15. ACCESS TRAFFIC AND TRANSPORT

Executive Summary

This chapter of the EIA Report considers the effect of land based transportation to the proposed development associated with construction, operation and decommissioning. Receptors sensitive to change in traffic flow and composition, located on or near to the proposed delivery route are identified. The effects considered are as follows: Traffic Generation, Accidents and Safety, Driver Delay, Pedestrian Amenity, Severance, Noise and Vibration, Hazardous Loads, Visual Effects, Air Quality and Cumulative Effects.

Baseline traffic flow conditions were established by three automatic traffic counts conducted during May 2018. The anticipated traffic generated during the peak week(s) of construction of the development was then estimated and compared to the measured baseline. In accordance with The Institute of Environmental Assessment Guidelines, the percentage change in overall traffic flow or HGV traffic flow compared with baseline was compared against an upper 30% threshold, and a lower 10% threshold in areas of high sensitivity. Areas where the predicted change exceeded these thresholds were considered in detail.

Three locations where the increase in overall traffic, or HGV traffic, is predicted to exceed the relevant threshold were identified. Major significant effects are predicted to occur on the unnamed road between the A83 and the site entrance in relation to traffic generation and in relation to driver delay. Moderate significant effects are predicted to occur at Glenbarr and Rhunahaorine primary schools in relation to pedestrian amenity.

In relation to the identified areas of significant effects, mitigation measures are provided in the Outline Traffic Management Plan (Appendix 15.2) and are outlined within Section 15.8 of this report. It is anticipated that following implementation of the specified mitigation the significance of the identified effects will be reduced to low and **not significant**. All other effects are predicted to be negligible and **not significant**.

15.1 Introduction

15.1.1 This chapter considers the potential effects on Traffic and Transport associated with the construction, operation and decommissioning of the proposed development. The specific objectives of the chapter are to:

- describe baseline transport infrastructure and traffic flow conditions within the study area;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects, including direct, indirect and cumulative effects;
- describe the mitigation measures proposed to address likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation.

15.1.2 The assessment has been carried out by Arcus Consultancy Services Ltd (Arcus) and in accordance with guidance from the Institution of Civil Engineers and the Chartered Institution of Highways & Transportation.

15.1.3 This chapter is supported by:

- Appendix 15.1: Abnormal Load Route Assessment
- Appendix 15.2: Outline Traffic Management Plan

15.1.4 Figures 15.1 – 15.3 are referenced in the text where relevant.

15.2 Scope of Assessment

Project Interactions

15.2.1 The proposed development has the potential to cause effects on Access, Traffic and Transportation resources within the study area as a result of:

- increased traffic flows;
- changes to the traffic composition;
- congested roads;
- journey delays;
- reduction in safety; and
- degradation of road surface.

Study Area

15.2.2 The site is located approximately 12 km north-west of Campbeltown, Argyll & Bute. No public roads are located within the site. The assessment study area extends to the routes which will be used by construction vehicles between the site and the nearest major trunk road, in this case the A83. Due to its proximity to the site, and its importance as a significant trunk road, the A83 itself will also be considered by this assessment.

15.2.3 Wind turbine components will be delivered by abnormal load vehicle (ALV) from Campbeltown Harbour via the Abnormal Load Route (ALR), this is indicated on Figure 15.1. Other materials are likely to be delivered by heavy goods vehicle (HGV) and will originate from a variety of locations, it is likely that a number of HGV deliveries will approach the site from the north via the A83, although some may also originate from the south.

Scoping and Consultation

15.2.4 Consultation responses received relevant to this assessment are summarised in Table 15.1.

15.2.5 Full details on the consultation responses can be reviewed in Appendix 2.1: Consultation Register

Table 15.1: Consultation Responses		
Consultee and Date	**Summary of Response**	**Comment/Action Taken**
The Scottish Government	It is Scottish Ministers' view that, in all of the circumstances of the present case, the baseline for the purpose of assessment should be the operational Tangy I and Tangy II wind farm (scenario 2). The decommissioning of Tangy I and Tangy II should therefore be assessed as an integral part of the construction of the proposed Tangy IV, being delivered as a single project.	Decommissioning of Tangy I and Tangy II has been fully considered within this chapter of the EIA Report, Chapter 15 Access Traffic and Transport
Transport Scotland	As the proposal includes a larger turbine model to that assessed in the previous ES, we understand that an updated swept path analysis study will be undertaken and we can confirm that Transport Scotland would wish to review the outcome of this study. In addition, a detailed Traffic Management Plan (TMP) will be produced prior to the commencement of construction works. The TMP would provide detail of materials, plant, equipment, components and labour required on site during the construction and operation phases of the development. This is welcomed. As all other elements of the proposal remain unchanged from the consented application, the SR indicates that it is proposed to scope out any assessment of environmental impacts on the local and trunk road network. Transport Scotland considers this to be an acceptable approach.	An updated Abnormal Load Route Assessment has been undertaken for the increased turbine specification and is included in Appendix 15.1 to this EIA Report. An Outline Traffic Management Plan has been developed and is included in Appendix 15.2 to this EIA Report.
Argyll and Bute Council	The EIA Report should include: a plan showing the proposed access point and haul route; a Traffic Management Plan, which should include details of all materials, plant, equipment, components and labour required during the construction, operation and decommissioning phases; and a detailed Method Statement in relation to access and transport of materials, plant and equipment.	These elements have been considered within this chapter of the EIA Report. An Outline Traffic Management Plan has been developed and is included in Appendix 15.2 to this EIA Report.
West Kintyre Community Council	We accept traffic surveys were carried out in 2014 but believe further surveys should be carried out, more especially because there is a strong likelihood that more than one windfarm will be under construction within the area at the same time resulting in a significant increase in the use of HGV's on the A83 which is the only road we on West have for all aspects of daily living, public transport and deliveries etc.	An updated baseline assessment has been undertaken which includes traffic surveys carried out in May 2018, this is detailed in Section 15.5 of this EIA Report

Effects to be Assessed

15.2.6 This assessment considers the following Access, Traffic and Transport effects which have the potential to occur during construction of the Development:

- Traffic Generation;
- Accidents and Safety;
- Driver Delay;
- Pedestrian Amenity;
- Severance;
- Noise and Vibration;
- Hazardous Loads;
- Visual Effects;
- Air Quality; and
- Cumulative Effects

Effects Scoped Out of Assessment

15.2.7 Traffic associated with operation of the Development is expected to be low and is unlikely to give rise to any appreciable traffic effects. Assessment of operational traffic has therefore been scoped out of this assessment.

