Chapter 12

Access, traffic and transport

SCOTTISHPOWER RENEWABLES

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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 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. SPR prepared scoping material for discussion with Argyll and Bute Council (A&BC) and other relevant organisations and stakeholders in the form of a Scoping Report, issued in April 2019, as highlighted in **Chapter 6 Scoping and Consultation**. The scoping responses received from, and discussions undertaken with A&BC, Transport Scotland and West Kintyre County Council (WKCC) have informed the studies undertaken.

3. Access to the Site is only via the A83 which runs past the northern and western ends of the Site. The B842 runs along the eastern side of the peninsula between Campbeltown and Cloanaig and the B8001 which runs north east to Kennacraig from Cloanaig. National Cycle Route (NCN) 78 also follows the B842 and the B8001. The Kintyre Way passes directly adjacent to the south of the Site. These B roads and the Kintyre Way will not be used by any construction vehicles.

4. For the delivery of construction materials, two different delivery scenarios have been assessed. First, a scenario whereby all construction materials (e.g., concrete for foundations and aggregate for access tracks) are delivered to the Site. The second scenario, and the one preferred by ScottishPower Renewables, is for 100% of access track aggregate to be sourced from the onsite borrow pits, thereby reducing the total number of heavy goods vehicle movements. Both scenarios result in increases in heavy goods vehicles movements on the A83, but the second scenario at a lower rate (57% average increase) compared to the first (103% average increase).

5. The delivery of the wind turbines would be from Campbeltown along the A83. The vehicles would be regarded as abnormal loads and be around 5 m in width. Each delivery would take between 1 hour 20 minutes to 2 hours 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 to enable the safe delivery of the wind turbine parts in agreement with Transport Scotland.

6. The proposed Development also includes a new Site entrance which is designed to safely allow the delivery of wind turbines and construction materials which would also minimise disturbance to Glebe Cottage at the existing entrance to the Site.

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 three other windfarm projects (High Constellation, Airigh and Eascairt) occurring simultaneously, would be a 25% increase on baseline traffic flows on the A83. 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 best practice measures which would be outlined in a Construction Traffic Management Plan (CTMP). Consequently, no significant effects are predicted to occur as a result of the access, traffic and transport impacts.

12.2 Introduction

8. This Chapter considers the environmental impacts of changes to access, traffic and transport as a result of 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.

9. 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.

10. 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.

11. For the worst-case assessment, the assumptions used in the assessment are as follows:

- 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 but has been included to ensure a robust assessment; and
- future traffic increases associated with the construction of the proposed Development measured against existing traffic flows, with no allowance for any growth in baseline traffic, thus ensuring that the highest level of impact is assessed.

12. This Chapter does not focus on the transport configurations made for the movement of wind turbine components to the site entrance. The off-site delivery routes would be considered in the separate Abnormal Loads Route Assessment (ALRA), which would include swept path analysis and a detailed review of the preferred routes for access. Given the identified routes have been used previously for the transportation of abnormal loads associated with windfarm developments, it is considered that there would be no major issues for the use of the routes, notwithstanding any mitigation that is required.

13. 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 every day fluctuation.

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

12.3 Approach to assessment and methods

15. This Chapter takes an appropriate and topic specific approach to assessment of the proposed Development based on the design parameters set out in **Chapter 3 Proposed Development**. This Chapter provides a worst-case assessment for site access, traffic and transport and presents information for consultees and the decision makers to comment on and determine the application of the proposed Development.

16. The approach for the assessment of site access, traffic and transport effects has been to define the level of traffic anticipated to access the proposed Development during its construction phase, calculated from first principles and distributed over an

anticipated construction programme of 22 months. The effects of the construction phase traffic have been assessed against the measured baseline in terms of existing traffic levels and then compared to standard practice criteria.

12.3.1 Study area

17. The Site (as defined by the application boundary) is located within the administrative boundary of A&BC as shown in **Figure 12.1**

18. The study area for the assessment of traffic and transport is predicated on the proposed routes to site from the external road network. The A83 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 between the site entrance and Campbeltown Harbour which would be used to transport the wind turbine components to the Site, as well as tower sections which are assumed to come from CS Wind UK, located at Campbeltown Airport, as shown in **Figure 12.2.**

19. In reality, it is likely that the majority of general construction traffic would approach the site from the north, due to the expected locations of site personnel, the potential sourcing of material from the nearby Barrachander Quarry and a nearby concrete supplier and the source 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 in the surrounding area, including Lochgilphead, Tarbert and Ardrishaig.

20. Construction traffic would not approach the Site from the east, through Cour, due to the restricted geometry of the B842. This assumption is consistent with the consultation response received from Argyll and Bute which is detailed in **Table 12.1.** 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 site access, traffic and transport would be unlikely to be significant.

12.3.2 Information and data sources

21. To determine the baseline conditions against which effects of the proposed Development have been assessed, an Automatic Traffic Count (ATC) on the A83 has been obtained in the vicinity of the Site, which is provided in **Technical Appendix 12.1: Traffic Data.**

22. Additionally, data from the Department for Transport (DfT) website has been obtained on the A83 to the north of the site. Annual traffic statistics are accrued via 12-hour manual traffic counts (MTCs), continuous data from ATCs, as well as robust estimation based upon previous data. The location of the traffic count data is shown in **Figure 12.3**.

23. Additionally, road traffic collision (RTC) data for the most recent five-year period from 2014 to 2018 was obtained and provided for by Transport Scotland. The locations of the recorded injury accidents are shown on **Figure 12.4**. Supplementary information from the Crashmap website (www.crashmap.co.uk) has been obtained for the A83 to the south of the site.

12.3.3 Effects scoped out

24. It is estimated that the operational phase of the proposed Development would generate no more than five 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 impact 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 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 the assessment.

