Chapter 12

Access, Traffic and Transport

SCOTTISHPOWER RENEWABLES

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Abbreviations

A&BC	Argyle and Bute Council
AADT	Annual Average Daily Traffic
AIL	Abnormal Indivisible Loads
ATMP	Abnormal Transport Management Plan
CTMP	Construction Traffic Management Plan
DfT	Department for Transport
DMRB	Design Manual for roads and Bridges
EIA	Environmental Impact Assessment
HGV	Heavy Goods Vehicle
IEMA	Institute of Environmental Management and Assessment
LGV	Light Goods Vehicle
NRTF	National Road Traffic Forecast
PIA	Personal Injury Accident
TMP	Traffic Management Plan
TS	Transport Scotland

Chapter 12
Access, Traffic and Transport

12.1 Executive Summary

1. This Chapter considers the environmental impacts of changes to access, traffic and transport as a result of the Earraghail Renewable Energy Development (the proposed Development). It sets out the assessment methodology adopted, existing conditions in the Study Area, proposed best practice methods and predicted effects prior to, and following, the application of mitigation measures to reduce potentially adverse effects on the road infrastructure, road users and local communities.

2. The Applicant prepared scoping material for discussion with Argyll and Bute Council (A&BC) and other relevant organisations and stakeholders in the form of direct scoping, issued in May 2020, as highlighted in **Chapter 6**. The scoping responses received from, and discussions undertaken with A&BC and Transport Scotland (TS) have informed the studies undertaken.

3. Access to the Site is only via the A83(T) which runs to the west and north of the Site. The site access is located on the A83(T), east of Corranbuie. From the A83(T) the route to the proposed turbine array follows an existing forestry road.

4. For the delivery of construction materials, two different delivery scenarios have been assessed. First, an unlikely, worst-case scenario whereby all construction materials (e.g., concrete for foundations and aggregate for access tracks) are delivered to the site. The second more likely scenario, is for access track aggregate to be sourced from onsite borrow pits, thereby reducing the total number of heavy goods vehicle movements. Both scenarios result in increases in heavy goods vehicles (HGV) movements on the A83(T) but the more likely, second scenario at a lower increase compared with the worst-case.

5. The delivery of the wind turbines would be from Campbeltown Harbour along the A83(T). The vehicles would be regarded as abnormal loads and be around 5 m in width. Each delivery would take between 1 hour and 50 minutes to 2 hours and 30 minutes to reach the Site. It is planned to make these deliveries at night to minimise road user impact which is subject to approval by Police Scotland. Some upgrades may be needed to the A83(T) to enable safe delivery of the wind turbine parts in agreement with Transport Scotland.

6. The proposed Development also includes an improved site entrance which is designed to safely allow the delivery of wind turbines and construction materials.

7. With the absolute worst-case, and highly unlikely scenario of all construction materials coming by road, the maximum vehicular traffic associated with the construction of the proposed Development, including other windfarm projects (Narachan) occurring simultaneously, would be a 16 % increase on baseline traffic flows on the A83(T).This assessment has found that no significant effects are predicted from this maximum increase in traffic with respect to driver delay, noise and vibration, road safety and community severance. However, the increase could be significant without mitigation for vulnerable road users, such as pedestrians and cyclists, and due to dust and dirt brought on to the public highway. These potential impacts would be controlled by good practice measures which are outlined in a Construction Traffic Management Plan (CTMP), found at **Technical Appendix 12.1**. Consequently, no significant effects are predicted to occur as a result of the access, traffic and transport impacts.

12.2 Introduction

8. This Chapter 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**.

9. This 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', as shown on Figure 12.1) which has the potential to be adversely or positively impacted by the proposed Development.

10. 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.

11. 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** in addition to a more realistic scenario.

12. 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 on-site 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.

13. This Chapter does not focus on the transport configurations made for the movement of wind turbine components to the site entrance. Given that the identified routes have been used previously for the transport of abnormal loads associated with renewable energy developments, it is considered that there would be no major issues for the use of the routes, notwithstanding any mitigation that may be required.

14. An assessment has been made of the potential effects of the proposed Development, with a focus on the construction on the basis that this will have the greatest impact on the local transport network within the Study Area. Where required, mitigation measures have been defined to reduce any significant effects.

15. During operation, the proposed Development would generate occasional maintenance trips, which would not lead to any variation in the baseline traffic flows beyond that of everyday fluctuation.

12.3 Approach to Assessment and Methods

16. 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); and
- Scottish Government, Transport Assessment Guidance (2012).

17. The following bullet points 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 24 months; and
- an assessment of operational traffic. This provides a brief summary of typical maintenance activities and the types of vehicles used as traffic impacts during the operation of the proposed Development are minimal.

12.3.1 Study Area

18. The Site (as defined by the application boundary) is located within Argyll and Bute Council (A&BC) administrative boundary.

19. 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 A83(T) is the major road which serves the Kintyre peninsula and is a trunk route between Tarbert on the eastern shores of the Kintyre Peninsula and Campbeltown. As such, the Study Area includes the route along the A83(T) between the site entrance and Campbeltown Harbour which would be used to transport the wind turbine components to the Site.

20. It is anticipated that the majority of general construction traffic would approach the Site from the north, due to expected locations of the site personnel, the potential sourcing of material from the nearby Barrachander Quarry (worst-case), nearby concrete supplier and the sourcing of other technology components e.g. solar panels. Therefore, the Study Area extends further north to take into account the effects on sensitive receptors on the A83(T) in the surrounding area, stretching as far as the A82(T) including Lochgilphead, Ardrishaig, Tarbert and Inveraray.

21. Vehicular traffic would not approach the Site from the B842 Clanoiaig – Southend Road and no construction traffic shall use it without a prior written authorisation from the Roads and Infrastructure Services. This assumption is consistent with the consultation received from A&BC. As vehicles travel away from the proposed Development, they would be distributed across wider network. Beyond the Study Area, professional judgment suggests that effects relating to site access, traffic and transport would unlikely be significant.

22. In addition, the A816 north of Lochgilphead has the potential to be used by construction traffic, although this is likely to be limited to local traffic as it is not a convenient route from the primary road network.

23. The Study Area highlighting routes to the site for general construction vehicles (including HGVs and personnel) and abnormal loads is illustrated by **Figures 12.1** and **12.2** respectively.

12.3.2 Effects Scoped Out

24. It is estimated that the operational phase of the proposed Development would generate no more than five 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 consent for 40 years, 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.