15.2.8 Effects arising from the process of decommissioning have been scoped out since they are of a similar nature to construction issues, but of a smaller scale and shorter duration. However, the results of decommissioning (i.e. the removal of the existing wind farm) are taken into account as the infrastructure forms part of the construction operations of the proposed development and is therefore included within the assessment of construction effects.

15.3 Methodology

Overview

15.3.1 Baseline traffic flow conditions were established at key locations on routes within the study area. Traffic surveys were undertaken at three locations on routes within the vicinity of the Development. Background traffic growth between the survey date and the anticipated year of construction was applied to the baseline flows.

15.3.2 A desk based assessment of the capacity of routes was undertaken. This study utilised online mapping resources to establish road geometry and layout. Guidance from the Department for Transport (DfT), the Design Manual for Roads and Bridges (DMRB), was used to estimate the capacity of routes from this information.

15.3.3 Sensitive receptors within the study area were identified following a site visit, and through the use of online mapping. This study identified receptors likely to be sensitive to changes in traffic flow or HGV composition.

15.3.4 The anticipated Development traffic was calculated and the construction programme used to determine the peak month of construction, from a delivery perspective, and the average number of deliveries expected throughout the project.

15.3.5 The percentage increase in traffic flow, and HGV composition, on the selected routes was calculated using the factored baseline traffic flow and the anticipated construction traffic.

A screening process was undertaken, as recommended in the Institute of Environmental Management & Assessment – Guidelines for the Environmental Assessment of Road Traffic (the Institute of Environmental Assessment (IEA))1993.

Method of Baseline Characterisation

Baseline Traffic Flow

15.3.6 Baseline traffic flow conditions were established at key locations within the vicinity of the site to enable comparison with the expected Development traffic. Automatic traffic counts (ATCs) were undertaken at three locations from the 16th to the 22nd of May 2018.

15.3.7 ATC locations are indicated on Figure 15.2. These locations were selected so as to enable assessment of all routes that might be used by Development construction traffic, this includes abnormal delivery vehicles approaching from Campbeltown and other traffic which may approach from the north.

Estimation of Road Capacity

15.3.8 A desk study, including review of online mapping resources, was undertaken to assess the capacity of roads within the study area. Geometric parameters of each road were established, and a review of other factors which might influence road capacity was undertaken. This information was then used to make an estimate of the capacity of each road, referring to the Design Manual for Roads and Bridges[1] (DMRB).

Future Baseline Scenarios

Traffic Growth

15.3.9 Background traffic growth will occur on the local road network irrespective of whether or not the Development is constructed. Projected baseline traffic flows for the expected year of construction were calculated by applying traffic growth factors from the National Trip End Model (NTEM) forecasts using the Trip End Model Presentation Program (TEMPRO). NTEM and TEMPRO are designed by the Department for Transport (DfT) and provide forecasts of traffic growth over time for use in local and regional transport models. NTEM and TEMPRO are the industry standard tool for estimating traffic growth.

15.3.10 A traffic growth factor of 1.0028 was calculated for routes in the study using the geographical location of the Development, the baseline year (2018) and the proposed year of construction (2020). The baseline traffic flow information collected for each route was then multiplied by the growth factor to give the estimated traffic flow for the year of construction.

Effects Evaluation Methodology

Receptor sensitivity

15.3.11 Table 15.2 indicates the criteria used to assess the sensitivity of routes and other receptors within the study.

Table 15.2: Receptor Sensitivity

Sensitivity	Description
High	Receptors of greatest sensitivity to changes in traffic flow, would include: People whose livelihood depends upon unrestricted movement within their environment including commercial drivers and companies who employ them, local residents, schools and colleges. Accident hotspots would also be considered
Medium	Traffic flow sensitive receptors, would include: People who pass through the area habitually, but whose livelihood is not wholly dependent on free access. Would also typically include: congested junctions, community services, parks, businesses with roadside frontage, and recreation facilities.
Low	Receptors with some sensitivity to changes in traffic flow:

Table 15.2: Receptor Sensitivity	
Sensitivity	**Description**
	People who occasionally use the road network. Would also typically include: public open spaces, nature conservation areas, listed buildings, tourist attractions, residential roads with adequate footway provision and places of worship.
Negligible	Receptors with very low sensitivity to traffic flows: People not sensitive to transport effects. Would also refer to receptors that are sufficiently distant from the affected roads and junctions.

Impact magnitude

15.3.12 The magnitude of the effect of increase in traffic flow is a function of the existing traffic volumes on routes and the percentage increase in flow as a result of the Development.

15.3.13 The Institute of Environmental Assessment (IEA) Guidelines suggest two broad principles, to be used as a screening process to delimit the scale and extent of assessment. These are:

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

15.3.14 Where the predicted increase in traffic flow is lower than these thresholds then the significance of the effects can be considered to be low or not significant and further detailed assessments are not warranted. Consequently, where the predicted increase in traffic flow is greater than these thresholds, the effects are considered to be potentially significant, and assessed in greater detail.

15.3.15 These guidelines are intended for the assessment of environmental effects of road traffic associated with major new developments giving rise to traffic generation, as opposed to short-term construction. In the absence of alternative guidance and, as the traffic generation during the operational phase is very low, these guidelines have been applied to assess the short-term construction phase of the Development.

15.3.16 It is worth noting that on roads where existing traffic levels are generally low (e.g., rural roads and some unclassified roads), any increase in traffic flow may result in a predicted increase that would be higher than the IEA (1993) guideline thresholds. In these situations, it is important to consider any increase in terms of overall traffic flow in relation to the capacity of the road before making a conclusion in EIA terms.

15.3.17 Any change in traffic flow which is greater than the thresholds set out in the IEA (1993) guidelines would be subject to further analysis using this method to establish if the increased traffic flow is within the capacity of the road. In instances where traffic flow is higher than the IEA (1993) guideline thresholds but within the capacity limits of the road, and the potential magnitude on receptors is minor or negligible, this increase would generally be considered as not significant. It is acknowledged that capacities can be reduced by local conditions.

15.3.18 The criteria used to assess the magnitude of change are presented in Table 15.3.

Table 15.3: Magnitude of Effect	
Magnitude	**Description**
Major	The proposals could result in an appreciable change in terms of length and/or duration to the present traffic routes or schedules or activities, which may result in hardship.
Moderate	The proposals could result in changes to the existing traffic routes or activities such that some delays or rescheduling could be required, which cause inconvenience.

