viable option for travelling to the Site, although may be feasible for some workers during the construction period. Notwithstanding, the nearest bus stops to the Site are in Mey offering a two-hourly service between Thurso and John o'Groats. Thurso is also the location of the nearest rail station, providing connections to Wick and Inverness.

12.3.5 Accident Records

69. A review of accident data covering the most recent five-year period has been undertaken using Police STATS19 data available from the DfT. This includes the years 2015-2019 and encompasses all roads within the study area covering a linear distance of around 150 km of road network.

70. Across the whole study area, there were 93 collisions, of which 65 were categorised as **'Slight'**, 12 were categorised as 'serious' and six were categorised as 'fatal'. The high number of incidents is reflective of the extensive study area, However, there have been less than five collisions on any 100 m length of road across that five-year period, indicating a '**Negligible'** magnitude of impact across the study area. Of the six 'fatal' accidents, three involved the driver losing control and hitting an object off the carriageway; one resulted when a car driver attempting to overtake another vehicle hit a permanent object in the carriageway; one occurred in dark and wet conditions where a car collided with a pedestrian; and the final fatality was as a result of a collision between two cars where one of the vehicles hit a boundary wall/fence. From the data, the location of the fatal accidents are random, with two accidents on both the A9 (T) and A99, and one accident on both the A836 and A882.

71. A plot of the Personal Injury Accidents (PIAs) in the study area that have occurred in the past five years is included in **Technical Appendix 12.1**

12.3.6 Existing Network Performance

72. The Sections above provide an assessment of the existing baseline situation. The following may be concluded:

- the existing road network has a moderate level of HGVs (generally 2 - 15%, averaging at 6% in 2020, with more minor roads carrying an insignificant level of HGVs. A maximum HGV proportion was measured as 38% on the C1033 Everley-Crockster Toll Road based on short period count data and is therefore not a maximum average);

- the study area has a low accident record; and
- there are no further capacity improvement works that have been proposed to the roads by the Roads Authorities within the study area.

12.4 Proposed Development Parameters – Traffic and Transport

73. The proposed Development is described fully in **Chapter 3: Proposed Development**. A summary is provided here highlighting those features pertinent to the assessment of traffic and transport.

12.4.1 Site Access and Onsite Tracks

74. Access to the Site would be provided via an existing opening from the C1033 Everley-Crockster Toll Road, which forms a crossroad junction with the West Lodge Road. The access would require to be upgraded to allow for access by construction traffic and abnormal load transporters from the west. This would likely take the form of a widened bellmouth with merge and diverge tapers to accommodate the larger vehicles transporting the WTG component abnormal loads. Improvements would also be made to increase visibility splays at the access junction.

75. There are several existing access tracks within the Site which would need to be widened and upgraded. Further access tracks including some which would be of floating construction would be required to provide access to the proposed turbine locations, solar array and borrow pits. A total of 2.71 km of upgraded and 8.93 km of new tracks would be constructed.

12.4.2 Abnormal Load Access Route

76. The anticipated abnormal load route for WTG components to the Site would be from Wick Harbour, south to Latheron on the A99, north west to the south of Thurso town centre on the A9 (T) and then east towards the Site on the A836 Thurso-John o'Groats, and from the A836 to site along either U1633 East Lodge Road or Charleston Farm Road and then C1033 Everley-Crockster Toll Road. An alternative routing from Wick Harbour to the A9(T) has also been explored via Station Road and the A882 through Watten before joining the A9(T) at Georgemas junction. Given the importance of the routes used it would be necessary for the timing of transporting abnormal loads to be agreed with the relevant authorities after detailed investigation.

12.4.3 Construction Programme

77. An indicative 22-month construction programme has been prepared and is set out in the construction timeline shown in **Chapter 3: Proposed Development.**

78. For the purposes of this assessment, it has been assumed that the construction is likely to begin in 2024 with the greatest level of traffic impact in month 3 of the construction programme (based on the most likely scenario), as shown in **Table 12.13.**

12.4.4 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 the generation of vehicular trips have been summarised in **Table 12.**.

Table 12.7: 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
Import of material from quarry	Delivery of materials that are not able to be extracted from within the Site	Yes	No
Borrow pit	Delivery of plant associated with establishing borrow pit	Yes	No
Access track upgrade and construction	Delivery of materials related to the upgrade of existing track and new onsite track	Yes	No
Turbine foundations and crane hardstandings	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 control building compound/substation	Delivery of material for construction of building foundations, structure and finishings. Delivery of electrical equipment and storage of batteries	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 Delivery of crane equipment to erect turbines. Includes escort vehicles associated with movement of abnormal loads	Yes	Yes

79. The precise quantities of construction materials required for the proposed Development would depend on the presence of onsite borrow pits.

80. Whilst borrow pits are proposed on Site, a robust assessment of a worst-case scenario has been used to assess a greater volume of material to be imported to Site. Therefore, to accurately assess the potential impact of the transportation of construction materials to the Site, two scenarios have been modelled:

- Scenario 1: All construction materials are assumed to be sourced from offsite locations, including all aggregate required for track construction and upgrade, thus ensuring that the estimated level of trip generation is considered as a worst case; and
- Scenario 2: Aggregates used for formation, capping and subbase materials are assumed to be sourced from proposed onsite borrow pits with all remaining construction materials, including concrete, assumed to be sourced from offsite locations.