12.3.2.1 Consultation

30. As part of the Scoping phase of the environmental assessment, an Access, Traffic and Transport section was prepared for inclusion in the EIA Scoping Report setting out the proposed approach to undertaking the environmental assessment in respect of the proposed Development, including the identification of assessment methodology. The information and advice received from A&BC and other Consultees during the scoping process regarding Traffic and Transport is summarised in **Table 12.1.**

Table 12.1: Summary of Consultation Responses

Consultee and date	Summary of key issues	Action Taken
A&BC (Area Roads Engineer) (25 June 2020)	No objection to the proposal subject to conditions that the Site is served by a direct access from the A83(T) Tarbert – Campbeltown Trunk Road and there is no vehicular access from the B842 Claonaig – Southend Road, and no construction traffic should use the B842 Claonaig – Southend Road without prior written authorisation from the Roads and Infrastructure Services.	This Chapter summarises the significance of the Access, Traffic and Transport environmental effects of the proposed Development on the roads proposed to be utilised during its construction; and any mitigation required to reduce those effects. Access to the site using the B842 Claonaig – Southend Road is not proposed. Access to the site for constructions vehicles will be from the A83(T).
Transport Scotland (16 June 2020)	Transport Scotland will require to be satisfied that the access can accommodate abnormal load manoeuvres and that any changes to the trunk road must be in accordance with the Design Manual for Roads and Bridges (DMRB) and that it will have to be discussed and approved by the appropriate Area Manager prior to construction. At the application stage, 1:500 scale drawings of what is proposed are required along with visibility splay plans. 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.	A preliminary layout has been prepared for the main site access from the A83(T) is illustrated by **Figure 12.1** in **Technical Appendix 12.1** of the EIA Report. A route assessment has been carried out for the transport of AIL from the Port of Campbelltown for the candidate turbines.

Consultee and date	Summary of key issues	Action Taken
	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. Transport Scotland requires that a full Abnormal Loads Assessment report be provided with the EIAR that identifies key pinch points on the trunk road network and that a Swept Path Analysis (SPA) should be undertaken, and details provided with regard to any required changes to street furniture or structures along the route.	
Scotways (08/09/2020)	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.	This is noted and acknowledged by the applicant in the design of the proposed development.**Figure 14.1** shows turbine locations in relation to recreational routes.

31. 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.

12.3.3 Approach to Assessment of Effects

32. The approach to this assessment is based upon the IEMA 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. IEMA guidelines state that 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.

33. The IEMA guidance suggests that a day-to-day traffic flow of plus or minus 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.

34. 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 crossroads;
- 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**;
- 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; and
- dust and dirt – the potential effect of dust, dirt and other detritus being brought onto the road.

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

36. 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.

12.3.3.1 Sensitivity of Receptors

37. 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.

38. 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).

39. 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.

Table12.2: Receptor Sensitivity

Impact	Low Sensitivity	Medium Sensitivity	High Sensitivity
Driver Severance & Delay	Road Network not affected	Road network not experiencing congestion at peak times	Road network experiencing congestion at peak times
Community Severance & Delay	No presence of existing communities severed by road	Presence of existing communities with a moderate level of existing severance (subjective assessment)	Presence of communities with existing severance (subjective assessment)
Noise	No sensitive receptors	Presence of sensitive receptors near to the road	Presence of sensitive receptors adjacent to the road
Road Safety	High sensitivity receptor		
Vulnerable Road Users	High Sensitivity receptor		
Wider Disruption due to dangerous loads	No hazardous or dangerous loads on the road network	Some hazardous or dangerous loads on the road network. Loads are generally permitted on UK roads	Abnormal and oversized loads to use road network
Dust and Dirt	Limited presence of sensitive receptors (subjective assessment)	Low to Medium presence of sensitive receptors (subjective assessment)	High presence of sensitive receptors (subjective assessment)

12.3.4 Magnitude of Impact

40. The determination of magnitude has been undertaken by considering the parameters of the proposed Development, establishing the scope of the receptors that may be affected and quantifying these effects utilising IEMA Guidelines and professional judgement. The magnitude of impact or change has been considered according to the criteria defined in **Table 12.3**.

Table12.3: Magnitude of Impact

Impact	Negligible	Minor	Moderate	Major
Driver Severance & Delay	< 10 % Increase in traffic	Quantitative assessment of road capacity based on existing traffic flows and predicted future traffic levels		
Community Severance & Delay	< 10 % Increase in traffic	< 30 % Increase in traffic	30 % - 60 % Increase in traffic	> 60 % Increase in traffic

Impact	Negligible	Minor	Moderate	Major
Noise	< 25 % Increase in traffic	> 25 % Increase in traffic. Quantitative assessment based on predicted increase in traffic against measured baseline (see **Chapter 13**)		
Road Safety	< 10 % Increase in traffic	Qualitative assessment of existing accident records and predicted increase in traffic		
Vulnerable Road Users	< 10 % Increase in traffic	Qualitative assessment of existing accident records and predicted increase in traffic		
Dangerous loads	0 % Increase in traffic	< 30 % Increase in traffic	30 % - 60 % Increase in traffic	> 60 % Increase in traffic
Dust and Dirt	< 10 % Increase in traffic	< 30 % Increase in traffic	30 % - 60 % Increase in traffic	> 60 % Increase in traffic

12.3.5 Significance of Effect

41. 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 collective assessment is a considered assessment by the assessor, based on the likely sensitivity of the receptor to the change (e.g. is receptor present which would be affected by the change), and then the magnitude of that change. **Table 12.4** is used as a guide to determine the level of effect. **'Major'** and **'Moderate'** effects are considered to be **'Significant'** in terms of the EIA Regulations.

Table 12.4: Level of Effect

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

12.3.6 Potential Cumulative Effects

42. 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.

12.3.7 Assessment Assumptions and Limitations

43. The assessment has been undertaken based on the assumption that good construction practices will 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.

44. 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**.

45. Although sensitive receptors e.g. residential properties are present within the Study Area, the Study Area in its entirety is not considered to be sensitive, and therefore the IEMA threshold of 30 % has been applied.

46. The construction working hours for the proposed Development would be 07:00 to 19:00 Monday to Friday with the potential for 07:00 to 16:00 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 Transport Scotland, A&BC and Police Scotland.

12.4 Baseline Conditions

47. This Section describes 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.

12.4.1 Existing Road Network

48. The Study Area has been defined as predominantly the A83(T) between the Site and Campbeltown Harbour to the south and north to Inveraray, which is a single carriageway and a section of the A816 to the north of Lochgilphead. For the majority of its length, the A83(T), is a subject to 60 mph speed limit, with 30 or 40 mph sections through the built-up areas such as Campbeltown, Tarbert and Lochgilphead. The A816 is also a single carriageway with a speed limit of 60 mph and 40 mph section through the built-up areas (Lochgilphead).