Table 15.3: Magnitude of Effect	
Magnitude	**Description**
Minor	The proposals could occasionally cause a minor modification to routes, or a very slight delay in present schedules, or on activities in the short-term.
Negligible	No effect on movement of road traffic above normal level.

Effects significance

15.3.19 Two broad principles outlined within the IEA Guidelines are used as a screening process to limit the scale and extend of the assessment as detailed in 15.3.13.

15.3.20 For the purposes of this assessment and in accordance with the criteria set out within the IEA guidelines, the scale (magnitude) of any increase in traffic flows on a particular section of the road network as a result of the Development construction activities will determine the significance of any effects associated with such increases. For example, an increase in traffic flows of more than 90% on a particular section of the road network, will likely have a major effect on the road section being assessed.

15.3.21 An assessment has been made of the significance of further effects taking into account the importance / sensitivity of the receptor, the magnitude of effect, the duration/ persistence of the effect and the likelihood of the effect occurring. The criteria used to make judgements on the importance/sensitivity of the receptor(s) is presented in Table 15.2. The criteria used to determine the significance of effects is detailed in Table 15.4.

Table 15.4: Effect Significance Matrix					
Magnitude of Effect	**Sensitivity of Receptor**				
	Very High	**High**	**Medium**	**Low**	**Negligible**
Major	Major	Major	Moderate	Moderate	Minor
Moderate	Major	Moderate	Moderate	Minor	Negligible
Minor	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

15.3.22 Where the significance of effects has been assessed as major or moderate these are considered as **significant** in terms of the EIA Regulations. Effects assessed as minor or negligible have been considered **not significant** in terms of the EIA Regulations.

Assessing cumulative effects

15.3.23 Cumulative effects were considered and have been assessed using the same significance criteria as the Development effects, as indicated in Table 15.4. The magnitude of cumulative effects is taken as the sum of all identified cumulative effects, and those of the Development, which is assessed against the criteria presented in Table 15.3.

Limitations of assessment

15.3.24 Baseline traffic for the anticipated year of construction has been estimated using road traffic growth forecasts published by the DfT. It is possible that unforeseen events for example changes in roads, ferry routes/timetables or visitor attractions may cause growth, or decline, out with the forecasted percentages.

15.4 Baseline Conditions

Baseline Traffic Flow

15.4.1 Baseline traffic flow data was collected at three locations, as shown on Figure 15.2, between the 16th and 22nd of May 2018. The results of the ATCs are summarised in Table 15.5.

Table 15.5: Existing Average Daily Traffic (ADT)					
Ref	**Road**	**Location**	**Total ADT**	**HGV ADT**	**%HGV**
1	A83	South of Kilchenzie	1892	435	23
2	A83	South of Low Ballevain	1717	412	24
3	Unnamed Road	South of High Ballevain Farm	90	16	18

Traffic Growth

15.4.2 Projected baseline traffic flows for the expected year of construction (2020) have been calculated by applying growth factors from the National Trip End Model (NTEM) forecasts.

Table 15.6: Projected Average Daily Traffic (ADT) – 2020					
Ref	**Road**	**Location**	**Total ADT**	**HGV ADT**	**%HGV**
1	A83	South of Kilchenzie	1897	436	23
2	A83	South of Low Ballevain	1722	413	24
3	Unnamed Road	South of High Ballevain Farm	90	16	18

Road Capacity

15.4.3 Typical capacity values for a variety of road types are provided within the Design Manual for Roads and Bridges (DMRB) [1], in which capacity is defined as the maximum sustainable flow of traffic passing in one hour under favourable road and traffic conditions and depends on the road type, width and speed limit defined in kilometres per hour (kph). Table 15.7 gives the estimated capacity of each of the roads within the study.

15.4.4 The unnamed road south of High Ballevain Farm is a narrow single-track road with infrequent and informal passing places. The theoretical capacity of single track roads is difficult to accurately estimate and is dependent on the road geometry and the intervisibility of the passing places, however an estimate is provided within the guidance and is given in Table 15.7.

Table 15.7: Theoretical Road Capacities				
Road	**Type**	**Speed Limit (kph)**	**Capacity (vehicle/hour/direction)**	**Two – Way Hourly Flow**
A83	Rural – Typical Single 7.3m	96	1200	2400
Unnamed Road	Rural – Poor Single 4m	96	140	280

Road Traffic Collision Assessment

15.4.5 A study of all reported road traffic collisions (RTCs) within the last five years within the vicinity of the site entrance and on the ALR between the site and Campbeltown Harbour was undertaken. Eight RTCs in total were identified within this study of which two were identified as 'serious', meaning that they resulted in hospitalisation of one or more casualties, all other RTCs were recorded as 'slight'. No fatal RTCs were recorded in the study. None of the RTCs in the study involved a HGV.

15.4.6 The two serious RTCs occurred on the A83, none of these were in the vicinity of the junction with the Unnamed Road proposed for use in the ALR and none involved a HGV. In both incidents a single vehicle left the left the carriageway and did not collide with any other vehicle.

Other Sensitive Receptors

15.4.7 A number of other receptors of medium or high sensitivity to changes in traffic have been identified and are detailed in Table 15.8. These receptors are either located directly on the

proposed delivery routes, or are located close to and require access to these routes. The sensitivity of these receptors has been estimated using the criteria outlined in Table 15.2.

Table 15.8: Other Sensitive Receptors

Receptor	Sensitivity	Justification
Aqualibrium Leisure Centre, Campbeltown	Medium	Located directly on ALR. Access to the centre requires use of this route. Centre is used by habitual users although is not considered lifeline.
Residential and commercial properties in Campbeltown and on A83 to Unnamed Road at Site.	High	A number of residential and commercial premises front directly onto the ALR on the A83. Residents and businesspersons require unrestricted access to this road for their livelihoods.
Campbeltown Ferry Terminal and Commercial Harbour	High	Both the ferry terminal and commercial harbour are accessed directly from the ALR. Users of these facilities are likely to require unrestricted access.
Campbeltown Airport and adjacent manufacturing facilities	High	Both the airport and the adjacent manufacturing facilities are reliant on the ALR the A83 for access to destinations to the north. They are likely to require unrestricted access to this route.
Machrihanish Dunes Golf Course	Medium	Access to this location from the north requires use of the ARL the A83. This attraction is used by habitual users although is not considered lifeline.
Residential properties and farms located on the A83 north of Site	High	A number of residential and farm premises front directly onto the A83 or are located adjacent to it, this includes (but is not restricted to) the settlements of Bellochantuy, Glenbarr, Tayinloan and Clachan. Residents and farms require unrestricted access to this road for their livelihoods.
Glenbarr and Rhunahaorine Primary Schools	High	These schools front directly onto the A83 and staff and students are required to use the A83 for part of their journey to and from the schools. These receptors may be highly sensitive to changes in HGV traffic volume.