All imported construction materials are likely to be sourced from local quarries. **Table 12.8** provides details of local quarries where these materials may be sourced, and the proposed routing from each quarry.

Table 12.8: Location of nearby quarries

Quarry	Address	Location in relation to Site (straight line)	Principal Road Route to Site
Ruther Quarry	Watten, KW1 5UW	15 km to the south west	A882 – A9 (T) – A836 – U1633 – C1033
Bower Quarry	Halkirk, KW12 6UY	16 km to the south west	A882 – A9 (T) – A836 – U1633 – C1033

Quarry	Address	Location in relation to Site (straight line)	Principal Road Route to Site
Spittal Mains Quarry	Spittal, KW1 5XR	22 km to the south west	A9 (T) – A836 – U1633 – C1033

81. An estimation of the material quantities for all elements of the proposed Development has been made. **Table 12.9** provides a summary of the material quantities (aggregates only) required to be imported should resources not be available from borrow pits.

Table 12.9: Estimated aggregate material quantities – Scenario 1: worst case

Infrastructure		Material quantities	
		m^3	tonne (t)
Access tracks	New onsite access track	28,428	56,856
	Upgrade of existing	7,588	15,176
	Floating track	15,950	31,900
	Passing places	985	1,970
Construction compounds	Control Building and Substation Compound	1,755	3,510
	Met mast working area	360	520
	Laydown area	768	1,536
	Compound Area (Solar)	1,500	3,000
	Battery Energy Storage System (BESS) area	735	1,470
	Construction compound and Ancillary Services	4,530	9,060
Turbine foundations	Turbine bases – formation only	1,452	2,904
	Fill above turbine bases	18,720	37,440
	Crane pads	47,183	94,366
	Crane pad boom support		
	Blade laydown and ancillaries		
	Turning heads		
Total		**122,954**	**259,908**

82. In addition to the aggregates required as summarised in **Table 12.9**, **Table 12.10** provides material quantities for all materials other than aggregates.

Table 12.10: Estimated material quantities – excluding aggregates (both scenarios)

Infrastructure		Material quantities	
		m^3	tonne (t)
Foundations: substation and met masts	Concrete	5,472	10.944
Turbine foundations	Installation 6N structural fill	1,973	3,946
	Blinding	307	614
	Installation of can/bolts	10 No.	
	Reinforcement	819	
	Plinth shutter	31	62
	Foundation slab perimeter shutter	44	87
	Ducts	60 No.	
	Transformer plinths	10 No.	
	Step plinth	10 No.	
Electrical connection	Sand layer	2,765	5,530
	Cable	10,956	24
Control building	Reinforcement	82	
Met masts	Blinding	7.5	15
	Reinforcement	20	
	Shuttering	64	135
Total		**10,685**	**22,292**

12.5 Trip Generation

12.5.1 HGV Trip Generation Calculations

83. The total number of HGV trips predicted to arise during the construction phase of the proposed Development has been calculated based on the estimated material quantities provided in **Table 12.9** and **Table 12.10**. These have then been doubled to provide the two-way movements that would occur from delivery and then returning vehicles, as shown in **Table 12.11.**

Table 12.11 Total number of HGV trips (conventional HGVs)

Infrastructure item		Load size	Scenario 1		Scenario 2	
			No of loads	Two-way movements	No of loads	Two-way movements
Access tracks	New onsite access track	20 t	2,813	5,626	589	1,178
	Upgrade of existing	20 t	679	1,358	236	472
	Floating track	20 t	1,320	2,640	220	440
	Passing places	20 t	75	150	19	38
Construction Compounds Substation BESS	Met mast working area	20 t	36	72	-	-
	Laydown area	20 t	77	154	-	-
	Compound area (Solar)	20 t	150	300	-	-
	Construction compound	20 t	453	906	-	-
	Substation compound area	20 t	176	352	-	-
	BESS area	20 t	74	148	-	-
Foundations	Concrete	20 t	547	1,094	547	1,094
Turbine Foundations	Foundations – formation	20 t	145	290	-	-
	Fill above turbine bases	20 t	1,872	3,744	1,872	3,744
	Crane pads, additional laydown areas and turning heads	20 t	4,718	9,436	4,718	9,436

Infrastructure item		Load size	Scenario 1		Scenario 2	
			No of loads	Two-way movements	No of loads	Two-way movements
	Installation 6N structural fill	20 t	197	394	197	394
	Blinding	20 t	31	62	31	62
	Installation of can/bolts	-	1	2	1	2
	Reinforcement	20 t	41	82	41	82
	Plinth shutter	-	1	2	1	2
	Foundation slab perimeter shutter	-	1	2	1	2
	Ducts	-	2	4	2	4
	Transformer plinths	-	1	2	1	2
	Step plinth	-	1	2	1	2
Electrical Connection	Sand layer	20 t	277	554	277	554
	Cable	-	23	46	23	46
Control Building	Reinforcement	20 t	4	8	4	8
Met Mast	Blinding	20 t	1	2	1	2
	Reinforcement	20 t	1	2	1	2
	Shuttering	-	6	12	6	12
	3m high anti-climb fence	-	1	2	1	2
	Supply and erection of mast	-	5	10	5	10
Total			**13,729**	**27,458**	**8,795**	**17,590**

The two-way movements for HGVs have then been distributed over the anticipated 22-month construction programme according to the relevant activity. The total two-way trip generation has been divided by the number of operational days in each month (assumed to be 22) to provide daily two-way trip generation for both scenarios. Scenario 1 is shown in **Table 12.12** and Scenario 2 in **Table 12.13**.