29. Should decommissioning of any of the proposed Development be required it is considered that any effects would be less than those resulting from construction of the proposed Development, and as such this potential for decommissioning has been scoped out of further assessment.

12.3.4 Consultation

30. SPR prepared scoping material for discussion with Argyll and Bute Council (A&BC) and other relevant organisations and stakeholders in the form of a Scoping Report, issued in April 2019, as highlighted in **Chapter 6 Scoping and Consultation**. Account has been taken of the scoping responses received from, and discussions undertaken with A&BC, Transport Scotland and West Kintyre County Council (WKCC). A summary of the key points from the relevant responses is shown in **Table 12.1.**

Consultee	Summary of Key Issues	Where Addressed in Chapter
A&BC (Area Roads Engineer)	No objection to the proposal subject to conditions that the Site is served by a direct access from the A83 Tarbert – Campbeltown Trunk Road and there is no vehicular access from the B8007 and B842.	Paragraph 64 and 65
Transport Scotland	Full details should be supplied with the EIA submission as Transport Scotland will require to be satisfied that the size of turbines proposed can negotiate this access.	To be provided prior to construction – see paragraph 126 and 135 for further details
	Any amendments to the trunk road junction will require to be discussed and agreed (via a technical approval process) by the appropriate Trunk Road Area Manager prior to construction. At the application stage, 1:500 scale drawings of what is proposed are required along with swept path plans for the vehicles that are anticipated to use the access.	**Chapter 3 Proposed Development, Figure 3.12** and **Figure 3.13**
	Transport Scotland will require to be satisfied that the size of turbine components proposed can negotiate the selected route and that their transportation will not have any detrimental effect on structures within the trunk road route path. We would, therefore, request that a full Abnormal Loads Assessment report be provided with the Environmental Impact Assessment Report (EIAR) which identifies any pinch points on the trunk road network. Swept path analysis should be undertaken and details provided with regard to any required changes to street furniture or structures along the route.	To be provided prior to construction – see paragraph 126 and 135 for further details
	Transport Scotland would wish to state that in the EIA report, the methods adopted to assess the likely traffic and transportation impacts on traffic flows and transportation infrastructure, should comprise: • Determination of the baseline traffic and transportation conditions, and the sensitivity of the site and existence of any receptors likely to be affected in proximity of the trunk road network; • Review of the development proposals to determine the predicted construction and operational requirements; and • Assessment of the significance of predicted impacts from these transport requirements, taking into account impact magnitude (before and after mitigation) and baseline environmental sensitivity. Where environmental impacts have been fully investigated but found to be of little or no significance, it is sufficient to validate that part of the assessment by stating in the report: • work that has been undertaken e.g. Transportation/ Noise / Air Quality Assessments etc;	Methodology described in 12.3, baseline conditions described in 12.4 and assessment set out in 12.7

Consultee	Summary of Key Issues	Where Addressed in Chapter
	• What this has shown i.e. what impact if any has been identified; and • Why it is not significant.	
WKCC	Can abnormal loads be transported at night?	Discussed in 12.8.1.2

Table 12.1: Key Issues

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

12.3.5 Approach to assessment of effects

32. This assessment has been prepared according to the guidance document *'Transport Assessment and Implementation: A Guide'* published by the Development Department of the Scottish Executive in August 2005.This Chapter also takes into account of the Institute of Environmental Management and Assessment (IEMA) *'Guidelines for the Environmental Assessment of Road Traffic'* (IEMA, 1993), and other departmental design standards.

33. The likely significance of the potential effects from the proposed Development that relate to Site Access, Traffic and Transport have been determined by considering the magnitude of change in traffic movements and the sensitivity of the receptors which would be affected by these changes. This has been undertaken in accordance with the IEMA guidance (1993) and standard good practice, based on the experience of the assessor.

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

35. 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 as 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 severance to communities and the delays to movements between communities;
- noise and vibration – the potential effect caused by additional traffic on sensitive receptors, which in this case relate to residential properties near to the road (see also **Chapter 13 Noise**);
- vulnerable road users and road safety – the potential effect on vulnerable users of the road (e.g. pedestrians/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.

36. 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.

37. 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.

38. **Chapter 5 Environmental Impact Assessment Report** provides further detail on the approach to assessment. Refer back to **Chapter 5** for the general approach and an explanation of the worst-case parameters being assessed in the EIA. **Chapter 5** also sets out the list of cumulative sites, and the approach to cumulative site assessment.

Sensitivity of Receptor

39. 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.

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

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

41. In this context, the IEMA guidance does not define a sensitive area and, 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**.

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 existing 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 legally 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)

Table 12.2: Receptor Sensitivity

Magnitude of Impact

42. 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**.

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	<60% increase in traffic	>60% increase in traffic
Noise	<25% increase in traffic	>25% increase in traffic. Quantitative assessment based on predicted increase in traffic against measured baseline (see **Chapter 13 Noise**)		
Road Safety / Vulnerable road users	<10% increase in traffic	Qualitative assessment of existing accident records and predicted increases in traffic		
Dangerous loads	0% increase in traffic	<30% increase in traffic	<60% increase in traffic	>60% increase in traffic
Dust and dirt	<10% increase in traffic	<30% increase in traffic	<60% increase in traffic	>60% increase in traffic

Table 12.3: Magnitude of Impact

Significance of Effect

43. 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 a 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.

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

Table 12.4: Level of Effect

Potential Cumulative Effects

45. 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.

Assumptions of the Assessment

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

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

47. The predicted increases in traffic levels against the baseline levels have been calculated in this section, and then an assessment of the significance of the effect has been made against the criteria described in **Table 12.2.**

48. As highlighted previously, the IEMA guidelines provide two thresholds when considering predicted increases in traffic, whereby a full assessment of impact would be required:

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

49. 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 threshold of 30% has been applied.