Summary

15.4.8 A summary of the receptors identified as being sensitive to the proposed development and which have been 'scoped-in' to the assessment are given in Table 15.9, together with the justification for inclusion:

Table 15.9: Summary of Receptor Sensitivity

Receptor	Sensitivity	Justification
A83	High	This is a trunk road of national significance and provides a lifeline link to communities on the Kintyre Peninsula.
Unnamed Roads from A83 to Site	High	These roads provide access to number of farms and residential properties and users are likely to require unrestricted access to them for their livelihoods.
Other sensitive receptors identified in Table 15.8	Medium/High	A number of other receptors which front directly onto, or require access via, the A83 were identified. These include residential properties, commercial and leisure facilities and transport hubs. Users may require unrestricted access to these routes for their livelihoods, or in the case of leisure facilities users are habitual and may be inconvenienced by adverse effects on the route.

15.5 Anticipated Construction Development Traffic

15.5.1 A detailed programme of anticipated construction development traffic is provided in Figure 15.3. The following subsections provide detail for each element of work. A summary is provided at the end of this section.

Forestry Operations

15.5.2 Forestry machinery and equipment will be mobilised at the commencement of the construction and removed following completion of forestry operations. This is expected to be delivered on two low loader vehicles, totalling four HGV vehicle movements at the commencement and a further four movements following completion.

15.5.3 Forestry keyholing will be undertaken at the commencement of construction in order to prepare suitable areas at each turbine location for the construction of crane hardstandings, blade laydown areas, foundations and connecting access tracks. Following completion of keyholing forestry operations will commence clear-felling the remainder of the site.

15.5.4 In total, approximately 101,000m^3 of timber is expected to be felled and removed from site. This will result in 4,595 loads of timber (22 tonnes per vehicle) leaving the site. This equates to a total of 9,190 vehicle movements over a period of 17 months.

15.5.5 Table 15.10 indicates the anticipated total number of vehicle movements associated with forestry operations.

Table 15.10: Anticipated Vehicle Movements – Forestry

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Equipment Delivery/Removal	HGV Low Loader	1, 20	8*	4*
Forestry Keyholing	HGV Timber Wagon	3-7	2435	541
Forestry Clear Felling	HGV Timber Wagon	7-19	6755	541
Overall			**9198**	**541**

***Includes transporter vehicle leaving and then returning to site during demobilisation**

Site Mobilisation and Demobilisation

15.5.6 HGV and other vehicle movements will be required during site mobilisation. This will involve the erection of welfare facilities, delivery of site vehicles and importation of plant and equipment including equipment for processing material from the on-site borrow pits. The majority of these movements will be as HGVs and low loaders which will deliver and then depart the site empty.

15.5.7 During site demobilisation the majority of this equipment will be removed from site. Vehicle movements for demobilisation will result from empty HGVs and low loaders travelling to site and then departing loaded. Table 15.11 indicates the anticipated number of vehicle movements associated with site mobilisation and demobilisation.

Table 15.11: Anticipated Vehicle Movements – Site Mobilisation/Demobilisation

Operation	Vehicle Type	Operational Months	Total	Max Monthly
On-site vehicles	Car/LGV**	7, 22	30	15
Construction Compound	HGV Low Loader	7, 22	120*	60*
Borrow Pit Equipment	HGV Low Loader	7, 22	168*	84*
Overall			**318**	**159**

***Includes transporter vehicle leaving and then returning to site during demobilisation**

****Self-propelled vehicles which arrive in one month and depart in another**

Access Track Construction

15.5.8 All stone required for construction of the access tracks is expected to be sourced from on-site borrow pits and processed on site. Therefore, there are not anticipated to be any vehicle movements associated with the importation of stone for access track construction.

15.5.9 Two teams are expected to operate during access track construction. Each team may utilise an excavator, roller and four dumper trucks. It is assumed that the excavators and rollers will be delivered to the site via low loaders at the commencement of this operation and will therefore generate two vehicle trips each for delivery and another two trips during removal, the dumper trucks will be self-propelled to and from the site.

15.5.10 Other materials will require to be imported regularly throughout construction of the access tracks such as geo-membrane, drainage pipes and culvert sections.

15.5.11 Table 15.12 indicates the anticipated number of vehicle movements associated with access track construction.

Table 15.12: Anticipated Vehicle Movements – Access Track Construction

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Plant Delivery	HGV Dump Truck**	9, 17	16	8
	HGV Low Loader (Excavators/Rollers)	9, 17	8*	4*
Material Deliveries	HGV	10-16	28	4
Overall			**52**	**12**

***Includes transporter vehicle leaving and then returning to site following completion of access tracks**

****Self-propelled vehicles which arrive in one month and depart in another**

Turbine Foundation Construction

15.5.12 Each turbine foundation will be formed from ready-mix concrete imported to site. Each foundation will be poured in one continuous session over a single day, with 16 non-consecutive days required in total.

15.5.13 Each foundation will comprise 550m^3 of concrete, which will require 60 or 90 ready-mix vehicle loads, assuming a capacity of 9m^3 or 6m^3 per vehicle respectively. A worst case scenario has been assumed where 90 vehicles per foundation are required. This will result in a total of 2,880 vehicle movements over the 5 months of this phase of works.

15.5.14 Additionally, 1,120 tonnes of steel reinforcement (rebar) will be required, this will result in a 118 HGV movements over this period. Table 15.13 indicates the anticipated number of vehicle movements associated with turbine foundation construction.

Table 15.13: Anticipated Two-Way Vehicle Movements – Turbine Foundation Construction

Operation	Vehicle Type	Operational Months	Total	Max (daily/monthly)
Concrete Delivery	Ready Mix HGV	13-17 (16 days)	2,880	90 (daily)
Rebar Delivery	HGV	13-17	118	26 (monthly)
Overall			**2998**	-

15.5.15 This assessment will consider the effect on individual days in which concrete pouring occurs (90 movements per day). It has been assumed that rebar deliveries will be distributed throughout each month of this phase of works.