Table 12.12 Scenario 1 – Two-way movements by construction month

	Months																					
Activity	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**
Site establishment	353	353	353																			
Forestry felling	25	25				0	0															
Access road upgrades	453	453	453																			
Construction of new access tracks and crane hardstandings			1793	1793	1793	1793	1793	1793	1793	1793	1793	1793										
Turbine foundation construction				632	632	632	632	632	632	632	632	632										
Substation building and electrical works				87	87	87	87	87	87	87	87	87	87	87								
Energy storage compound and installation										32	32	32	32	32								
Cable trenching and installation							3	3	3		3											
Crane Delivery											10											
Turbine delivery, erection and commissioning												33	33	33	33	33	33					
Solar foundation construction and solar delivery, erection and commissioning																	75	75	75	75		
Site reinstatement																					20	20
General site traffic	440	440	440	1650	1650	1650	1650	1650	1650	1650	1650	1650	440	440	440	440	440	440	440	440	440	440
Monthly ALL total	1271	1271	3038	4162	4162	4162	4165	4165	4165	4207	4227	4227	592	592	473	473	515	515	515	515	460	460
Daily ALL total	58	58	140	190	190	190	190	190	190	192	194	194	28	28	22	22	24	24	24	24	22	22
Monthly HGV total	831	831	2599	2512	2512	2512	2515	2515	2515	2544	2577	2577	152	152	33	33	108	75	75	75	20	20
Daily HGV total	38	38	120	116	116	116	116	116	116	118	118	118	8	8	2	2	4	4	4	4	2	2

Table 12.13 Scenario 2 – Two-way movements by construction month

	Months																					
Activity	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**
Site establishment	0	0	0																			
Forestry felling	25	25																				
Access road upgrades	157	157	157																			
Construction of new access tracks and crane hardstandings			2209	1109	1109	1109	1109	1109	1109	1109	1109	1109										
Turbine foundation construction				632	632	632	632	632	632	632	632	632										
Substation building and electrical works				87	87	87	87	87	87	87	87	87	87	87								
Energy storage compound and installation										32	32	32	32	32								
Cable trenching and installation							3	3	3	3												
Crane Delivery										10												
Turbine delivery, erection and commissioning											33	33	33	33	33	33						
Solar foundation construction and solar delivery, erection and commissioning																	75	75	75	75		
Site reinstatement																					1	1
General site traffic	440	440	440	1650	1650	1650	1650	1650	1650	1650	1650	1650	440	440	440	440	440	440	440	440	440	440
Monthly ALL total	622	622	2806	3479	3479	3479	3481	3481	3481	3523	3544	3544	592	592	473	473	515	515	515	515	441	441
Daily ALL total	30	30	78	160	160	160	160	160	160	162	162	162	28	28	22	22	24	24	24	24	22	22
Monthly HGV total	182	182	2366	1828	1828	1828	1831	1831	1831	1873	1893	1893	152	152	33	33	75	75	75	75	1	1
Daily HGV total	10	10	58	84	84	84	84	84	84	86	88	88	8	8	2	2	4	4	4	4	2	2

12.5.2 HGV Trip Generation Summary

84. The maximum level of two-way trips generated for the two construction programmes and the two aggregate sourcing scenarios are as follows:

- Scenario 1: the maximum number of daily two-way HGV movements is 120 in month 3; and
- Scenario 2: the maximum number of daily two-way HGV movements is 88 in month 6.

12.5.3 Light Vehicle Trip Generation

85. Light vehicles (i.e. smaller vehicles such as cars and vans, which would typically be associated with the workforce) have also been calculated to provide total two-way vehicle movements predicted to arise from the proposed Development.

86. Light vehicle trips would be generated by the approximately 75 workers who would be working on the Site during the peak construction phase equating to 76 two-way movements (rounded up to provide one trip in, one trip out per vehicle) daily based on a vehicle occupancy of 2 people.

12.5.4 Total Trip Generation

87. The total trip generation (maximum daily and average) for a 22-month construction programme for HGV and LGV is set out in **Table 12.14**.

Table 12.14 Maximum and average daily two-way vehicle movements

	Scenario 1			Scenario 2		
	HGV	LGV	Total	HGV	LGV	Total
Maximum	120	20	140	88	20	108
Average	58	20	78	40	20	60

88. Construction HGV traffic flows would be spread across the working day (07:00-19:00), which at peak would equate to a maximum of ten two-way trips per hour, or five HGVs in each direction – one every 12 minutes. On average across the 22-month programme this reduces to six two-way trips per hour, or three HGVs in each direction and equivalent to one every 20 minutes.