50. The construction working hours for the proposed Development would be 07:00 to 19:00 Monday to Friday and 07:00 to 16:00 on weekends 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 also 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 A&BC.

12.4 Baseline conditions

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

12.4.1 Existing road network

52. The study area for this assessment has been defined as predominantly the A83 between the Site and Campbeltown Harbour to the south and north to Lochgilphead, which is a single carriageway. This section of the A83 is subject to a 60 mph speed limit for the majority of its length, with 30 mph or 40 mph sections through built up areas such as Campbeltown, Tarbert and Lochgilphead.

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

54. The A83 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 is an important route for the community.

12.4.2 Existing traffic flows

55. Baseline traffic flows have been obtained as follows:

- a new ATC on the A83 (south of Gartnagrenach), June 2019;
- DfT Count on the A83 (south of Ardrishaig), 2018; and
- DfT count on the A83 (at Lochgilphead), 2018

56. The ATC and DfT count data are provided in **Technical Appendix 12.1: Traffic Data** and a summary of the average weekday 24 hour and 12-hour (07:00 to 19:00) traffic is provided in **Table 12.5** and **Table 12.6** respectively. The data includes directional and two-way flows.

57. The 12-hour flows (19:00 to 07:00) are also shown at the A83 south of Gartnagrenach (**Table 12.7**) to provide context to the traffic flows during the night, when it is proposed to transport the abnormal loads from Campbeltown Harbour.

Count Location	Source	Direction	Total	HGV	% HGV
A83 south of Gartnagrenach	Nationwide Data Collection (June 2019)	North	815	54	6.6
		South	868	48	5.6
		2-Way	1683	102	6.1
A83 south of Ardrishaig	DfT Counts, 2018[1]	North	1414	128	9.1
		South	1407	131	9.3
		2-Way	2821	259	9.2
A83 at Lochgilphead		East	3883	182	4.7
		West	3545	213	6.0
		2-Way	7428	395	5.3

Table 12.5: Average Weekday 24 Hour Traffic Flows

Count Location	Source	Direction	Total	HGV	% HGV
A83 south of Gartnagrenach	Nationwide Data Collection (June 2019)	North	815	54	6.6
		South	868	48	5.6
		2-Way	1683	102	6.1
	DfT Counts, 2018[2]	North	1414	128	9.1

[1] Estimated from ATC data in 2009
[2] 12-hour flows estimated using the A83 south of Gartnagrenach ATC

Count Location	Source	Direction	Total	HGV	% HGV
A83 south of Ardrishaig		South	1407	131	9.3
		2-Way	2821	259	9.2
A83 at Lochgilphead		East	3883	182	4.7
		West	3545	213	6.0
		2-Way	7428	395	5.3

Table 12.6: Average Weekday 12 Hour (daytime 07:00 to 19:00) Traffic Flows

Count Location	Source	Direction	Total	HGV	% HGV
A83 south of Gartnagrenach	Nationwide Data Collection (June 2019)	North	109	8	7.5
		South	146	9	6.5
		2-Way	255	18	6.9

Table 12.7: Average Weekday 12 Hour (night time 19:00 to 07:00) Traffic Flows

12.4.3 Accident records

58. Personal Injury Accident (PIA) data covering the study area have been obtained from Transport Scotland, supplemented by data from Crashmap (www.crashmap.co.uk) for the five-year period between 2014 and 2018 (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.

59. The accident analysis is used to inform the review of the proposed route where any deficiencies in the road layout and condition are identified. A total of 54 accidents were recorded across the study area (which is around 25 miles of the A83) during the five-year period. Of these, 43 resulted in slight injury (slight shock with occurrences of sprains or bruises) and 11 resulted in serious injury (breakages, lacerations, concussion or hospital admittance). There were no fatalities recorded within the data period.

60. For the purpose of the accident review the study area has been split into three sections of road network. These are:

- Campbeltown to the Site;
- the Site to Tarbert; and
- Tarbert to Lochgilphead.

61. The number and severity of accidents recorded in each of the three sections is provided in **Table 12.8.**

Section	Slight	Serious	fatal
Campbeltown to the Site	13	6	0
The Site to Tarbert;	9	2	0
Tarbert to Lochgilphead	21	3	0

Table 12.8: Accident Records

12.4.4 Existing network performance

62. 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 (around 5 to 9%) and so can support an increase;
- The study area has a low accident record; and
- There are no further improvement works that have been proposed to the roads within the study area.

12.5 Proposed Development parameters - Traffic and Transport

63. The proposed Development is described fully in **Chapter 3 Proposed Development**. A summary is provided here highlighting those features of the proposed Development pertinent to the Traffic and Transport assessment.

12.5.1 Site access and onsite tracks

64. There is an existing access track off the main highway network (the A83), adjacent to Glebe Cottage, south of Gartnagrenach. Two access points are currently included in the proposed Development. This comprises an existing access at Glebe Cottage and a new access 180 m south of Glebe Cottage. Both access points would require works prior to the delivery of turbine blades to the Site. However, the new access is the preferred access as deliveries to the Site would be directed away from the cottage avoiding any disturbance and visual intrusion for the residents of the cottage, and also providing better alignment for the delivery of the larger components to enter the Site. However, in the absence of current agreement from A&BC and Transport Scotland, who have verbally agreed to the design of the new access, both accesses are included in the proposed Development and assessed in this EIA Report.

65. **Figure 3.12** and **Figure 3.13** illustrate the design of the access points, both of which require works to create an access point suitable for the delivery of turbines to the Site. Should the new access be approved, SPR would not undertake the upgrade improvements needed at Glebe Cottage preferring instead to create the new access illustrated in **Figure 3.12** and this could be controlled through a condition.