Decommissioning of Existing Wind Turbines

15.5.16 The 22 existing wind turbines which comprise the Tangy I and Tangy II Wind Farms are to be removed during construction of the Development. These turbines will be dismantled and removed from site during a three month period.

15.5.17 Abnormal load vehicles will be required to remove certain components from these turbines. It is anticipated that five abnormal load vehicles will be required per turbine, resulting in a total of 220 vehicle movements through the duration of this phase of works. It has also been assumed that two escort vehicles will be required to accompany each abnormal load vehicle, resulting in 440 vehicle movements.

15.5.18 A further two HGV loads per turbine will be required for the removal of ancillary equipment resulting in 88 HGV movements.

15.5.19 Additional traffic will be generated by the removal of other items such as turbine transformers, the substation and control room. These movements are anticipated to number 100 movements over the duration of this phase of works.

Table 15.14: Anticipated Vehicle Movements – Turbine Decommissioning

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Turbine Removal	Abnormal Load Vehicle	15-18	220	72
	Escort Cars/Vans	15-18	440	144
	HGV	15-18	88	29
Removal of Other Equipment	HGV	15-18	100	34
Overall			**848**	**279**

Substation Construction

15.5.20 Material for construction of the substation compound is assumed to be won from on site borrow pits. Electrical components and switchgear will require to be imported, and is predicted to total 40 HGV movements over the eight-month phase of this element.

15.5.21 Two transformers will require to be delivered by abnormal load vehicle due to their weight, this will result in four vehicle movements. Two escort vehicles are assumed to accompany each abnormal load vehicle resulting in eight vehicle movements. Table 15.15 indicates the number of vehicles associated with substation construction.

Table 15.15: Anticipated Vehicle Movements – Substation Construction

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Electrical Components and Switchgear Delivery	HGV	13-21	40	5
Transformer Delivery	Abnormal Load Vehicle	13-21	4	2
	Escort Car/Van	13-21	8	4
Overall			**54**	**11**

Electrical Cabling Delivery

15.5.22 Electrical cabling for wind farm power distribution will require to be delivered and will constitute 48 HGV movements over the period of delivery. Table 15.16 indicates the number of vehicle movements associated with electrical cabling delivery.

Table 15.16: Anticipated Vehicle Movements – Electrical Cabling Delivery				
Operation	**Vehicle Type**	**Operational Months**	**Total**	**Max Monthly**
Electrical Cabling Delivery	HGV	14-21	48	6

Turbine Delivery

15.5.23 Turbines will be delivered as separate components the majority of which will require to be transported by abnormal load vehicle. The towers will be transported in three separate sections and each of the three blades will be transported individually. Two further abnormal load vehicles will be required to transport the nacelle and hub. For the 16 turbines, 128 abnormal load vehicle deliveries will be required which will result in 256 vehicle movements. Following delivery of components, the abnormal load vehicles are able to retract to the size of a standard HGV vehicle for the return journey.

15.5.24 Two escort vehicles are likely to be required to accompany each abnormal load which will result in a worst case of 512 additional vehicle movements. In practice this figure may be reduced where abnormal load vehicles approach the site in convoy and fewer than two escort vehicles per abnormal load are required.

15.5.25 Additionally, 32 HGV vehicle movements will be required for the delivery of turbine accessories and ancillary equipment. Table 15.17 indicates the number of vehicle movements that are expected for turbine delivery.

Table 15.17: Anticipated Vehicle Movements – Turbine Delivery				
Operation	**Vehicle Type**	**Operational Months**	**Total**	**Max Monthly**
Turbine Components	Abnormal Load Vehicle	17-22	256	52
	Escort Cars or Vans	17-22	512	102
Accessories and Ancillary Equipment	HGV	17-22	32	6
Overall			**800**	**160**

Crane Delivery

15.5.26 A large crawler or track mounted crane of approximately 1,000 tonne capacity will be required for turbine erection along with an additional 160 tonne pilot crane. The crawler crane will be transported in component form and assembled on site. This will require approximately 52 HGV movements to be undertaken prior to the commencement of turbine delivery. The pilot crane will be self-propelled although will constitute an abnormal load vehicle due to its weight.

15.5.27 Both cranes will remain on site for the duration of the turbine assembly phase and will also be used for the decommissioning of the old turbines. Table 15.18 indicates the number of vehicle movements associated with crane delivery.

Table 15.18: Anticipated Vehicle Movements – Crane Delivery				
Operation	**Vehicle Type**	**Operational Months**	**Total**	**Max Monthly**
Crawler Crane	HGV	17,22	52	26
Pilot Crane	Abnormal Load Vehicle**	17,22	2	1
Overall			**54**	**27**

****Self-propelled vehicle which will arrive in one month and depart in another**

Fuel Delivery

15.5.28 Fuel will require regular delivery to the site regularly throughout the construction period and is expected to total 8 movements. Table 15.19 indicates the number of vehicle movements associated with fuel delivery.

Table 15.19: Anticipated Vehicle Movements – Fuel Delivery				
Operation	**Vehicle Type**	**Operational Months**	**Total**	**Max Monthly**
Fuel Delivery	HGV Fuel Tanker	7-22	8	1

Construction Personnel and Staff

15.5.29 It is anticipated that an average of 40 staff will be required on site per day throughout the construction phase, months 3-22. For the purposes of this assessment the most recent available Scottish private vehicle occupancy rate[2] of 1.57 people per vehicle was used.

15.5.30 Assuming a 26 day working month, this is expected to result in a total of 13,240 vehicle trips for staff over the course of construction of the Development. Table 15.20 indicates the number of vehicle movements associated with staff.