49. The A83(T) follows the western shore of Loch Fyne via Lochgilphead and Ardrishaig, where it crosses the entrance to the Crinan Canal. From Ardrashaig the road continues south to Tarbert, where it crosses over to the western wore of the Kintyre Peninsula. Following the western shore of the Kintyre Peninsula, it passes through villages of Whitehouse, Chlachan, Tayinloan, Muasdale and Bellochantuy before finally crossing back to the east of the peninsula, on the Firth of Clyde coast, as it reaches Campbeltown.

50. The A83(T) is the major road of the two that run north-south along the peninsula, with the other road, the B842 being a single-track road with passing places, and as such there is no viable diversion route for traffic. Therefore, the A83(T) is an important route for the community.

12.4.2 Baseline Traffic Flows

51. Baseline traffic flows have been obtained as follows and the locations are shown on **Figure 12.3**;

- DfT Count on the A83(T) Hall Street Campbeltown (91292);
- DfT Count on the A83(T) Kennacraig (77107);
- DfT Count on the A83(T) Kennacraig (10844);
- DfT Count on the A83(T) south of Inverneil (80363);
- DfT Count on the A83(T), Lochgilphead (20772);
- DfT Count on the A83(T) south of Minard (40768);
- DfT Count on the A83(T) south of Inveraray (10765); and
- DfT count on the A816 north of Lochgilphead (80392).

52. A summary of the DfT count data average weekday 24-hour traffic, factored to 2024 baseline, is provided in **Table 12.5**. The data includes two-way flows.

Table12.5: Baseline 2024 AADT

Count location	Source	Direction	Total	HGV	HGV%
A83(T) Hall Street, Campbeltown	DfT count	2-way	2905	159	5.5%
A83(T) (trunk) Kennacraig	DfT count	2-way	2341	226	9.7%
A83(T) Kennacraig	DfT count	2-way	2341	226	9.7%
A83(T) (South of Inverneil)	DfT count	2-way	2932	267	9.1%
A83(T) Lochgilphead	DfT count	2-way	7704	406	5.3%
A83(T) (South of Minard)	DfT count	2-way	2952	285	9.7%
A83(T) (South of Inveraray)	DfT count	2-way	3255	291	8.9%
A816 (North of Lochgilphead)	DfT count	2-way	4907	294	6.0%

53. Forestry is a major industry in the local area and as such there has been investment in improvements to the A83 infrastructure at various locations in recent years which has attracted funding from EU. Notwithstanding, A&BC Transport Planning and Transport Scotland have noted that there are not presently any planned improvement schemes within the Study Area.

12.4.3 Accident Records

54. Personal Injury Accident (PIA) data covering the Study Area was obtained from the DfT (available at http://www.gov.uk/government/collections/road-accidents-and-safety-statistics) for the five-year period between 2015 and 2019 (inclusive), which comprises the most recent period of available data. The locations of recorded accidents are shown on **Figure 12.4**. Data detailing the accidents and classification of the vehicles involved in the accidents are not available.

55. The accident analysis is used to inform the review of the proposed route where any deficiencies in the road layout and condition identified. A total of 121 accidents were recorded across the Study Area (which is approximately 75 miles of the A83(T)) during the five-year period. Of these, 92 resulted in slight injury (e.g. slight shock with occurrences of sprains or bruises) and 26 resulted in serious injury (e.g. breakages, lacerations, concussion, or hospital admittance) and 3 resulted in fatal injury (resulted in a mortality within 30 days after the accident).

56. For the purposes of the accidents review, the Study Area has been split into four sections of road network. These are:

- Campbeltown to the Site (A83);
- The Site to Lochgilphead (A83);
- Lochgilphead to Inveraray (A83); and
- Cairnbann to Lochgilphead (A816).

57. The number and severity of accidents recorded in each of the four sections is provided in **Table 12.6** below.

Table12.6: Accident Statistics

Section	Slight	Serious	Fatal
Campbeltown to the Site (A83)	17	12	1
The Site to Lochgilphead (A83)	29	7	0
Lochgilphead to Inveraray (A83)	36	5	2
Cairnbaan to Lochgilphead (A816)	10	2	0
Total	**92**	**26**	**3**

12.4.4 Existing Network Performance

58. 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 5 -10 %, averaging at 6 % in 2024. A maximum HGV proportion was measured as 9.7 % on the A83(T) near Kennacraig;
- the Study Area has a low accident record; and
- there are no further improvement works that have been proposed to the roads by the Roads Authorities within the Study Area.

12.5 Proposed Development Parameters – Traffic and Transport

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

12.5.1 Site Access and Onsite Tracks

60. Access to the Site will be provided via an existing opening from the A83(T) near Corranbuie, which forms a t-junction and currently provides access via Tarbert Holiday Park. The access will require to be upgraded to allow for access by construction traffic and abnormal load transporters from the south. This will take the form of a widened bellmouth with merge tapers to accommodate the larger vehicles transporting the WTG component abnormal loads. Improvements will also be made to increase visibility splays at the access junction. An indicative access layout has been prepared to support this EIA Report and is illustrated by **Figure 3.11c**.

61. There are several existing access tracks within the site which will need to be widened and upgraded. Further access tracks including some which will be of floating construction will be required to provide access to the proposed turbine locations, solar array and borrow pits. A total of 12.9 km of upgraded and 10.4 km of new tracks will be constructed.

12.5.2 Abnormal Load Access Route

62. The proposed abnormal load route would be from Campbeltown Harbour to the as shown on **Figure 12. 2**.

63. Given that the A83(T) is a key route for the local community, movement of abnormal loads at night or on a Sunday when traffic flows are lower is proposed subject to approval by Police Scotland.

12.5.3 Construction Programme

64. An indicative 24-month construction programme has been prepared and is set out in the construction timeline shown in **Chapter 3.**

65. 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 6 of the construction programme, as shown in **Table 12.13**.

12.5.4 Construction Materials

66. 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 12.7**.

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
Forestry Felling	Removal of tree felling/felling for the installation of wind turbines, access tracks and BESS, Compounds and Substation	Yes	No
Import of Material from Quarry	Delivery of materials that are not able to be extracted from within the Site.	Yes	No

Key work element	Details and assumptions	Conventional HGVs	Abnormal loads
Borrow Pits	Delivery of plant associated with establishing borrow pits.	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 Hardstanding	Delivery of plant associated with construction of crane hardstanding. 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 finishing's. Delivery of electrical equipment and storage of batteries.	Yes	No
Electrical Installation	Delivery of sand and cables to connect turbines to substation.	Yes	No
Solar	Delivery of solar farm components to site.	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

67. The precise quantities of construction materials required for the proposed Development would depend on the presence of on-site borrow pits.