12.5.5 Trip Distribution

89. All construction vehicles would enter the Site from the access track to the north, having travelled along the C1033 Everley-Crockster Toll Road, A836 and A9 (T).

90. For Scenario 1, it is assumed that the aggregate would be sourced from Bower, Ruther (near Watten) and Spittal Mains quarries located to the south east of the Site.

91. It is anticipated that staff working at the construction site would either live locally or stay in bed and breakfasts, guest houses or hotels for the duration of the construction programme. For simplicity, it has been assumed that many of the site personnel would live in the vicinity of Thurso and Wick and travel to the Site by the most direct main road route – A9 (T), A99, and A836.

92. Initial studies have been undertaken to determine appropriate routing for the WTG components by transporter from the port of entry. Both Scrabster and Wick Harbours are suitable for the receipt of the components associated with the candidate turbine. However, it has been concluded from the results of swept path assessments that only the blades can be transported through Thurso town centre and then only by using a specialist blade adapter (lifter) transporter. Wick Harbour would therefore be the preferred port of entry. Routing of the components from Wick Harbour would take the following route to Site: A99-A9(T)-A882-A836-Charleston Farm Road/U1633 East Lodge Road-C1033 Everley-Crockster Toll Road. Potential remedial works would have to be undertaken to permit the passage of the abnormal loads which may include: the temporary removal of street furniture / lighting, road and bend widening and temporary haul roads. More detailed studies would be required to define these works.

93. Given that the peak traffic generation associated with the proposed Development is predicted to occur in the construction year 2024, a forecast year of 2024 has been adopted. As noted above, the NRTF was utilised to generate a growth factor of 1.024 based on 'low' growth. The 2024 forecast future baseline traffic flows are presented in **Table 12.6** above.

12.6 Assessment of Effects

94. Analysis within this Section focuses on understanding the future changes in traffic demand levels and their related environmental effects.

95. Transport related environmental effects vary over the different stages of the life of the proposed Development. This Section provides the details regarding the trip generation from the proposed Development during construction for scenario 1 to enable the extent of the impact from the worst-case scenario to be considered, as well as scenario 2 to demonstrate the likely impact.

12.6.1 Construction Effects

96. The impact of the proposed Development has been assessed using Annual Average Daily Traffic flows on the principal road links in the study area that would be utilised by the general construction traffic – cars/LGVs, and HGVs involved in the delivery of construction materials and plant to/from the Site.

97. The net change in traffic on the road sections within the study area has been estimated to determine the need for detailed assessment of the traffic impacts. **Table 12.15** compares the '2024 baseline traffic' with the '2024 baseline + construction traffic' by testing the net increase in total flows and HGV flows against the IEMA criteria for scenario 1, and **Table 12.16** for scenario 2.

98. The roads which would experience 100% of the HGV traffic associated with the proposed Development have all been assessed in **Table 12.15** and **Table 12.16,** and these roads include the U1633 East Lodge Road, C1033 Everley-Crockster Toll Road, A836, A882 and A9 (T).

99. The roads which would experience 100% of car and LGV traffic have also been assessed and these roads include the U1633 East Lodge Road and C1033 Everley-Crockster Toll Road. The car and LGV traffic is then expected to split, with 50% using the A9 (T) and the other 50% using the A836. This traffic would then disperse further across the network and would have a '**Negligible'** impact on traffic flows as there are never more than 20 cars or LGVs travelling to and from the Site in a day. Given these assumptions only site personnel/visitors would use the A836, and A99 between the Site and Wick with an according insignificant impact and have therefore been excluded from the assessment.

Table 12.15 Predicted increases in traffic – scenario 1

Link		2024 Baseline		Construction		2024 Baseline+ Construction		Increase %	
		Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs
A99 Cliff Road, Wick	Max	7982	220	-	-	7982	220	-	-
	Avg			-	-	7982	220	-	-
A99 Blackness	Max	2348	163	-	-	2348	163	-	-
	Avg			-	-	2348	163	-	-
A9 (T) Achavanich	Max	1058	155	-	-	1058	155	-	-
	Avg			-	-	1058	155	-	-
A9 (T) Banniskirk	Max	1539	97	-	-	1539	97	-	-
	Avg			-	-	1539	97	-	-
A9 (T) Sordale	Max	3581	311	120	120	3701	431	3	39
	Avg			58	58	3639	369	2	19
A9 (T) Thurso Centre	Max	14687	280	10	-	14697	280	-	-
	Avg			10	-	14697	280	-	-
A882 Haster	Max	2953	119	-	-	2953	119	-	-
	Avg			-	-	2953	119	-	-
A882 Oldhall	Max	1953	98	120	120	2073	218	6	122

Link		2024 Baseline		Construction		2024 Baseline+ Construction		Increase %	
		Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs
	Avg			58	58	2011	156	3	59
A836	Max	3712	190	130	120	3842	310	4	63
	Avg			68	58	3780	248	2	31
C1033 Everley-Crockster Toll Road	Max	84	32	140	120	224	152	167	376
	Avg			78	58	162	90	93	182
U1633 East Lodge Road	Max	74	1	140	120	214	121	189	11,811
	Avg			78	58	152	59	106	5,708
Charleston Farm Road	Max	11	1	8	5	20	6	75	492
	Avg			8	5	20	6	75	492