66. The Site currently comprises 4.98km of existing track. Approximately 13.66 km of new onsite access tracks and approximately 4.4 km of upgraded track would be required to provide access to the wind turbines, control building compound, solar areas and construction compound **(Figure 3.14).** Indicative track details are shown on **Figure 3.11**

12.5.2 Abnormal load access route

67. The proposed abnormal load route to the Site would be from Campbeltown Harbour to the Site as well as the tower sections from the assumed source of CS Wind UK, as shown in **Figure 12.2**.

68. Given that the A83 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

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

70. For the purposes of this assessment, it is assumed that construction is likely to begin in the first quarter of 2022. The main construction works would be undertaken during months 6 to 13. The final two months of the construction programme would comprise a wind turbine (WTG) and solar Reliability Run and snagging followed by take-over activities.

12.5.4 Construction materials

71. The proposed Development would require the transportation of a range of construction materials to the Site. The key elements of construction work which would result in trip generation have been summarised in **Table 12.9.**

Key Work Element	Details and Assumptions	Conventional HGVs	Abnormal Loads
Site Establishment	Delivery of Site cabins and plant for construction activities at commencement of construction and later removal from Site.	Yes	No
Borrow Pit	Delivery of plant associated with establishing the borrow pit.	Yes	No
Access track upgrade and Construction	13.66km of new onsite track, together with floating tracks, passing places and turning heads.	Yes	No

Key Work Element	Details and Assumptions	Conventional HGVs	Abnormal Loads
Solar Arrays	Delivery of PV panels Frames/Posts Aggregates Inverters Transformer and Switchgear	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 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. Bringing in of crane equipment to erect turbines. Includes escort vehicles associated with movement of abnormal loads.	Yes	Yes

Table 12.9: Construction Activities Requiring Vehicle Trips

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

73. While borrow pits are proposed on Site, a robust assessment of a worst-case scenario would 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, these are:

- **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:** 100% of aggregate is assumed to be sourced from the proposed five onsite borrow pits with all remaining construction materials assumed to be sourced from offsite locations.

74. An estimation of the material quantities for all elements of the proposed Development has been made. **Table 12.10** provides a summary of the material quantities (aggregates only) required to be imported when referring to a worst-case scenario.

Infrastructure		Material Quantities	
Access Tracks	Access Tracks on site (new)	76,496 m^3	152,992 t
	Existing Upgraded	4,420 m^3	8,840 t
	Floating Track	7,896 m^3	15,792 t
	Track to solar farm	6,496 m^3	12,992 t
	Recreational Access Track	2,680 m^3	5,360 t
	Access Track to Met Mast	32 m^3	64 t
	Access Track to Borrow Pit (Temporary)	240 m^3	480 t
	Passing Places	4,200 m^3	8,400 t
Construction Compound	Substation	7,500 m^3	1,5000 t
	Met Mast Working area	1,250 m^3	2,500 t
	Laydown Area	3,750 m^3	7,500 t
	Construction Compound	3,750 m^3	7,500 t
Turbine Foundations	Turbine Bases - formation only	2,759 m^3	5,518 t
	Fill above Turbine Bases	35,568 m^3	71,136 t
	Crane Pads	37,240 m^3	74,480 t
	Crane Pad boom support	1,862 m^3	3,724 t
	Blade laydown and ancillaries	760 m^3	1,520 t
	Turning Heads	2,730 m^3	5,460 t
Total (Scenario 1)		**199,629 m^3**	**399,258 t**

Table 12.10: Estimated Material Quantities – Scenario 1: Worst Case

75. **Figure 3.1** shows the Site layout and infrastructure. The borrow pits are numbered BP01 to BP05 and their locations within the proposed Development are shown and are summarised as follows:

- **BP01** will be approximately 193 m x 135 m. The extent of aggregate extraction from this borrow pit is assumed to be 291,816 m^3;
- **BP02** will be approximately 180 m x 95 m. The extent of aggregate extraction from this borrow pit is assumed to be 164,160 m^3;
- **BP03** will be approximately 180m x 106m. The extent of aggregate extraction from this borrow pit is assumed to be 137,376 m^3
- **BP04** will be approximately 167 m x 70 m. The extent of aggregate extraction from this borrow pit is assumed to be 46,670 m^3; and
- **BP05** will be approximately 180 m x 100 m. The extent of aggregate extraction from this borrow pit is assumed to be 100,800 m^3

76. Scenario 2 is the more realistic 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, no additional importation of aggregates would be required for Scenario 2.

77. **Table 12.11** provides material quantities for all other materials other than aggregate.

Infrastructure		Material Quantities	
Bases, Substation and met masts	Concrete	9,270 m^3	18,540 t
Turbine Foundations	Installation 6N Structural Fill	3,749 m^3	7,499 t
	Blinding	538 m^3	850 t
	Installation of Can/Bolts	19 no.	
	Reinforcement	1,556 t	
	Plinth Shutter	59 m^3	118 t
	Base Slab Perimeter Shutter	83 m^3	166 t
	Ducts (200mm diameter)	114 no.	
	Ducts (75mm diameter)	114 no.	
	Transformer Plinths	19 no.	

Infrastructure		Material Quantities	
	Step Plinth	19 no.	
Electrical Connection	Sand Layer – 6m x 3m x 3,400m	1,292 m^3	2,584 t
	Cable – Drums hold 500m	5,667 m^3	12 t
Control Building	Reinforcement	82 t	
Substation Compound	Imported type 1 running surface	1,085 m^3	2,169 t
	Imported 6F2 Capping	2,172 m^3	4,345 t
	Class 1C1 Roadbox bulk fill	5,428 m^3	10,855 t
	Class 1 general fill	14,533 m^3	29,066 t
Temporary Power Performance Masts	Crane hardstanding (70m x 40m x 1m)	5,911 m^3	11,822 t
	Blinding (10m x 10m x 0.075m)	17 m^3	34 t
	Reinforcement (150kg/m3)	-	41 t
	Shuttering (8m x 4m sides x 2m high)	64 m^2	135 m^2

Table 12.11: Estimated Material Quantities – Excluding Aggregate (Both Scenarios)

12.6 Trip generation

12.6.1 HGV trip generation calculations

78. 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 **Tables 12.10** and **12.11**. These have then been doubled to provide the two-way movements that would occur from delivery and then returning vehicles, as shown by **Table 12.12**.