68. 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 the Site. Therefore, the potential impact of the transportation of construction materials to the Site has been modelled using two scenarios:

- **Scenario 1**: All construction materials are assumed to be sourced from off-site 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 and subbase materials are assumed to be sourced from proposed on-site borrow pits with all remaining construction materials (e.g. concrete and track surfacing material) assumed to be sourced from off-site locations.

69. An estimation of the material quantities for all elements of the proposed Development has been made. **Table 12.8** provides a summary of the material quantities (aggregates only) required to be imported should resources not be available from borrow pits.

Table 12.8: Estimated Aggregate Material Quantities – Scenario 1: Worst-Case

Infrastructure		Material quantities	
On-site Access Tracks (turning heads included)	New on-site access track	58,175 m^3	116,350 t
	Upgrade of existing	35,259 m^3	70,518 t
	Floating track	13,932 m^3	27,864 t
	Tarmac	133 m^3	266 t
Hardstanding	Substation & Battery Storage Area (including compound)	9,000 m^3	18,000 t
	Met mast working area	540 m^3	1,080 t
	Construction compound (near entrance)	2,520 m^3	5,040 t
Turbine Foundations	Turbine bases – formation only	1,888 m^3	3,775 t
	Fill above turbine bases	24,336 m^3	48,672 t
	Crane pads	171,864m^3	343,728 t
	Crane pad boom support		
	Blade laydown and ancillaries		
Total		**317,646 m^3**	**635,292 t**

70. Scenario 2 is the more likely scenario whereby onsite borrow pits are taken into account with aggregate extraction. The borrow pits totalled together are expected to extract material won exceeding the amount required for importation in the worst-case scenario (Scenario 1); therefore, some initial importation of aggregate would be required for Scenario 2 in order to upgrade sections of the existing track from the site entrance to Borrow Pit 1 (location of the Borrow Pit 1 is shown on Figure 3.1) .

71. In addition to the aggregates required as summarised in **Table 12.8**, **Table 12.9** provides material quantities for all materials other than aggregates.

Table 12.9: Estimated Material Quantities – Excluding Aggregates (both scenarios)

Infrastructure		Material quantities	
Foundations, Substation, BESS, Solar Arrays and Permanent Met Mast	Concrete	13,755 m^3	27,510 t
Turbine Foundations	Installation 6N structural fill	2,565 m^3	5,130 t
	Blinding	399 m^3	798 t
	Installation of can/bolts	13 No.	
	Reinforcement	1,065 t	
	Plinth shutter	40 m^3	81 t
	Foundation slab perimeter shutter	57 m^3	114 t
	Ducts	80 No.	
	Transformer plinths	13 No.	
	Step plinth	13 No.	
Electrical Connection	Sand layer	5,840 m^3	11,681 t
	Cable (500m per Drum)	23,361 m	47 drums
Control Building	Reinforcement	82 t	
Permanent Met Mast	Blinding	15 m^3	29 t
	Reinforcement	20 t	
	Shuttering	11 m^2	21 m^2

Total	**50,883 m³**	**49,898 t**

12.6 Trip Generation

12.6.1 HGV Trip Generation Calculations

72. 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 12.8** and **Table 12.9**. These have then been doubled to provide the two-way movements that would occur from delivery and then returning vehicles, as shown in **Table 12.10.**

Table 12.10: 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
Forestry Clearance	Timber (Logs)	25	1009	2018	1009	2018
	Brash	25	273	546	273	546
On-site Access Tracks	New on-site access track	20 t	5,818	11,636	-	-
	Upgrade of existing	20 t	3,526	7,054	1,078	2,156
	Floating track	20 t	1,393	2,788	-	-
	Tarmac	20t	13	28	13	28
Construction Compounds	Met mast working area	20t	54	108	-	-
	Construction compound (Site Entrance)	20t	252	504	252	504
	Substation, Control Building and BESS (including Construction Compound)	20t	900	1,800	-	-
Solar Farm	Solar Panels	-	25	50	25	50
BESS	BESS Equipment	-	8	16	8	16
Foundations	Concrete	20 t	1,375	2,754	1,375	2,754
Turbine Foundations	Foundations – formation only	20 t	189	378	-	-
	Fill above turbine bases	20 t	2,434	4,868	-	-
	Crane pads, additional laydown areas and turning heads	20 t	8,593	17,188	8,593	17,188
	Installation 6N structural fill	20 t	257	514	257	514
	Blinding	20 t	40	80	40	80
	Installation of can/bolts	-	1	2	1	2
	Reinforcement	20 t	53	106	53	106
	Plinth shutter	-	4	10	4	10
	Foundation slab perimeter shutter	-	6	14	6	14
	Ducts	-	2	4	2	4
	Transformer plinths	-	1	2	1	2

Infrastructure item		Load size	Scenario 1		Scenario 2	
			No of loads	Two-way movements	No of Loads	Two-way movements
	Step plinth	-	1	2	1	2
Electrical	Sand layer	20 t	584	1,170	584	1,170
	Cable	-	8	16	8	16
Control Building	Reinforcement	20 t	4	8	4	8
Met Mast	Blinding	20 t	1	4	1	4
	Reinforcement	20 t	1	2	1	2
	Shuttering	-	1	4	1	4
Reinstatement and Restoration		20 t	20	40	20	40
Total			**26,976**	**53,952**	**13,741**	**27,482**

12.6.2 Programme

73. The two-way movements for HGVs have been distributed over the anticipated 24-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 24) to provide daily two-way trip generation for both scenarios. Scenario 1 is shown in **Table 12.11** and Scenario 2 in **Table 12.12**.

74. For both scenarios, the month with the highest volume of traffic has been highlighted. For scenario 1, month 6 is predicted to experience the most traffic, with 474 two-way vehicle movements daily, with months 7 - 13 also experiencing similar volume of traffic. For scenario 2, month 6 is expected to experience the most traffic, with 404 two-way vehicle movements daily, with months 7 - 13 also experiencing this volume of traffic.