Table 12.16 Predicted increases in traffic – scenario 2

Link		2024 Baseline		Construction		2024 Baseline+ Construction		Increase %	
		Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs
A99 Cliff Road, Wick	Max	7982	220	-	-	7982	220	-	-
	Avg			-	-	7982	220	-	-
A99 Blackness	Max	2348	163	-	-	2348	163	-	-
	Avg			-	-	2348	163	-	-
A9 (T) Achavanich	Max	1058	155	-	-	1058	155	-	-
	Avg			-	-	1058	155	-	-
A9 (T) Banniskirk	Max	1539	97	-	-	1539	97	-	-
	Avg			-	-	1539	97	-	-
A9 (T) Sordale	Max	3581	311	88	88	3669	399	3	28
	Avg			40	40	3621	351	1	13
A9 (T) Thurso Centre	Max	14687	280	10	-	14697	280	-	-
	Avg			10	-	14697	280	-	-
A882 Haster	Max	2953	119	-	-	2953	119	-	-
	Avg			-	-	2953	119	-	-
A882 Oldhall	Max	1953	98	88	88	2041	186	5	90
	Avg			40	40	1993	138	2	41
A836	Max	3712	190	98	88	3810	278	3	46
	Avg			50	40	3762	230	1	21
C1033 Everley-Crockster Toll Road	Max	84	32	108	88	192	120	129	276
	Avg			60	40	144	72	71	125
U1633 East Lodge Road	Max	74	1	108	88	182	89	146	8,661
	Avg			60	40	134	41	81	3,937
Charleston Farm Road	Max	11	1	8	5	20	6	75	492
	Avg			8	5	20	6	75	493

12.6.2 Scenario 1: Traffic Increase Summary

100. The results in **Table 12.15** show that specific links would experience increases in total and HGV traffic volumes that are above the IEMA thresholds (i.e. an increase of 30%) and will therefore be considered in more detail in the following Sections.

12.6.3 Scenario 2: Traffic increase summary

101. The results in **Table 12.16** demonstrate that with the estimated reduction in construction materials being imported to the Site, specific links would still experience increases in total and HGV traffic in excess of the IEMA thresholds (i.e. an increase of 30%) and will be considered in more detail in the following Sections.

12.6.4 Abnormal loads

102. As noted previously it is anticipated that Wick Harbour would be the port of entry for the WTG components. The abnormal load vehicles are large and would be up to 5 m in width for the tower sections and nacelle. The following factors would impact on the travel time for the abnormal loads between Wick and the Site:

- there are specific locations along the main route, primarily bends, where oncoming traffic would not be able to pass the abnormal loads with caution;
- the last 2.5 miles of the route to Site for the abnormal loads would require the use of narrower roads – single track with passing places, where oncoming traffic would not be able to pass the abnormal loads;
- at several locations along the route to Site it is anticipated that the abnormal load transports would have to reduce their speed to a walking pace in order to negotiate; and
- a lorry is restricted to two-thirds of the speed (40 mph) of a car (60 mph). Under normal conditions, therefore it would take roughly two to three times the length of time that a car journey would take.

12.6.5 Traffic Increase Summary

Scenario 1

103. **Table 12.15** demonstrates that the maximum increase in total construction traffic on the principal road network within the study area does not exceed the IEMA thresholds (an increase of 30% or more)with the largest increase being 6% on the A882 at Oldhall.

104. The minor roads which make up the last 4 km / 2.5 miles of the route experience those most significant increase (nearly 3x) in traffic in relative terms given the existing low baseline flow at 189% at peak activity and on average doubling.

105. Routing of the HGVs transporting construction materials from the quarry locations near Watten and Spittal via the principal road network within the study area to the Site would result in increases in HGVs, in excess of the IEMA guidelines (an increase of 30% or more). These range from 39% on the A9 near Sordale, and more significant 122% on the A882 at Oldhall during peak construction activity. On average, these increases reduce at these locations to 19% and 59% respectively across the 22-month outline construction programme, assuming the import of all construction material from source quarries.

106. Considering the minor roads nearer the Site where baseline HGV traffic flows are measured to be significantly less than the principal road links the relative impact is significantly greater with a maximum increase of a significant 11,811% in relative terms on the U1633 East Lodge Road – a length of 0.8 km / 0.5 miles.

107. Construction HGV traffic flows would be spread across the working day (07:00-19:00). In absolute terms, at peak would equate to a maximum of ten two-way trips per hour, or five HGVs in each direction – one every 12 minutes. On average, across the 22-month construction programme, this reduces to six two-way trips per hour, or three HGVs in each direction – one every 20 minutes.

Scenario 2

108. **Table 12.16** demonstrates that the maximum increase in total construction traffic on the principal road network within the study area does not exceed the IEMA thresholds with the largest increase being 5% on the A882 at Oldhall.

109. The minor roads which make up the last 4 km / 2.5 miles of the route experience those most significant increase (nearly 3x) in traffic in relative terms given the existing low baseline flow at 146% at peak activity and on average less than doubling.