Infrastructure Item		Load Size	Scenario 1 No. of loads	Scenario 1 Two-way Movements	Scenario 2 No. of loads	Scenario 2 Two-way Movements
Access Tracks	Access Tracks on site (new)	20 t	7,650	15,299	-	-
	Existing Upgraded	20 t	442	884	-	-
	Floating Track	20 t	790	1,579	-	-
	Track to solar arrays	20 t	650	1,299	-	-
	Recreational Access Track	20t	268	536	-	-
	Access Track to Met Mast	20 t	3	6	-	-
	Access Track to Borrow Pit (Temporary)	20 t	24	48	-	-
	Passing Places	20 t	420	840	-	-
Construction Compound	Substation	20 t	750	1,500	-	-
	Met Mast Working area	20 t	125	250	-	-
	Laydown Area	20 t	375	750	-	-
	Construction Compound	20 t	375	750	-	-
Turbine Foundations	Bases (Formation)	20 t	276	552	-	-
	Fill above Turbine Bases	20 t	3,557	7,114	-	-
	Crane Pads	20 t	3,724	7,448	-	-
	Additional Laydown	20 t	186	372	-	-
	Installation 6N Structural Fill	20 t	296	592	296	592
	Blinding	20 t	43	85	43	85
	Installation of Can/Bolts	-	1	2	1	2
	Reinforcement	20t	61	123	61	123
	Plinth Shutter	-	1	2	1	2
	Base Slab Perimeter Shutter	-	1	2	1	2
	Ducts (200mm diameter)	-	1	2	1	2
	Ducts (75mm diameter)	-	1	2	1	2
	Transformer Plinths	-	15	30	15	30
	Step plinth	-	15	30	15	30
Electrical Connection	Sand layer – 6m x 3m x 3,400m	20 t	102	204	102	204
	Cable – drums hold 500m	-	12	24	12	24
Control Building	Reinforcement	20 t	4	8	4	8
Substation Compound	Imported Type 1 running surface	20 t	86	171	86	171
	Imported 6F2 capping	20 t	172	343	172	343
	Class 1C1 Roadbox bulk fill	20 t	429	857	429	857
	Class 1 General Fill	20 t	1,147	2,295	1,147	2,295
Anemometry Masts	Crane Hardstanding (70m x 40m x 1m)	20 t	467	933	467	933
	Blinding (10 x 10 x 0.075m)	20 t	1	2	1	2
	Reinforcement (150kg/m^3)	20 t	1	2	1	2
	Shuttering (8m x 4m sides x 2m high)	-	6	12	3	6
	3m high anti-climb fence	-	1	2	1	2
	Supply and Erection of Mast	-	5	10	5	10
Total			24,155	48,309	4,541	9,081

Table 12.12: Total Number of HGV Trips (Conventional HGVs)

12.6.2 Programme

79. The two-way movements for HGVs have been distributed over the anticipated 22-month construction programme according to the relevant activity, for both Scenario 1 and Scenario 2. 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 as shown in **Table 12.13** for Scenario 1 and **Table 12.14** for Scenario 2.

Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Forestry felling and export	45	45	45	45	45																	
Site establishment		40	40																			
Access road improvements			10	10	10	10																
Construction of haul road & site access to borrow pits					1	1	1	1														
Construction of access tracks, crane pad and compounds						148	148	148	148	148	148											
Turbine & Solar foundation construction							140	140	140	140	140	140										
Substation/storage - civil and electrical works								35	35	35	35	35	35									
Cable Trenching, Installation and Backfilling									3	3	3	3	3									
Crane delivery													2									
Turbine & Solar delivery, erection and commissioning														10	10	10	10	10	10	10		
Reinstatement and Restoration Works																			5	5	5	5
Total	0	85	95	55	56	159	288	323	325	325	325	177	40	10	10	10	10	10	15	15	5	5

Table 12.13: Two-Way HGV movements per Construction Month: Scenario 1

Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Forestry felling and export	45	45	45	45	45																	
Site establishment		-	-																			
Access road improvements			-	-	-	-																
Construction of haul road & site access to borrow pits					-	-	-	-														
Construction of access tracks, crane pad and compounds						-	-	-	-	-	-											
Turbine & Solar foundation construction							140	140	140	140	140	140										
Substation/storage - civil and electrical works								35	35	35	35	35	35									
Cable Trenching, Installation and Backfilling									3	3	3	3	3									
Crane delivery													2									
Turbine & Solar delivery, erection and commissioning														10	10	10	10	10	10	10		
Reinstatement and Restoration Works																			5	5	5	5
Total	45	45	45	45	45	0	140	175	178	178	178	178	40	10	10	10	10	10	15	15	5	5

Table 12.14: Two-Way HGV movements per Construction Month: Scenario 2

12.6.3 HGV trip generation summary

80. The maximum level of two-way trip generation for the two construction programmes and the two different aggregate sourcing scenarios are as follows:

- Scenario 1, the maximum number of daily two-way HGV movements is 325; and
- Scenario 2, the maximum number of daily two-way HGV movements is 177;

12.6.4 Light vehicle trip generation

81. Light vehicles trips (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.

82. Light vehicle trips would be generated by the approximately 150 workers who would be working on the Site during the construction phase. As an absolute worst case, there would be a maximum of 300 two-way movements daily; however, it is more likely that the majority of the workforce will car share with 2 or more arriving and leaving together, and therefore 50% has been applied to the trip generation.