Table 12.11: Scenario 1 – Two-way Movements by Construction Month

Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Site establishment	168	168	168																					
Forestry felling		641	641	641	641																			
Access road upgrades		2667	2667	2667																				
Construction of new access tracks and crane hardstandings			965	965	965	965	965	965	965	965	965	965	965	965	965	965								
Turbine foundation construction						3083	3083	3083	3083	3083	3083	3083	3083											
Substation building and electrical works					126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126		
BESS Compound and Installation														59	59	59	59	59	59					
Cable trenching and installation														237	237	237	237	237						
Crane delivery																		28						
Turbine delivery, erection and commissioning																		37	37	37	37	37	37	37
Solar foundation construction and solar delivery erection and commissioning														57	57	57	57	57	57	57				
Site reinstatement																					10	10	10	10
General Site Traffic (Personnel)	3600	4800	4800	4800	4800	**7200**	7200	7200	7200	7200	7200	7200	7200	4800	4800	4800	4800	4800	4800	4800	3600	3600	3600	3600
Monthly ALL Total	3768	8276	9241	9073	6531	**11373**	11373	11373	11373	11373	11373	11373	11373	6244	6244	6244	5279	5344	5079	5020	3773	3773	3647	3647
Daily ALL Total	158	346	386	380	274	**474**	474	474	474	474	474	474	474	262	262	262	220	224	212	210	158	158	152	152
Monthly HGV Total	168	3476	4441	4273	1731	**4173**	4173	4173	4173	4173	4173	4173	4173	1444	1444	1444	479	544	279	220	173	173	47	47
Daily HGV Total	8	146	186	180	74	174	174	174	174	174	174	174	174	62	62	62	20	24	12	10	8	8	2	2

Table 12.12: Scenario 2 – Two-way Movements by Construction Month

Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Site establishment	168	168	168																					
Forestry felling		641	641	641	641																			
Access road upgrades		719	719	719																				
Construction of new access tracks and crane hardstandings			0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Turbine foundation construction						2427	2427	2427	2427	2427	2427	2427	2427											
Substation building and electrical works					26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26		
BESS Compound and Installation														59	59	59	59	59	59					
Cable trenching and installation														237	237	237	237	237						
Crane delivery																		28						
Turbine delivery, erection and commissioning																		37	37	37	37	37	37	37
Solar foundation construction and solar delivery erection and commissioning														57	57	57	57	57	57	57				
Site reinstatement																					10	10	10	10
General Site Traffic (Personnel)	3600	4800	4800	4800	4800	**7200**	7200	7200	7200	7200	7200	7200	7200	4800	4800	4800	4800	4800	4800	4800	3600	3600	3600	3600
Monthly ALL Total	3768	6328	6328	6160	5467	**9653**	9653	9653	9653	9653	9653	9653	9653	5179	5179	5179	5179	5244	4979	4920	3673	3673	3647	3647
Daily ALL Total	158	264	264	258	228	**404**	404	404	404	404	404	404	404	216	216	216	216	220	208	206	154	154	152	152
Monthly HGV Total	168	1528	1528	1360	667	**2453**	2453	2453	2453	2453	2453	2453	2453	379	379	379	379	444	179	120	73	73	47	47
Daily HGV Total	8	64	64	58	28	**104**	104	104	104	104	104	104	104	16	16	16	16	20	8	6	4	4	2	2

12.6.3 HGV Trip Generation Summary

75. 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 174.
- Scenario 2: the maximum number of daily two-way HGV movements is 104.

12.6.4 Light Vehicle Trip Generation

76. 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.

77. Light vehicle trips would be generated by the approximately 150 workers who would be working on the Site during the peak construction phase. This would equate to a maximum of 300 two-way movements daily based on an average vehicle occupancy of 1 individual per vehicle. As a worst case this has been applied across the full construction programme.

12.6.5 Total Trip Generation

78. The total trip generation (maximum daily and average) for a 24-month construction programme for Heavy Goods Vehicles (HGVs) and Light Goods Vehicles (LGVs) is set out in **Table 12.13**.

Table 12.13: Maximum and Average Daily Two-way Vehicle Movements

	Scenario 1			Scenario 2		
	HGV	LGV	Total	HGV	LGV	Total
Maximum	186	300	486	104	300	404
Average	96	224	320	50	224	274

79. Construction HGV traffic flows would be spread across the working day (07:00-19:00), which at peak would equate to a maximum of 16 two-way trips per hour, or one HGVs in each direction every 4 minutes. On average across the 24-month programme this reduces to 8 two-way trips per hour, or 1 HGV in each direction every 7 minutes.

12.6.6 Trip Distribution

80. All construction vehicles would enter the site along the access track from the west, having travelled the length of the A83(T) either from the north (the majority of construction traffic) or from the south (the abnormal loads i.e. the blades and tower sections) and 50 % of the concrete delivery, from a batching plant in Campbeltown (the other 50 % is assumed to arrive from Lochgilphead).

81. For Scenario 1, it is assumed that the aggregate would be sourced from Barrachander Quarry which is located to the south of the Site.

82. It has been assumed 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. Therefore, it has been assumed that 50 % would arrive from the A83(T) south and 50 % from the A83(T) north for the purpose of this assessment.

83. All the abnormal loads would arrive on the A83(T) from the direction of Campbeltown south of the Site.

84. Given that the peak traffic generation associated with the proposed Development is predicted to occur in the construction year 2024, a forecast year from the existing baseline 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 12.5** previously.

12.7 Assessment of Effects

85. 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 3**.

12.7.1 Construction Effects

86. The impact of the proposed Development has been assessed using Annual Average Daily Traffic (AADT) 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.

87. The increase in traffic flow along the A83(T) (for vehicle movements other than the abnormal loads) has been calculated for both scenarios 1 and 2 for the following two cases:

- The maximum trip generation occurring over the construction period; and
- The average trip generation throughout the entire active construction period.

88. **Table 12.14** and **Table 12.15** show the predicted daily total ad HGV traffic increases for the two cases above. The existing baseline traffic flows are those presented in **Table 12.5**.