Table 15.20: Anticipated Vehicle Movements – Staff				
Operation	**Vehicle Type**	**Operational Months**	**Total**	**Max Monthly**
Staff	Car or Minibus	3-22	21,184	1324

Summary

15.5.31 Table 15.21 provides a summary of all deliveries expected for the duration of construction of the Development.

Table 15.21: Anticipated Vehicle Movements – Summary				
Operation	**Vehicle Type**	**Operational Months**	**Total**	**Max Monthly**
Forestry				
Equipment Delivery/Removal	HGV Low Loader	1, 20	8*	4*
Forestry Keyholing	HGV Timber Wagon	3-7	2435	541
Forestry Clear Felling	HGV Timber Wagon	7-19	6755	541
Subtotal			**9198**	**541**
Site Mobilisation/Demobilisation				
On-site vehicles	Car/LGV**	7, 22	30	15
Construction Compound	HGV Low Loader	7, 22	120*	60*
Borrow Pit Equipment	HGV Low Loader	7, 22	168*	84*
Subtotal			318	159
Access Track Construction				
Plant Delivery	HGV Dump Truck	9, 17	16	8
	HGV Low Loader (Excavators/Rollers)	9, 17	8*	4*
Material Deliveries	HGV	10-16	28	4
Subtotal			**52**	**12**
Turbine Foundation Construction				
Concrete Delivery	Ready Mix HGV	13-17 (16 days)	2880	90 (daily)

Table 15.21: Anticipated Vehicle Movements – Summary				
Operation	**Vehicle Type**	**Operational Months**	**Total**	**Max Monthly**
Rebar Delivery	HGV	13-17	118	26 (monthly)
Subtotal			**2998**	
Turbine Decommissioning				
Turbine Removal	Abnormal Load Vehicle	15-18	220	72
	Escort Cars/Vans	15-18	440	144
	HGV	15-18	88	29
Removal of Other Equipment	HGV	15-18	100	34
Subtotal			**848**	**279**
Substation Construction				
Electrical Components and Switchgear Delivery	HGV	13-21	40	5
Transformer Delivery	Abnormal Load Vehicle	13-21	4	2
	Escort Car/Van	13-21	8	4
Subtotal			**54**	**11**
Electrical Cabling Delivery				
Electrical Cabling Delivery	HGV	14-21	48	6
Turbine Delivery				
Turbine Components	Abnormal Load Vehicle	17-22	256	52
	Escort Cars or Vans	17-22	512	102
Accessories and Ancillary Equipment	HGV	17-22	32	6
Overall			**800**	**160**
Crane Delivery				
Crawler Crane	HGV	17,22	52	26
Pilot Crane	Abnormal Load Vehicle**	17,22	2	1
Overall			**54**	**27**
Fuel Delivery				
Fuel Delivery	HGV Fuel Tanker	7-22	8	1
Staff and Construction Personnel				
Staff	Car or Minibus	7-22	21,184	1324
Total HGV and Abnormal Load Movements (excluding Concrete Delivery)			10,536	781
Total HGV Movements for Concrete Delivery (16 non-consecutive Days)			2880	90 (daily)
Total Car and Van Movements			22,174	1520
Overall Total			**35,590**	**2877**

***Includes transporter vehicle leaving and then returning to site following completion of access tracks**

****Self-propelled vehicles which arrive in one month and depart in another**

15.6 Assessment of Effects

Traffic Generation

15.6.1 A detailed breakdown of the distribution of vehicle movements in each month, and for each element of work, throughout the construction phase of the Development is included in Figure 15.3. The peak month of construction, from a traffic perspective, was identified and was used to predict the traffic increase on routes within the study area. A worst case scenario in which all predicted traffic passes each location within the study was assumed.

15.6.2 From inspection of the predicted traffic movements, the peak month for vehicle flows is expected to be month 17 where there will be 2,877 vehicle movements in total. This is comprised of 96 abnormal load movements, 685 HGV movements (excluding concrete delivery) and 1520 car or van movements.

15.6.3 In addition, concrete deliveries are scheduled to be undertaken during this month and will comprise 90 HGV movements per day over a maximum of 13 non-consecutive days (assuming a 26 day working month). This would result in a total of 1170 HGV movements associated with concrete delivery. In practice the number of concrete deliveries during this month can be expected to be significantly less as in total there will be only 16 non-consecutive days of concrete delivery distributed over a 5 month period.

15.6.4 Table 15.22 details the anticipated vehicle flow in the peak month on days with no concrete deliveries and the percentage increase above the predicted baseline at each point within the study.

Table 15.22: Predicted Average Daily Traffic – No Concrete Delivery

Location	Total Vehicles			HGV Only*		
	2020 Baseline	Peak Month	% Increase	2020 Baseline	Peak Month	% Increase
1 - A83 South of Kilchenzie	1897	1986	5	436	466	7
2 – A83 South of Low Ballevain	1722	1811	5	413	443	7
3 – Unnamed Road South of High Ballevain Farm	90	179	98	16	46	185

***For the purposes of this estimation abnormal load vehicles are included in HGV**

15.6.5 Table 15.23 details the anticipated vehicle flow in the peak month on days where concrete deliveries will take place, this will occur on a maximum of 13 non-consecutive days although is expected to be significantly less than this.

Table 15.23: Predicted Average Daily Traffic – During Concrete Delivery

Location	Total Vehicles			HGV Only*		
	2020 Baseline	Peak Month	% Increase	2020 Baseline	Peak Month	% Increase
1 - A83 South of Kilchenzie	1897	2076	9	436	556	28
2 – A83 South of Low Ballevain	1722	1900	10	413	533	29

Table 15.23: Predicted Average Daily Traffic – During Concrete Delivery						
Location	**Total Vehicles**			**HGV Only***		
	2020 Baseline	**Peak Month**	**% Increase**	**2020 Baseline**	**Peak Month**	**% Increase**
3 – Unnamed Road South of High Ballevain Farm	90	269	198	16	136	739

***For the purposes of this estimation abnormal load vehicles are included in HGV**

15.6.6 As detailed in paragraph 15.4.18 a screening exercise was undertaken in order to determine which routes warrant detailed assessment. Given that each route within the study contains a number of high sensitivity receptors (summarised in Table 15.9) the lower threshold of significance (10%) was used. Using this criteria and considering the percentage increases presented in Tables 15.22 and 15.23, it can be seen that there is a potential for effects in the following cases:

1. On the unnamed road between the A83 and the site entrance throughout construction of the Development as a result of both total traffic increase and HGV increase; and
2. On the A83 at both locations during concrete delivery days as a result of HGV increase.

15.6.7 The following subsections detail considerations for each of the above cases.

1 - Unnamed Road from A83 to Site Entrance

15.6.8 Total traffic on this route is predicted to increase by 98% during the peak month, with a 185% increase in HGV traffic. During concrete pouring days total traffic is predicted to increase by 269% and HGV traffic by 739%. Analysis of the overall construction programme, presented in Figure 15.3, indicates that the increase in traffic on this route is likely to be above the 10% threshold for the duration of construction of the Development.

15.6.9 This route provides the only access to a number of farms and residential properties. It is too narrow for two vehicles to safely pass on much of its length and has infrequent and informal passing places. It is therefore highly sensitive to changes in traffic flow and composition.