12.6.5 Total trip generation

83. The total trip generation (maximum daily and average) for a 22-month construction programme for HGV and LGV is set out in **Table 12.15**.

	Scenario 1			Scenario 2		
	HGV	LGV	Total	HGV	LGV	Total
Maximum	325	150	475	177	150	327
Average	109	114	223	63	114	177

Table 12.15: Maximum and Average Daily Two-Way Vehicle Movements

12.6.6 Trip distribution

84. All construction vehicles would enter the Site along the access track from the west, having travelled the length of the A83 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)

85. For Scenario 1, it is assumed the aggregate would be source from Barrachander Quarry, which is south of Tarbert.

86. It has been assumed that staff working at the construction site would either live locally or stay in bed & breakfasts, guest houses or hotels for the duration of the construction programme. Therefore, is has been assumed that 50% would arrive from the A83 south and 50% from the A83 north for the purposes of this assessment.

87. All abnormal loads would arrive on the A83 from the direction of Campbeltown to the south of the Site.

12.7 Assessment of effects

88. 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 Proposed Development**.

12.7.1 Construction effects

89. The impact of the proposed Development has been assessed over the 12-hour weekday period 07:00 to 19:00, which considered the natural peak usage of the road network. Additionally, given it is proposed to transport the abnormal loads overnight when baseline traffic is significantly less, consideration of the impacts between 19:00 and 07:00 for those vehicle movements between Campbeltown Harbour and the Site has been undertaken.

90. The increase in traffic flow along the A83 (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.

91. **Table 12.16** and **Table 12.17** show the predicted daily total and HGV traffic increases for the two cases above. The baseline traffic flows are those observed on an average weekday over a 12-hour period between 07:00 and 19:00.

Direction	Link	Maximum / Average Day	Baseline		Development		Baseline + Development		Increase %	
			Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs
A83 North of the Site	A83 south of Gartnagrenach	Maximum day	1683	102	400	325	2083	427	24%	319%
		Average day			161	105	1844	207	10%	103%
	A83 south of Ardrishaig	Maximum day	2821	259	245	170	3066	429	9%	66%
		Average day			114	57	2935	316	4%	22%
	A83 at Lochgilphead	Maximum day	7428	395	245	170	7673	565	3%	43%
		Average day			114	105	7542	500	2%	26%
A83 South of the Site	A83 south of Gartnagrenach[3]	Maximum day	1683	102	82	7	1765	109	5%	7%
		Average day			62	5	1745	107	4%	5%

Table 12.16: Predicted Increases in Traffic – 12 Hour Flows (Scenario 1)

Direction	Link	Maximum / Average Day	Baseline		Development		Baseline + Development		Increase %	
			Total	HGVs	Total	HGVs	Total	HGVs	Total	HGVs
A83 North of the Site	A83 south of Gartnagrenach	Maximum day	1683	102	245	170	1928	272	15%	167%
		Average day			115	58	1798	160	7%	57%
	A83 south of Ardrishaig	Maximum day	2821	259	245	170	3066	429	9%	66%
		Average day			114	57	2935	316	4%	22%
	A83 at Lochgilphead	Maximum day	7428	395	245	170	7673	565	3%	43%
		Average day			114	58	7542	453	2%	15%
A83 South of the Site	A83 south of Gartnagrenach	Maximum day	1683	102	82	7	1765	109	5%	7%
		Average day			62	5	1745	107	4%	5%

Table 12.17: Predicted Increases in Traffic – 12 Hour Flows (Scenario 2)

[3] Indicative traffic flows as no count data on A83 south of the site

Scenario 1: Traffic Increase Summary

92. 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 north of the Site (both directions) are in exceedance of the IEMA thresholds.

93. The largest increase would be where the total traffic flows increase by 24% (319% HGV increase) for a worst-case day.

94. The average day during the construction period would see only a 10% increase to total traffic flows but a significant 103% increase to HGVs.

95. There is a negligible increase (5%) in total traffic on the A83 to the south of the Site (both directions).

96. In summary, while total traffic levels are within the IEMA thresholds of a 30% increase to traffic flows on the A83 to the north of the Site access (both directions), HGV trip generation is significantly increased for both the worst-case scenario and the average day.

Scenario 2: Traffic Increase Summary

97. 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 north are in exceedance of the IEMA thresholds.

98. Under scenario 2, the largest increase would be where the total traffic flows increase by 15% (167% HGV increase) for a worst-case day.

99. The average day during the construction period would see only a 7% increase to total traffic flows but a significant 57% increase to HGVs.

100. In summary, while total traffic levels are within the IEMA thresholds of a 30% increase to traffic flows on the A83 to the north of the site access (both directions), HGV trip generation is significantly increased for both the worst-case scenario and the average day.

Abnormal Loads

101. 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 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.

102. The following factors have been considered in order to identify an estimate of the likely travel time for abnormal loads between Campbeltown Harbour / CS Wind UK 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;
- None of the bends along the route are severe and none would require the lorry to slow down to a walking pace; and
- a lorry is restricted to two thirds the speed (40 mph) of a car (60 mph) and would need to slow down on some of the bends. Therefore, it will take roughly two to three times the length of time that a car journey would take.

103. Given the above, an estimate of between 1 hour 20 minutes and 2 hours has been identified.

104. The hourly two-way average vehicle flow on the A83 (for the count data available at south of Gartnagrenach) between 19:00 and 07:00 is 21, which would result in a small number of users of the A83 impacted during the delivery of an abnormal load during these hours. Additionally, between the hours of 01:00 and 03:00, the average two-way flow is 7 vehicles and, therefore, if the abnormal loads were to be transported during these hours, the impact on users of the A83 would be largely imperceptible.

12.7.2 Potential effects

Effect on Driver Severance and Delay

105. 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 parked cars 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.