Table 12.14: Predicted Increases in Traffic – Scenario 1

Link		2024 Baseline		Construction		2024 Baseline+ Construction		Increase %	
		Total	HGVs	Total	HGVs (ex AIL)	Total	HGV (ex AIL)	Total	HGVs
A83 Hall Street, Campbeltown	Max	2905	159	245	93	3150	252	8.4	58.5
	Avg			162	48	3067	207	5.6	30.2
A83(T) Kennacraig	Max	2341	226	245	93	2586	319	10.5	41.1
	Avg			162	48	2503	274	6.9	21.2
A83(T) Kennacraig	Max	2341	226	245	93	2586	319	10.5	41.1
	Avg			162	48	2503	274	6.9	21.2
A83(T) (South of Inverneil)	Max	2932	267	243	93	3175	360	8.3	34.8
	Avg			160	48	3092	315	5.5	18.0
A83(T) Lochgilphead	Max	7704	406	243	93	7947	499	3.2	22.9
	Avg			160	48	7864	454	2.1	11.8
A83(T) (South of Minard)	Max	2952	285	243	93	3195	378	8.2	32.6
	Avg			160	48	3112	333	5.4	16.8
A83(T) (South of Inveraray)	Max	3255	291	243	93	3498	384	7.5	32.0
	Avg			160	48	3415	339	4.9	16.5
A816 (North of Lochgilphead)	Max	4907	294	243	93	5150	387	5.0	31.6
	Avg			160	48	5067	342	3.3	16.3

Table 12.15: Predicted Increases in Traffic – Scenario 2

Link		2024 Baseline		Construction		2024 Baseline+ Construction		Increase %	
		Total	HGVs	Car/LGVs	HGVs	Total	HGVs (ex AIL)	Total	HGVs
A83 Hall Street, Campbeltown	Max	2905	159	204	52	3109	211	7.0	32.7
	Avg			139	25	3044	184	4.8	15.7
A83(T) Kennacraig	Max	2341	226	204	52	2545	278	8.7	23.0
	Avg			139	25	2480	251	5.9	11.1
A83(T) Kennacraig	Max	2341	226	204	52	2545	278	8.7	23.0
	Avg			139	25	2480	251	5.9	11.1
A83(T) (South of Inverneil)	Max	2932	267	202	52	3134	319	6.9	19.5
	Avg			137	25	3069	292	4.7	9.4
A83(T) Lochgilphead	Max	7704	406	202	52	7906	458	2.6	12.8
	Avg			137	25	7841	431	1.8	6.2
A83(T) (South of Minard)	Max	2952	285	202	52	3154	337	6.8	18.3
	Avg			137	25	3089	310	4.6	8.8
A83(T) (South of Inveraray)	Max	3255	291	202	52	3457	343	6.2	17.9
	Avg			137	25	3392	316	4.2	8.6
A816 (North of Lochgilphead)	Max	4907	294	202	52	5109	346	4.1	17.7
	Avg			137	25	5044	319	2.8	8.5

12.7.2 Scenario 1: Traffic Increase Summary

89. The results above show that all percentage increases in total traffic volumes are below the IEMA thresholds (i.e. an increase of 30 %); however, the increase in HGV traffic along the A83(T) Hall Street Campbeltown, A83(T) Kennacraig and A83(T) south of Inverneil are in exceedance of the IEMA thresholds.

90. The largest increase would be where the total traffic flows increase by 10.5 % (58.5 % HGV increase) for a worst-case day.

91. The average day during the construction period would see only a 6.9 % increase to total traffic flows but a substantial 30.2 % increase in HGVs.

92. In summary, while total traffic levels are within the IEMA thresholds of a 30 % increase to traffic flows along the A83(T) (both directions), HGV trip generation is significantly increased for the worst-case scenario and slightly over the threshold for the average day.

12.7.3 Scenario 2: Traffic Increase Summary

93. The results above show that all percentage increases in total traffic volumes are well below the IEMA thresholds (i.e. an increase of 30 %); however, the increase in HGV traffic along the A83(T) Hall Street, Campbeltown are in exceedance of the IEMA thresholds.

94. Under Scenario 2, the largest increase would be where the total traffic flows increase by 8.7 % (32.7 % HGV increase) for a worst-case day.

95. The average day during the construction period would see only a 5.9 % increase to total traffic flows and 15.7 % increase to HGVs.

96. In summary, while total traffic levels are within the IEMA thresholds of a 30 % increase to traffic flows along the A83(T) (both directions), HGV trip generation is slightly increased for the worst-case days.

12.7.4 Abnormal loads

97. The abnormal load vehicles are large and will be up to and around 5 m in width for the tower sections and nacelle. By comparison the A83(T) is a standard two-way road ranging between 6.5 m and 8 m in width. The vehicles will reduce in size to a typical HGV when leaving the Site.

98. The following factors have been considered in order to identify an estimate of the likely travel time for abnormal loads between Campbeltown Harbour and the Site:

- there are no obvious locations, except on bends, where oncoming traffic would not be able to pass the abnormal loads with caution;
- the route through Campbeltown has already been improved for abnormal loads associated with wind turbines; and a lorry is restricted to two thirds the speed (40mph) of a car (60mph) and would need to slow down on some of the bends. Therefore, it will take roughly two three times the length of time that a car journey would take.

99. Given the above, an estimate of between 1 hour 50 minutes and 2 hours 30 minutes has been identified.

12.7.5 Potential Effects

12.7.5.1 Effect on Driver Severance and Delay

100. The IEMA guidance states that there are a number of 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.

101. The main potential impact of driver severance and delay would relate to the transportation of abnormal loads, which are set out in **Paragraphs 121 to 125** of this Chapter.

12.7.5.2 Effect on Road Safety

102. **Table 12.2** and **Table 12.4** define road safety as 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.

103. The accidents recorded within the Study Area are set out in **Paragraphs 54 to 57** of this Chapter. A total of 121 injury accidents were recorded within the Study Area: 92 resulting in a slight injury, 26 resulting in serious injury and 3 resulting in fatal injuries.

104. There would be a large increase in HGVs against baseline HGV flows: however, these would be spread evenly throughout the working hours of 07:00 to 19:00 Monday to Friday and 07:00 to 16:00 on a Saturday.

105. Deliveries of abnormal loads will be delivered to the Site under police escort. Other large components would be moved in accordance with an agreed Traffic Management Plan (TMP).

106. The movement of abnormal loads has the potential to create a general hazard on the highway. All turbine components would be transported via Campbeltown Harbour, and along the A83(T) to the Site. The Abnormal Loads must be delivered to the Site under controlled conditions and under suitable escort. The manner in which abnormal loads are transported along the public highway/trunk road network would be subject to the approval of Transport Scotland, A&BC and Police Scotland in advance and would be planned to ensure road safety is not compromised.

107. In summary, the proposed Development would create 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. The accidents record for the Study Area are low over the five-year study period. Therefore, the level of effect is considered to be **'Slight'** and **'Not Significant'** for both Scenarios 1 and 2.

12.7.5.3 Effect on Community Severance and Delay

108. 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.

109. There are local amenities directly fronting the A83(T) in Tarbert, although the majority of these are close to a sharp bend in the road, where traffic will be travelling at low speeds. Additionally, there are informal crossing facilities located here.

110. In accordance with significance criteria in **Table 12.2** community severance has been classified as a medium sensitivity receptor and the magnitude of change of the proposed Development on community severance would be negligible (<10 % increase in traffic). Therefore, the effect is considered **'Slight'** and therefore **'Not Significant'**, for both Scenarios 1 and 2.