15.6.10 It is considered that there is a potential for a major adverse effect on receptors on this route as a result of increased traffic for the duration of construction of the Development, the significance of this effect is considered to be major and **significant.**

2 – A83 During Concrete Delivery as a Result of HGV Increase

15.6.11 HGV traffic on the A83 north and south of the unnamed road to site is predicted to increase by 29% and 28% respectively on concrete pouring days. Concrete pouring will occur on 16 non-consecutive days spread over a four month period, out with these 16 days the increase in HGV traffic is predicted to be a maximum of 7% for the remainder of the duration of construction.

15.6.12 It is worth noting that the predicted traffic level on the A83 during concrete pouring days of 2076 vehicles per day is significantly less that the theoretical capacity of the road as detailed in Table 15.7, 2400 vehicles per hour.

15.6.13 The number of days during which traffic will exceed the 10% threshold of significance is limited (16 non-consecutive days) and the upper 30% threshold will not be exceeded at any time. There is sufficient residual capacity on the road. It is therefore considered that the overall effect on receptors on the A83 will be negligible and that this effect will be minor and **not significant.**

Accidents and Safety

15.6.14 The road traffic collision assessment identified a number of collisions within the last five years within the vicinity of the development. None of these incidents involved a HGV or occurred at the site entrance or at the junction between the unnamed road and the A83. Two serious incidents

were identified, both of which involved a single car leaving the carriageway and not colliding with another vehicle. No trends could be identified from the data. In the absence of any other identifiable factors, an increase in traffic flow or change in composition is not sufficient to affect a change in safe operation of the road network.

15.6.15 It is therefore considered that the temporary increase in overall traffic, and HGVs, for the duration of construction of the Development is not likely to result in an effect on accidents and safety. The effect on accidents and safety is considered to be negligible and **not significant.**

Driver Delay

15.6.16 The A83 is operating significantly below its theoretical capacity and is predicted to do so throughout the course of construction of the Development. The effect of a general increase in traffic on driver delay on this route is therefore considered to be negligible and **not significant.**

15.6.17 There is predicted to be a significant increase in traffic flow and HGV composition on the unnamed road between the A83 and the site entrance. Although this road is currently operating significantly below capacity, as it is narrow and has infrequent and informal passing places there is a potential for driver to delay to occur during periods of intensive delivery. It is therefore considered that the potential for driver delay to occur on this route is Moderate and due to the high sensitivity of receptors on this route the significance of this effect should be considered major and **significant.**

15.6.18 Some driver delay is expected to occur on routes due to the slow movement of abnormal load vehicles between Campbeltown Harbour and the site entrance. Abnormal load deliveries will be timed to avoid peak times and due to the short distance between Campbeltown Harbour and the junction to the unnamed road towards site the expected effect on driver delay is negligible and **not significant.**

Pedestrian Amenity

15.6.19 Pedestrian amenity, fear and intimidation can be affected by changes to traffic flow and composition. The unnamed road between the A83 and the site entrance does not have pedestrian footways and it is considered unlikely that there is any significant pedestrian traffic on this route. The effect of increased traffic on pedestrian amenity on this route is therefore considered to be negligible and **not significant.**

15.6.20 The A83 is a nationally significant trunk road with an existing high composition of HGV traffic (18% - 24%). It does not have pedestrian footways on most of its length except where it passes through settlements. The route passes directly by the front of Glenbarr and Rhunahaorine Primary Schools, however in both cases the schools do not have pedestrian footways connecting to them and it is considered unlikely that students would walk to school.

15.6.21 Traffic increase and HGV composition is only predicted to increase above the threshold of significance for 16 non-consecutive days throughout the duration of construction of the Development and at other times the increase will be negligible. It is considered that during concrete pours the effect of increased traffic and HGV composition may have a moderate effect on pedestrian amenity at the primary schools, and due to their high sensitivity this significance of this should be considered moderate and **significant.**

Severance

15.6.22 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. The A83 passes through a number of settlements which have the potential to be affected by severance, however the A83 is a trunk road of national significance and the effect of construction traffic is short term and exceeds the threshold of significance for only 16 non-consecutive days over the duration of construction of the Development. It is therefore considered that the effect on severance is negligible and **not significant.**

Noise and Vibration

15.6.23 Ground-borne vibration resulting from heavy goods vehicle and turbine delivery vehicle movements is generally only likely to be significant where vehicles traverse discontinuities, such as rough surfaces (including pot-holes) or speed-humps.

15.6.24 The DMRB Volume II[3] identifies that there is no evidence that suggests traffic induced vibrations are a source of significant damage to buildings.

15.6.25 Airborne vibrations resulting from low frequency sound emitted by vehicle engines and exhausts can result in detectable vibrations in building elements such as windows and doors and cause disturbance to local people. However due to the short-term temporary nature of the increase in traffic movements, and the fact that the increase in traffic is predicted to be negligible for all but 16 days of construction, it is considered that the effect of vibration upon receptors along the route would be negligible and **not significant.**

Hazardous Loads

15.6.26 Fuel will be regularly transported to the site, although this will occur only eight times over the duration of construction of the Development. All fuel will be transported by suitably qualified contractors and all regulations for the transportation and storage of hazardous substances will be observed. No other hazardous substances are expected to be transported to site.

15.6.27 It is therefore considered that the effect of the transportation of hazardous substances is negligible and **not significant.**

Visual Effects

15.6.28 The movements of ALVs could be considered visually intrusive. This effect would be short-term and would only occur during the movement of abnormal loads. It is therefore considered the visual effect as a result of the ALVs upon receptors along the routes would be negligible and **not significant.**

Air Quality

15.6.29 Maintaining good local air quality is essential for the human health and overall quality of life for people living in the area. Road transport accounts for a significant proportion of emissions of a number of pollutants including carbon dioxide (CO2), nitrogen dioxide (NO2) and particulate matter (PM10). Nitrogen oxide emissions are also of concern for nearby vegetation and ecosystems.

15.6.30 The DMRB gives guidance on matters relating to air quality in Volume 11 Section 3 and advises that significant impacts to local air quality may be found in the following cases:

- Where the road alignment will change by 5 m or more; or
- daily traffic flows will change by 1,000 AADT or more; or
- Heavy Duty Vehicle flows will increase by 200 AADT or more; or
- daily average speed will change by 10 km/hr or more; or
- peak hour speed will change by 20 km/hr or more.

15.6.31 Given the assessment of the expected volume of construction traffic it is considered that none of the above criteria have been met or exceeded. It is therefore considered that the effect of the increase in traffic on local air quality would be negligible and **not significant**.