106. The main potential impact of driver severance and delay would relate to the transportation of abnormal loads, which are set out in Paragraphs 126 to 131.

Effect on Road Safety

107. **Table 12.2** and **12.3** define road safety as a high sensitivity receptor with an increase of traffic levels greater than 10% requiring a quantitative assessment of existing accident records.

108. The accidents recorded within the study area are set out in paragraphs 58 to 61. A total of 54 injury accidents were recorded within the study area; 43 resulting in slight injury and 11 resulting in serious injury. There have been no fatal injuries.

109. 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.

110. Deliveries of abnormal loads will be delivered to Site under police escort. Other large components would be moved in accordance with an agreed CTMP.

111. The movement of abnormal loads has the potential to create a general hazard on the highway. All turbine components would be transported via Campbelltown Harbour with exception of the towers, assumed to be from CS Wind as long as financially viable, and along the A83 to the Site . The Abnormal Loads must be delivered to the Site under controlled conditions and under a 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.

112. 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 accident records for the study area are good over the five-year study period. Therefore, the level of effect is considered to be slight and not significant.

Effect on Community Severance

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

114. There are local amenities directly fronting the A83 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.

115. In accordance with the 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 minor (<30% increase in total traffic). Therefore, the effect is considered slight and therefore not significant, for both Scenarios 1 and 2.

Effects on Noise and Vibration

116. The effects from 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**.

117. As discussed in **Table 12.3**, the IEMA Guidelines 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.

118. The maximum traffic increase predicted for the proposed Development is 400 two-way vehicle movements per day for Scenario 1 on the A83 north between the Site and Barrachander Quarry and 245 two-way vehicle movements per day for Scenario 2 on the A83 north of the site.

119. This is 25% of the current number of daily (12 hour, 07:00 to 19:00) vehicle movements along the A83 south of Gartnagrenach in Scenario 1 and 19% 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 Noise**.

Effects on Vulnerable Road Users

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

121. 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.

122. The percentage increase in traffic would be >10% for both scenarios and for both construction programmes. 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 road 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.

Effects due to dust and dirt

123. The movements 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&B's, local shops and other facilities along the A83, which may experience dust and dirt have been classified as medium sensitivity receptors.

124. HGVs are likely to create the greatest impact in terms of impact of dust and dirt with an anticipated significant increase of HGV traffic on the A83 for the worst-case day for both scenarios with a predicated maximum increase of 319% (Scenario 1) and 167% (Scenario 2) and average day increases of 103% for Scenario 1 and 57% for Scenario 2.

125. Given that the magnitude of effect of dust and dirt have been classified as major (>60% increase in traffic) and would affect medium sensitivity receptors, the potential effect would be moderate and therefore significant.

Impact Caused by Movement of Abnormal Loads

126. The route from Campbeltown Harbour / CS Wind along the A83 to the Site is 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 the Roads Authority and the necessary consents and permits would be obtained in advance of any works or delivery periods.

127. 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.

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

- Delays to drivers due to lane/road closures would be inevitable, though abnormal loads would be timed to avoid the peak hours (night-time movements) and, therefore, abnormal load movements occurring outside of the peak traffic hours would have a temporary minor adverse effect; and
- The perceived effect to residents is subjective and it is likely that the transport of abnormal loads close to properties could lead to local objection, stress and anxiety.

129. The residential properties, B&B's, local shops and other facilities along the A83 in the study area are classed as medium receptors.

130. The magnitude of change of transporting the abnormal loads during the day would be major given the importance of the A83 to local residents, and therefore the effect during the day would be significant.

131. However, it would be SPRs preference to undertake the AIL movements during the night-time to reduce the potential for disruption and delay. Based on the analysis provided in Paragraphs 88 to 91, the magnitude of effect of transporting the abnormal loads during the night would be minor. Therefore, the effect during the night would be slight and not significant.

12.7.3 Mitigation

132. A CTMP would be in place to actively mitigate the effects as discussed above and an outline CTMP has been prepared at this stage and submitted as part of the Planning Application to outline the mitigation measures recommended during the construction stage. This is provided as **Technical Appendix 12.2: CTMP**.

133. 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.

134. Given the length of the access rack to and from the A83, it is likely that the majority of 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.

135. In addition, further details of the Abnormal Load Assessment would be provided to Transport Scoland to secure permissions for the movement of abnormal loads and would include details of any required temporary widening and other road improvement measures, together with detailed consideration of vehicle swept paths, loadings, structural assessments (where required) and temporary street furniture removal details. It may also provide details of passing places such as those identified in **Table 12.18**, to assist in minimising the delay experienced by vehicles on the A83, albeit the very few predicted during the night.

Location		Length	Distance from Campbeltown (miles)	Distance from Site (miles)	Vehicle Size Suitability	Requirements
1	A83 South of Lagalgarve Farm	95m	7.1	22.3	Small To Medium	N/A
2	Muasdale	125m	14.9	14.5	Small To Medium	N/A
3	Tayinloan	230m	18.7	10.7	Small To Medium	N/A
4	A83 North of Ballochroy	85m	24.1	5.3	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 nr Corriechrevie Beach	45m	24.2	5.2	Small to Large	Would require convoy to drive on enough to allow cars/lorries in passing point then reverse to allow them out.

Location		Length	Distance from Campbeltown (miles)	Distance from Site (miles)	Vehicle Size Suitability	Requirements
6	Rochanan Point Car Park	60m	24.9	4.5	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.

Table 12.18: Potential Abnormal Load Passing Places

136. The document would be prepared in consultation with the Roads Authority, Transport Scotland and the emergency services, including Police Scotland. An element of preparation of the CTMP 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 regards to abnormal loads, would be provided to local residents and users of amenities to alleviate stress and anxiety.