110. Routing of the HGVs transporting construction materials from the quarry locations near Watten and Spittal via the principal road network within the study area to the Site would result in increases in HGVs in excess of the IEMA guidelines. These range from 28% on the A9 near Sordale, and more significant 90% on the A882 at Oldhall during peak construction activity. On average, these increases reduce at these locations to 13% and 41% respectively across the 22-month outline construction programme, assuming the import of all construction material from onsite borrow pits.

111. Considering the minor roads nearer the Site where baseline traffic flows are measured to be significantly less than the principal road links the relative impact is significantly greater with a maximum increase of a significant 8,661% in relative terms on the U1633 East Lodge Road – a length of 0.8 km / 0.5 miles.

112. Similar to Scenario 1, in absolute terms, at peak activity there would be a maximum of eight two-way trips per hour (allowing for rounding to generate one trip in, one trip out of the Site), or four HGVs in each direction – one every 15 minutes. On average across the 22-month programme, this reduces to six two-way trips per hour, or three HGVs in each direction – one every 20 minutes.

12.6.6 Potential Effects – Scenario 1 and 2

12.6.6.1 Effect on Driver Severance and Delay

113. The IEMA guidance states that there are several factors which determine driver severance and delay: these include delay caused by additional turning vehicles and additional cars parked at the Site, delays at junctions due to increased traffic, as well as delays at side roads due to reduced gaps in the oncoming traffic.

114. The principal road network in the study area consists of high-quality trunk and A-class roads suitable of carrying HGVs. The use of well-established quarried material suppliers in the north east Caithness area would assist in reducing excess mileage used to transport materials to the Site. Accordingly, these receptors are of '**Low'** and '**Medium'** sensitivity. Magnitude of impact by the construction phase HGV traffic is typically '**Low'** to '**Medium'**, resulting in a significance of effect of **'Slight'** to **'Moderate'** impact respectively.

115. Closer to the Site, where the U1633 East Lodge Road, Charleston Farm Road and C1033 Everley-Crockster Toll Road are of single-track construction these receptors are of '**High'** sensitivity, experiencing a '**High'** magnitude of impact resulting in a '**Major'** significance of effect in relative terms given the existing low traffic and HGV flows.

116. The baseline traffic flows equate to a maximum 10 (2 HGV) two-way trips per hour over the working day using these roads. Or one every 12 minutes in each direction over the last 2.5 miles to the Site. This is significantly below the typical capacity of a single-track road with passing places of between 100-200 vehicles per hour and therefore the impact on driver delay/severance in absolute terms would be **'Slight'**. This effect is therefore '**Not Significant'**.

117. The main potential impact of driver severance and delay would relate to the transportation of abnormal loads, which is discussed in **Section 12.6.6.8.**

12.6.6.2 Effect on Community Severance and Delay

118. 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 amenities may be 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.

119. The potential changes in the volume, composition and speed of traffic as a result of additional traffic from the proposed Development is such that they are very unlikely to affect the ability of people to cross the roads within the identified settlements that would be used by construction traffic.

120. Magnitude of this effect is '**Low'** to '**Medium'**, and therefore the significance of this effect is **'Slight'** to **'Moderate'**, respectively. This effect is therefore '**Not Significant'**.

12.6.6.3 Effect on Pedestrian Amenity

121. Pedestrian amenity can be affected by traffic flow and composition as well as pavement widths and separation from traffic. It is broadly defined within the IEMA guidelines as the relative pleasantness of a journey and can be judged based on changes in traffic flow or changes in the HGV component.

122. The potential changes in the volume, composition and speed of traffic as a result of additional traffic from the proposed Development is such that they are very unlikely to affect pedestrian amenity within the identified settlements on the roads that would be used by construction traffic.

123. Magnitude of this effect is '**Low'** to '**Medium'**, and therefore the significance of this effect is **'Slight'** to **'Moderate'**, respectively. This effect is therefore '**Not Significant'**.

12.6.6.4 Effects on Noise and Vibration

124. The effects of noise can be high in relation to sensitive receptors such as those residential properties which are sparsely present within the study area. A noise assessment has been undertaken for the proposed Development and is presented in **Chapter 13: Noise.**

12.6.6.5 Effect on Road Safety

125. Road safety is a '**High'** sensitivity receptor with a magnitude of impact based on the volume of accidents along the routes used to the Site. An increase, or decrease, in accidents may result from changes in traffic flows and the composition of traffic on the local highway network.

126. Across the whole study area in the immediately previous five-year period, there were 93 collisions. 65 were categorised as **'Slight'**, 12 were categorised as 'serious' and six were categorised as 'fatal'. The high number of incidents is reflective of the extensive study area but this equates less than five collisions on any 100 m length of road over the five-year data period. Of the six 'fatal' accidents, three resulted from the vehicle driver losing control and hitting an object off the carriageway, one where a car driver attempting to overtake another vehicle hit a permanent object in the carriageway; one occurred in dark and wet conditions where a car collided with a pedestrian; and one fatality was as a result of a collision between two cars where one of the vehicles hit a boundary wall/fence.

127. There would be a large increase in HGV movements against baseline HGV flows; however, these would be spread evenly throughout the working hours of 07:00 to 19:00.