12.7.5.4 Effects on Noise and Vibration

111. 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**.

112. As discussed in **Table 12.3**, the IEMA guidance state that an increase in noise due to an increase in total traffic of less than 25 % is deemed a negligible noise impact to receptors, with anything greater than 25 % requiring a quantitative assessment.

113. **Table 12.14** and **Table 12.15** demonstrate that the maximum traffic increase predicted for the proposed Development is 245 two-way vehicle movements per day for Scenario 1 on A83(T) Kennacraig and 204 two-way vehicle movements per day for Scenario 2 on the A83(T) Kennacraig, respectively.

114. This is 10.5% of the current number daily vehicle movements along A83(T) Kennacraig in Scenario 1 and 8.7 % for Scenario 2 and hence, the traffic noise effects are considered to be **'Slight'** and **'Not Significant'**. This corresponds with the findings of the noise assessment which describes the full environmental effects of noise and vibration in **Chapter 13**.

12.7.5.5 Effects on Vulnerable Users

115. Vulnerable road users are considered to be a high sensitivity receptor according to the assessment criteria detailed in **Table 12.2**.

116. The impact of traffic on vulnerable 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.

117. The percentage increase in total traffic would be <10 % for both scenarios. The majority of trip generation from the proposed Development would arise from 20 tonne HGVs. Consequently, there would be a potential worsening of conditions for vulnerable users during the construction period. This magnitude of effect is considered to be **'Moderate'** and the effect on vulnerable road users for both Scenario 1 and 2 is, considered to be **'Major'** during the construction period and **'Significant'** in terms of the EIA regulations.

12.7.5.6 Effects Due to Dust and Dirt

118. 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.

119. HGVs are likely to create the greatest impact in terms of dust and dirt with an anticipated significant increase of HGV traffic on the A83(T) Hall Street, Campbeltown for the worst-case day for both scenarios with a predicated maximum increase of 58.5 % (Scenario 1) and 32.7 % (Scenario 2) and average day increases of 30.2 % for Scenario 1 and 15.7 % for Scenario 2.

120. Given that the magnitude of effect of dust and dirt have been classified as moderate (<60 % increase) and would affect medium sensitivity receptors, the potential effect would be **'Moderate'**, therefore **'Significant'**.

12.7.5.7 Impact Caused by Movement of Abnormal Loads

121. The route from Campbeltown Harbour along the A83(T) to the Site is considered suitable for such movements, subject to the potential need for localised temporary works along the route to facilitate movements. Any modifications to junctions and road layouts would be confirmed through trial run and further surveys, and any modifications or works required to accommodate

abnormal loads would be discussed with the Roads Authority and the necessary consents and permits would be obtained in advance of any works or delivery periods.

122. 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.

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

- Delays due to rolling 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.

124. The residential properties, B&Bs, local shops and other facilities within the Study Area are classed as medium receptors.

125. The magnitude of change of transporting the abnormal loads during the day would be major and therefore consideration should be given to abnormal load deliveries being undertaken overnight to reduce the potential for disruption and delay. Timing of which will be agreed with Police Scotland, Transport Scotland and Argyll and Bute Council.

12.7.6 Mitigation

126. A Construction Traffic Management Plan (CTMP) would be in place to actively mitigate the effects discussed above and an outline CTMP has been prepared at this stage and submitted as part of the Section 36 Application to outline the mitigation measures recommended during the construction stage. This is provided as a **Technical Appendix 12.1**.

127. 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 would be supplemented with additional information as appropriate by SPR'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 A&BC 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.

128. Given the length of the access track to and from the A83(T), it is likely that most loose materials will not be deposited onto the highway. Should there be evidence of this following the commencement of construction, suitable measures would be implemented within the Site to ensure materials are not transferred onto the highway, and road cleaning would take place if required to remove any deposits that are carried from the Site.

129. In addition, further details of the Abnormal Load Assessment would be provided to Transport Scotland to secure permissions for the movement of abnormal loads and would include detail 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. It may also provide details of passing places such as those identified in **Table 12.16**, to assist in minimising the delay experienced by vehicles on the A83(T), albeit very few predicted during the night. A separate Abnormal Transport Management Plan (ATMP) would be prepared for the transport of the AILs.

Table 12.16: Potential Abnormal Load Passing Places

Location	Length (metres)	Distance from Campbeltown (miles)	Distance from Site (miles)	Vehicle Size Suitability	Requirements
1. A83(T) South of Lagalgrave Farm	95	7.1	27.7	Small to Medium	N/A
2. Muasdale	125	14.9	19.9	Small to Medium	N/A

Location	Length (metres)	Distance from Campbeltown (miles)	Distance from Site (miles)	Vehicle Size Suitability	Requirements
3. Tayinloan	230	18.7	16.1	Small to Medium	N/A
4. A83(T) North of Ballochroy	85	23.9	10.9	Small to Medium	May require convoy to drive on enough to allow cars/lorries in passing point then reverse slightly to allow them out
5. A83(T) near Corriechrevie Beach	45	24.1	10.7	Small to Medium	May require convoy to drive on enough to allow cars/lorries in passing point then reverse slightly to allow them out
6. Rochanan Point Car Park	60	24.9	9.9	Small to Large	Would require convoy to drive on enough to allow cars/lorries in passing point then reverse to allow them out. Check to see if this would be suitable for large vehicles
7.South of Clachan	40	26.4	8.4	Small to Medium	Would require convoy to drive on enough to allow cars/lorries in passing point then reverse to allow them out. Check to see if this would be suitable for large vehicles
8. Clachan	50	26.5	8.3	Small to Large	Would require convoy to drive on enough to allow cars/lorries in passing point then reverse to allow them out. Check to see if this would be suitable for large vehicles
9. South of Clachan Filling Station	50	26.6	8.2	Small to Large	Would require convoy to drive on enough to allow cars/lorries in passing point then reverse to allow them out. Check to see if this would be suitable for large vehicles
10. South of Gartnagrenach	45	28.3	6.5	Small to Medium	Would require convoy to drive on enough to allow cars/lorries in passing point then

Location	Length (metres)	Distance from Campbeltown (miles)	Distance from Site (miles)	Vehicle Size Suitability	Requirements
					reverse to allow them out.
11. South of Gartnagrenach	40 m	29.6	5.2	Small to Medium	Would require convoy to drive on enough to allow cars/lorries in passing point then reverse to allow them out.

130. Both documents 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 through a special licence, with the Roads Authority and Police Scotland, should they wish to attend. Information, with regard to abnormal loads, would be provided to local residents and users of amenities to alleviate stress and anxiety.