15.6.32 It should also be noted that due to the temporary nature of the increase in vehicles using the proposed access route, any effects on local air quality will be short term and reversible.

Cumulative Effects

15.6.33 Significant cumulative effects may occur during construction of the Development where this overlaps with construction of another nearby development. Proposed developments which have the potential to result in cumulative effects are:

- Auchadaduie (3 turbines);
- Beinn An Tuirc (Phase 3) (19 turbines); and
- Blary Hill (14 turbines).

15.6.34 Table 15.24 provides daily traffic generation figures that have been assumed for each of the identified developments. Exact traffic data is not available for the identified developments and in order to provide a reasonable assessment, it has been assumed that traffic generation for each project will be in proportion to that generated by the Tangy IV proposals (calculated pro-rata, per turbine). Traffic relating to the delivery of concrete during foundation pours has not been included as it is assumed that, given the relative impacts, these events will be timed to ensure they do not coincide. It is unlikely that the local capacity for concrete production could accommodate several pours coinciding in any case.

Table 15.24 Extrapolated Cumulative Peak Daily Traffic Generation

Site	Number of Turbines	HGV	LGV	Total
Tangy IV	16	30	59	89
Beinn An Tuirc (Phase 3)	19	36	70	106
Blary Hill	14	26	52	78
Auchadaduie	3	6	11	17

15.6.35 The traffic associated with the three identified cumulative developments will primarily be related to the import of materials. It is assumed that all traffic will utilise the A83 and will not therefore further affect the minor roads within the study area. This would only apply to the Tangy IV development.

15.6.36 As with assessment of the proposed development, 100% of all generated traffic has been applied to the survey locations to assess a worst case scenario. In reality a significant proportion of the traffic associated with the identified developments will arrive from the north and not feature within the study area for this assessment. The cumulative increases are summarised in Table 15.25.

Table 15.25: Cumulative Extrapolated Average Daily Traffic – No Concrete Delivery

Location	Total Vehicles			HGV Only*		
	2020 Baseline	Peak Month	% Increase	2020 Baseline	Peak Month	% Increase
1 - A83 South of Kilchenzie	1897	2187	15	436	534	22
2 – A83 South of Low Ballevain	1722	2012	17	413	511	24

***For the purposes of this estimation abnormal load vehicles are included in HGV**

15.6.37 It can be seen from Table 15.25 that the addition of all construction traffic on the A83 results in a maximum increase of 17% over existing flows. A maximum increase of 24% is predicted for HGV traffic.

15.6.38 Even based on the robust assumption of each development being simultaneously constructed and all traffic utilising the A83 within the study area, the increase in all traffic on the A83 is below the 30% threshold. The additional volume of traffic falls well below the predicted theoretical capacity of the A83 and therefore the road network is not anticipated to experience any operational issues.

15.6.39 The increase is marginally greater when considering just HGV traffic. The effect magnitude is still below the 30% threshold. The overall impact will be less than during the concrete delivery peak days of the proposed development.

15.6.40 All developments are consented and could potentially be completed prior to the commencement of Tangy IV in the proposed year of construction (2020). The likelihood of all wind farms being constructed at the same time very is low. Furthermore, the likelihood of 100% of all HGV traffic from the three identified sites travelling on the A83 within the study area is also very low. Given the potential scale of the cumulative effect, it is proposed that a routeing strategy in conjunction with the contractors TMP is provided along with construction schedule to Argyll and Bute Council prior to construction to ensure that any possible effects are reduced. There is sufficient residual capacity on the road. It is therefore considered that the overall effect on receptors on the A83 will be negligible and that this effect will be minor and **not significant**.

15.7 Mitigation

15.7.1 Three potentially significant effects were identified in Section 15.6. An outline Traffic Management Plan (TMP) has been prepared and is included in Appendix 15.2. This TMP provides detailed mitigation measures to address each of the identified significant effects, and general operation practices and policies relating to transport which are to be adopted for the duration of construction of the proposed development.

15.7.2 A summary and assessment of residual effects is provided for each significant effect below.

Effect of Traffic Generation on the Unnamed Road from A83 to Site Entrance

15.7.3 A major significant effect is predicted to occur as a result of traffic generation on this route. This route is narrow and has infrequent and informal passing places. The TMP provides detailed mitigation measures.

15.7.4 It is considered that following implementation of the mitigation measures detailed in TMP the residual effect of increased traffic on this route will be low and **not significant.**

Driver Delay on the Unnamed Road from A83 to Site Entrance

15.7.5 A major significant effect on driver delay is predicted to occur as a result of increased traffic on this route. Mitigation measures are provided in the TMP and are as the previous section. It is considered that following the implementation of these measures the residual effect on driver delay on this route will be low and **not significant.**

Pedestrian Amenity at Glenbarr and Rhunahaorine Primary Schools

15.7.6 A moderate and significant effect on pedestrian amenity is predicted to occur during concrete pouring days as a result of increased traffic and HGV composition at these schools. The TMP provides detailed mitigation measures as follows:

- The applicant and the appointed contractor will provide written notice to these schools in advance of concrete pouring days and indicate that there is a potential for an effect on pedestrian amenity; and

- The applicant and their appointed contractor shall consult with these schools to identify any specific mitigation measures which might be adopted on concrete pouring days. Given the location of each of these schools on the A83, and their small size, it is reasonably possible that no staff or students walk to school. If is established that this is the case then no mitigation measures are likely to be required.

15.7.7 It is also possible that some or all concrete pouring days may occur during school holidays, in which case mitigation will not be required.

15.7.8 It is considered that following implementation of the above measures the residual effect of increased traffic on pedestrian amenity will be low and **not significant.**

Additional Good Practice

15.7.9 Additional good practice measures are detailed in the TMP included in Appendix 15.2.

15.8 Summary

15.8.1 The environmental effects as a result of traffic generated during the construction phase of the Development are predicted, following implementation of the outlined mitigation measures, to result in **no significant residual effects** in the context of the EIA regulations.

15.9 References

[1] Department for Transport (2013) - Design Manual for Roads and Bridges, Chapter 3, Volume 15, Section 1, Part 5
[2] The Scottish Government (2011) – High Level Summary of Statistics Trend, Car Occupancy – Available at http://www.gov.scot/Topics/Statistics/Browse/Transport-Travel/TrendCarOccupancy [Accessed 13/06/2018]
[3] The Design Manual for Roads and Bridges Volume II, Section 3 Annex 5 'Research into Traffic Noise and Vibration'.