128. Abnormal loads would be delivered to the Site under Police escort, whilst other large components would be moved in accordance with an agreed CTMP, referred as **Technical Appendix 12.1,** and the safety measures defined within it.

129. In summary, analysis has shown that existing levels of Personal Injury Accidents (PIAs) recorded during the last five years is low within the extensive study area. Whilst the proposed Development would create a significant increase the HGV traffic levels at specific locations within the study area, these levels would remain within the design capacity of the local road network.

130. It is therefore unlikely that the number of PIAs would significantly change as a result of the construction of the proposed Development, and the effect of the predicted levels in construction traffic on accidents and road safety would be **'Slight'.** This effect is therefore '**Not Significant'**.

12.6.6.6 Effects on Vulnerable Users

131. Vulnerable road users (pedestrians, cyclists and equestrians) can be affected by traffic flow and composition as well as pavement, cycle and bridleway widths and separation from traffic. It is broadly defined within the IEMA guidelines as the *'relative pleasantness of a journey'* and can be judged based on changes in traffic flow or changes in the HGV component. The impact of traffic on these road users would be most noticeable within settlements along the proposed access routes where the presence of vulnerable road users, such as pedestrians and cyclists, are highest.

132. The potential changes in the volume, composition and speed of traffic as a result of additional traffic from the proposed Development is such that they are unlikely to affect vulnerable road users such pedestrians, cyclists and equestrians within the identified settlements that would be used by construction traffic.

133. Magnitude of this effect is '**Low'** to '**Medium'**, and therefore the significance of this effect is **'Slight'** to **'Moderate'**, respectively. This effect is therefore '**Not Significant'**.

12.6.6.7 Effects Due to Dust and Dirt

134. The movement of construction traffic to and from the Site would have the potential to bring dust and dirt and other detritus onto the highway. Sensitive receptors within the study area include residential properties, B&Bs, local shops and other facilities, which may experience dust and dirt and have been classified as '**Low'** to '**Medium'** sensitivity receptors.

135. HGVs are likely to create the greatest impact in terms of dust and dirt with an anticipated significant increase of HGV traffic.

136. Given that the magnitude of effect of dust and dirt have been classified as '**High**' (>60% increase) and would affect '**Medium**' sensitivity receptors, there is potential for a '**Major**' (short-term) effect. This effect is therefore '**Significant'.**

137. Good construction practices on site such as the use of water spray and covering of loads will mitigate the potential effects of dust and dirt. The length of the access tracks on site will also reduce the transmission of dirt and other detritus onto the local roads. Additional measures such as wheel washing facilities could be utilised, if required. The use of the aforementioned practices and measures wil**l** effectively manage this effect, reducing to '**Slight'** and therefore **'Not Significant'.**

12.6.6.8 Effects Caused by Movement of Abnormal Loads

138. The routes from Wick to the Site are considered suitable for such movements, subject to the potential need for 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 THC and Transport Scotland (trunk road network) with the necessary consents and permits obtained in advance of any works or delivery periods. Each turbine delivery comprises specialist transport vehicles carrying the nacelle, hub, drive train, blades (3 no.) and tower sections (3 no.) totalling a minimum of 9 vehicles or 18 two-way vehicle movements

139. 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.

140. The severity of these impacts is considered as follows:

- delays due to lane/road closures would be inevitable, although abnormal loads would be timed to avoid the peak hours and therefore abnormal loads 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.

141. The residential properties, B&Bs, local shops and other facilities within the study area are classed as '**Low'** to '**Medium**' receptors given their low density along the route.

142. The magnitude of change of transporting the abnormal loads during the day would be '**Medium**'.

143. Given that the magnitude of impact of transporting the abnormal loads during the day have been classified as '**Medium**' in relative terms based on the number of vehicle deliveries and would affect '**Low**' to '**Medium'** sensitivity receptors, there is potential for a '**Moderate**' (short-term) effect. This effect is therefore '**Significant'.** However, mitigating the potential for delays or impacts on residents and vulnerable road users by transporting the abnormal loads during the night if the blade lifter is not involved would reduce the effect to **'Not Significant'.**

12.7 Embedded Mitigation

12.7.1 Construction Traffic Management Plan

144. Temporary effects relating to an increase in general construction traffic would be minimised through the implementation of an appropriate, locally focused, CTMP which would seek to promote the safe and efficient transportation of components and materials to minimise congestion and disruption. This would be produced following grant of planning permission for the Development and approved in consultation with Police Scotland, THC and Transport Scotland.

145. The CTMP would apply to all sections of the public road network but enhanced with locally specific measures as appropriate. It would include but not be limited to:

- the proposed routes for construction traffic including AILs;
- the necessary agreements and timing restrictions for construction traffic.
- escort arrangements for AILs;
- route signing;
- details of advanced notification to the general public, warning of turbine component transport movements;
- arrangements for the control of dust and debris;
- the briefing of drivers on pulling over to the side of the road at suitably safe locations to allow other road users to overtake safely;
- contractor speed limits;
- community and emergency services liaison details; and
- details of potential impact with timber haulage routes and mitigation

146. A draft CTMP has been included as **Technical Appendix 12.1.**

12.8 Residual Effects

147. Residual effects are those that would still occur after mitigation measures detailed in **Technical Appendix 12.1**. Given the temporary nature of the construction programme (22 months) and the implementation of mitigation measures through a CTMP, all residual effects are '**Slight'** and '**Not Significant'**. **Table 12.20** summarises all of the potential effects, proposed mitigation and the resulting residual effects.