12.7.6.1 Vulnerable Road Users

131. The CTMP would ensure that there is appropriate signage along the construction routes to make vulnerable users aware of the additional HGV traffic and to provide the opportunity to plan accordingly. The CTMP would ensure that construction HGVs are road worthy, legally compliant and drivers are made aware that should they be caught driving above the speed limit, a zero-tolerance policy will be adopted, such that any infringement results in that person not returning to site. Each of these measures would contribute to minimising the level of effect experienced by vulnerable road users along the A83(T).

132. This assessment has considered the worst-case possible effect at each location. However, it is anticipated, the traffic levels would be lower than those assessed and spread more evenly across the road network.

133. The reduction in the magnitude of effect from moderate to negligible, results in the residual effects on vulnerable road users after implementation of a CTMP to be **'Minor'** and **'Not Significant'**.

12.7.6.2 Dust and Dirt

134. Due to the length of the on-site access track, the majority of any loose mud and debris collected on construction vehicles is most likely to fall on the access track and therefore unlikely to reach the public highway (the A83(T)). However, should any deposits onto the A83(T) be observed once construction commences, a wheel washing facility would be installed on-site, as set out in the CTMP. This would minimise the amount of material and dirt deposited on the road surface and the site Liaison Officer / appointed contractor would ensure that the public road is kept clean by utilising a mechanical road sweeper if necessary.

135. These are tried and tested methods used to mitigate the spread of dust and dirt from construction sites to the public road network. In any of the above scenarios, the reduction in the magnitude of effect from major to slight, results in the residual effect of dust and dirt to be **'Minor'** and **'Not Significant'**.

12.7.7 Cumulative effects

136. **Chapter 5** of this EIA Report provides further information on the cumulative sites.

137. There are several proposed windfarm developments in Argyll and Bute which may have overlapping construction periods. For the purposes of the cumulative assessment only windfarms which are still in the planning process have been considered. Those that are consented are deemed to have the potential to be under construction or nearing completion by the time development is commenced on the proposed Development and have therefore been excluded from the assessment. Other developments currently in planning being promoted by SPR are excluded as the programming of construction works are within the control of SPR and therefore any potential cumulative construction impacts can be mitigated. Accordingly, the following windfarm projects have been considered in this cumulative assessment:

- Narachan Windfarm.

138. 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 A&BC Planning portal. Only developments which would impact on the same study network as the proposed Development have been included in the cumulative assessment.

139. Combining these with the respective link flows from Scenario 1, as a worst-case, provides the following cumulative assessment, summarised in **Table 12.17** below.

Table 12.17: Cumulative Construction Trip Assessment

Link	Baseline		Narachan WF		Earraghail WF		Cumulative		% Change	
	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs
A83 Hall Street, Campbeltown	2905	159	16	8	**245**	**95**	**3166**	**262**	**9**	**65**
A83 (trunk) Kennacraig	2341	226	140	68	245	95	2726	389	16	72
A83 Kennacraig	2341	226	140	68	245	95	2726	389	16	72
A83 (south of Inverneil)	2932	267	140	68	243	93	3315	428	13	60
A83 Lochgilphead	7704	406	140	68	243	93	8087	567	5	40

140. **Table 12.17** shows, with the absolute worst-case (and highly unlikely scenario) of the maximum vehicular traffic associated with the construction of the proposed Development and cumulative windfarm s occurring simultaneously, the maximum impact on the baseline traffic flows on the A83(T) Kennacraig is 16 %, which is less than the 30 % identified in the IEMA guidelines.

141. **Table 12.17** shows the worst-case cumulative impact of an increase in HGVs against baseline HGVs. The highest percentage increase of the listed locations is 72 % at A83(T) Kennacraig which represents a cumulative magnitude of impact of 'High' on these 'Low' sensitivity receptors resulting in a significance of effect of **'Moderate'**, which may be reduced to **'Slight'** with the proposed mitigation and therefore **'Not Significant'**.

142. The assessment of the cumulative impact of abnormal loads has not been undertaken as these specific vehicle movements would not ever occur at the same time and would be planned fully in an Abnormal Load Traffic Management Plan (ATMP) for each development.

12.7.8 Residual effects

143. Given the temporary nature of construction programme (24 months) and with the implementation of mitigation measures through a CTMP and ATMP, all effects can be effectively managed and are considered to be **'Minor'** or **'Negligible'**. No residual effects remain after mitigation measures have been implemented.

12.8 Summary and Statement of Significance

144. **Table 12.18** provides a summary of the construction environmental effects, in terms transport and access, of the proposed Development.

Table 12.18: Summary of Access, Traffic and Transport Effects

Potential Impact	Duration	Sensitivity	Magnitude	Effect	Significance
Driver severance and delay	Temporary	Low/medium	Low/medium	Slight/moderate	Not significant
Community severance and delay	Temporary	Medium	Negligible	Slight	Not significant
Pedestrian amenity	Temporary	Low/medium	Low/medium	Slight/moderate	Not significant
Vulnerable Road Users	Temporary	High	Moderate	Major	Significant
Noise and vibration	Refer to Chapter 13				
Road safety	Temporary	High	Negligible	Slight	Not significant
Abnormal loads	Temporary	High	Minor	Slight	Not significant
Dust and dirt	Temporary	High	Moderate	Moderate	Significant

145. **Table 12.19** provides a summary comparing the significance of the effects during the construction period before and after the proposed mitigation.

Table 12.199: Summary of Pre/Post Mitigation Access, Traffic and Transport Effects

Potential Impact	Pre-mitigation		Proposed Mitigation	Post-mitigation residual effects	
	Magnitude	Significance		Magnitude	Significance
Driver severance and delay	Low/medium	Not Significant	ATMP for the movement of abnormal loads. Trial Run for abnormal loads prior to commencement of construction. Implementation of an approved CTMP for general construction activities associated with the development. 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.	Slight	Not significant
Community severance and delay	Negligible	Not significant		Negligible	Not significant
Pedestrian amenity	Low/medium	Not significant		Slight	Not significant
Vulnerable Road Users	High	Significant		Slight	Not significant
Road safety	Negligible	Not significant		Slight	Not significant
Abnormal loads	Low	Not significant		Minor	Not significant
Dust and dirt	Medium	Significant		Minor	Not significant

12.9 References

Institute of Environmental Management and Assessment (IEMA), 1993 – *Guidelines for the Environmental Assessment of Road Traffic*

Design Manual for Roads and Bridges (DMRB), Standards for Highways, 2020 – *LA104, Environmental assessment and monitoring*

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

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