12.7.4 Residual effects

137. Residual effects are those that would still occur after mitigation measures have been incorporated into the scheme.

138. Given the temporary nature of the construction programme (22 months) and the implementation of mitigation measures through a CTMP and ATMP, all residual effects are considered to be minor or negligible. This is discussed further for those potential effects identified as significant prior to mitigation.

Vulnerable Road Users

139. 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 complaint 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.

140. This assessment has considered the worst-case possible effect at each location. In reality, the traffic levels would be lower than those assessed and spread more evenly across the road network.

141. 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.

Dust and Dirt

142. 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). However, should any deposits onto the A83 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.

143. 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.

12.7.5 Cumulative Effects

144. **Chapter 5 Environmental Impact Assessment Report** provides further information on the cumulative Sites.

145. There are a number of proposed windfarm developments in Argyll and Bute which may have overlapping construction periods. No other development projects have been identified which could have a potential for a cumulative impact. The following windfarm projects considered in this cumulative assessment are as follows:

- Ronachan Windfarm;
- Willow Windfarm;
- High Constellation Windfarm;
- Airigh Windfarm; and
- Eascairt Windfarm

146. Ronachan Windfarm is at scoping stage and there is no available traffic data. Therefore, no cumulative assessment has been carried out for this project.

147. For the Willow Windfarm, although a planning application has been submitted, no traffic data is available and, therefore, no cumulative assessment can be made at this time. The cumulative traffic effects associated with the High Constellation, Airigh and Eascairt Windfarms commencing in tandem with the proposed Development, have been considered.

High Constellation Windfarm

148. For the proposed High Constellation Windfarm, the daily peak will occur on days where concrete delivery occurs, during months 5 to 7. On 19 non-consecutive days during months 5 to 7 a maximum of 128 vehicle (73 HGV) movements are expected

Airigh Windfarm

149. For the proposed Airigh Windfarm, a maximum of 153 two-way vehicle (73 HGV) movements are expected .

Eascairt Windfarm

150. For the proposed Eascairt Windfarm, a maximum of 112 two-way vehicle (62 HGV) movements are expected.

Cumulative Impact

151. The maximum cumulative impact of construction traffic (excluding AILs) from the above three windfarms with the proposed Development on the A83, to the north of the Site entrance is shown in **Table 12.19** for all traffic and **Table 12.20** for HGVs.

Direction	Link	Other Windfarm Developments				Total Cumulative	Baseline	% increase in total traffic
		High Constellation	Airigh	Escairt	Sheirdrim			
A83 North of the Site	A83 south of Gartnagrenach[4]	n/a	n/a	n/a	400	400	1683	24%
	A83 south of Ardrishaig	128	153	112	245	638	2821	23%
	A83 at Lochgilphead	128	153	112	245	638	7428	9%

Table 12.19: Maximum Cumulative Effects Assessment (All Traffic)

[4] This count location is south of the cumulative windfarm sites and HGV traffic is assumed to be on the A83 north of these sites

Direction	Link	Other Windfarm Developments				Total Cumulative	Baseline	% increase in HGV traffic
		High Constellation	Airigh	Escairt	Sheirdrim			
A83 North of the Site	A83 south of Gartnagrenach[4]	n/a	n/a	n/a	325	325	102	319%
	A83 south of Ardrishaig	73	73	62	170	378	259	146%
	A83 at Lochgilphead	73	73	62	170	378	395	96%

Table 12.20: Maximum Cumulative Effects Assessment (HGVs)

152. As **Table 12.19** shows, even with the absolute worst case (and highly unlikely scenario) of the maximum vehicular traffic associated with the construction of the proposed Development and three additional windfarms occurring simultaneously, the maximum impact on baseline traffic flows on the A83 is 24%, which is less than the 30% identified in the IEMA guidelines where a full assessment of the impact is required.

153. **Table 12.20** shows the worst-case cumulative impact of an increase in HGVs against baseline HGVs. The highest percentage increase of the three locations (319% at A83 south of Gartnagrenach) is equal to the maximum percentage increase of HGVs associated with the proposed Development. The percentage increases at the locations to the north of Tarbert (A83 south of Ardrishaig and A83 at Lochgilphead) are greater than the percentage increases associated with the proposed Development, but significantly less than the 319% at the A83 south of Gartnagrenach.

154. Given the above, is can be concluded that, even in the unlikely scenario of the peak periods of construction activity of the proposed Developments and other windfarm developments occurring simultaneously, the predicted impacts will not be any worse overall, therefore no further consideration of the cumulative impacts of HGVs is required.

155. 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.

12.8 Summary and statement of significance

156. The potential effects associated with the proposed Development are summarised in **Table 12.21.**

Type	Duration	Sensitivity	Magnitude	Effect	Significance
Road safety	Temporary	High	Negligible	Slight	Not Significant
Community severance & delay	Temporary	Medium	Minor	Slight	Not Significant
Noise & vibration	Temporary	Low	Negligible	None	Not significant
Vulnerable road users	Temporary	High	Moderate	Major	Significant
Abnormal Loads	Temporary	High	Minor	Slight	Not Significant
Dust & dirt	Temporary	High	Moderate	Moderate	Significant

Table 12.21: Summary of Predicted Effects (Pre-Mitigation)

157. Following the assessment of traffic impacts, the significance of potential effects that could occur during construction both before and after proposed mitigation measured are presented in **Table 12.22**.

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

Table 12.22: Summary of Predicted Effects (Pre and Post-Mitigation)

12.9 References

Transport Scotland, June 2007 - Abnormal Load Movements – A brief guide to Notification and Authorisation requirements

Institute of Environmental Management and Assessment (IMEA), 1993 - Guidelines for the Environmental Assessment of Road Traffic'

Development Department of the Scottish Executive, August 2005 - Transport Assessment and Implementation: A Guide

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