12.9 Cumulative Effects

148. **Chapter 5: EIA Process and Methodology** of the EIA Report provides further information on the cumulative windfarm sites.

149. There are several proposed windfarm developments in Caithness and Sutherland which may have overlapping construction periods, however, no other windfarm developments have been identified which may have a potential for cumulative impact. **Table 12.17** below lists windfarm developments that are considered in this cumulative assessment and constitute developments which already have planning consent or are currently in the planning application/consenting process.

Table 12.17 Cumulative development trip generation

Name	Planning Application No.	Location	Status
Achlachan Windfarm 2	15/01831/FUL	Onshore	Consented
Cogle Moss Windfarm	15/02769/FUL	Onshore	Consented
Dounreay Tri Floating Windfarm	16/04775/S36	Offshore	Consented
Limekiln Windfarm	16/02752/S36	Onshore	Consented
Rumster Community Wind Energy Project	20/03178/FUL	Onshore	Consented
Strathy South Windfarm	20/03481/S36	Onshore	Consented
Camster 2 Windfarm	19/03015/FUL	Onshore	Planning Application
Golticlay Windfarm	16/04966/S36	Onshore	Planning Application
Slickly Windfarm	19/05624/FUL	Onshore	Planning Application
Strathy Wood Windfarm	13/04469/S36	Onshore	Planning Application

150. Details of the estimate construction vehicle trip generation and affected road links were extracted for each cumulative windfarm development from the relevant EIA Report Chapter found on the THC Planning portal. Only developments which would impact on the same study network as the proposed Development have been included in the cumulative assessment.

151. **Table 12.18** below provides a summary of the applicable cumulative development peak traffic flows on the study network.

Table 12.18 Cumulative development trip generation

Link	Achlachan 2		Cogle Moss		Slickly		Golticlay		Camster 2	
	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs
A99 Cliff Road, Wick	-	-	-	-	157	131	-	-	-	-
A99 Blackness	-	-	-	-	157	131	226	196	262	232
A9 (T) Achavanich	-	-	-	-	-	-	226	196	-	-
A9 (T) Banniskirk	43	28	-	-	-	-	-	-	-	-
A9 (T) Sordale	-	-	-	-	-	-	-	-	262	232
A882 Haster	-	-	-	-	-	-	-	-	262	232
A882 Oldhall	43	28	73	4	-	-	-	-	-	-

152. Combining these with the respective link flows from Scenario 1, as a worst case, provides the following cumulative assessment, summarised in **Table 12.19**.

Table 12.19: Cumulative construction trip assessment

Link	Baseline		Achlachan 2		Cogle Moss		Camster 2		Hollandmey		Cumulative		% Change	
	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGV	Total	HGV
A9 (T) Sordale	3581	311	-	-	-	-	262	232	120	120	3963	663	11	113
A882 Oldhall	1953	98	43	28	73	4	-	-	120	120	2189	250	12	155

153. The sensitivity of these receptors is ‘Low’, with a cumulative magnitude of impact of ‘High’, resulting in a significance of effect of ‘Moderate’, which may be reduced to ‘Slight’ with the embedded mitigation and therefore ‘Not Significant’.

12.10 Summary and Statement of Significance

Table 12.20 provides a summary of the assessment of potential access, traffic and transport effects during the construction phase before and after the proposed mitigation.

Table 12.20: Summary of effects

Description of effect	Significance of potential effects		Mitigation/Enhancement measure	Significance of residual effect	
	Significance	Beneficial / Adverse		Significance	Beneficial / Adverse
Construction effects					
Driver severance and delay	Not significant	Adverse	TMP 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 CTMP and to alleviate stress and anxiety.	Not significant	Adverse
Community severance and delay	Not significant	Adverse	CTMP	Not significant	Adverse
Pedestrian amenity	Not significant	Adverse	CTMP	Not significant	Adverse
Vulnerable Road Users	Not significant	Adverse	CTMP	Not significant	Adverse
Road safety	Not significant	Adverse	CTMP	Not significant	Adverse
Abnormal loads	Not significant	Adverse	CTMP, Trial runs	Not significant	Adverse
Dust and dirt	Significant	Adverse	Good construction practices including wheel wash facilities and careful loading. CTMP.	Not significant	Adverse
Transporting the abnormal loads during the day	Significant	Adverse	Transporting the abnormal loads during the night if blade lifter not involved	Not Significant	Adverse

12.11 References

Guidance on the Preparation of Transport Assessments: The Highland Council: 2014

Guidelines for the Environmental Assessment of Road Traffic: Institute of Environmental Management and Assessment (IEMA): 1993.

LA 104 - Environmental assessment and monitoring: Design Manual for Roads and Bridges: Standard for Highways: 2020.

Scottish Government (Transport Scotland), 2012 – Transport Assessment Guidance

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