

# 11 Traffic and Transport

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# 11 Traffic and Transport

## 11.1 Executive Summary

- 11.1.1 The Proposed Development will be accessed from Craigmarnloch Road via a priority access junction constructed near to the existing access junction with Barr Farm Road. In order to construct the Proposed Development, bulk materials such as concrete will be imported to the site from local sources, whilst specialist loads such as the turbine components will arrive from the south via the A78 and Routenburn road.
- 11.1.2 The construction activities will lead to increased traffic volumes on Craigmarnloch Road, Routenburn Road and the A78 during the construction and decommissioning phases. Following commissioning of the Proposed Development, traffic flows will average two vehicles every fortnight.
- 11.1.3 An assessment of likely potential effects using Institute of Environmental Management and Assessment (IEMA) guidelines has been undertaken. This determined that prior to the implementation of mitigation, a **moderate / minor** effect could be expected for users of Craigmarnloch Road and Routenburn Road, relating to the increase in HGV traffic operating on the route. All other receptors indicated a negligible effect caused by the Proposed Development within the study area.
- 11.1.4 With the implementation of appropriate mitigation, no significant residual effects are anticipated in respect of traffic and transport issues. The residual effects are all assessed to be **minor** and as they will occur during the construction and decommissioning only, they are temporary and reversible.

## 11.2 Introduction

- 11.2.1 This Chapter considers the likely significant effects on receptors along the transport routes resulting from vehicle movements associated with the construction and operation of the Proposed Development. The specific objectives of the chapter are to:
- review the relevant policy and legislative framework;
  - describe the baseline transport conditions;
  - describe the assessment methodology and significance criteria used in undertaking the assessment;
  - describe the likely 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.
- 11.2.2 A high-level overview of the effects of the traffic movements has been considered in accordance with Institute of Environmental Assessment (now Institute of Environmental Management and Assessment) Guidelines for the Environmental Assessment of Road Traffic. The document is referred to as the IEMA Guidelines in this chapter.
- 11.2.3 The chapter should be read in conjunction with Appendix 11.1 Transport Assessment.
- 11.2.4 The assessment has been carried out by Gordon Buchan BEng (Hons), MSc, CMILT, MCIHT, Divisional Director of Pell Frischmann. He has 24 years experience of transport planning and preparing transport impact statements.

## 11.3 Legislation, Policy and Guidelines

- 11.3.1 A review of relevant transport planning policies has been undertaken and is summarised below for national and local government policies.

## **Legislation**

- 11.3.2 There is no legislation applicable to this chapter.

## **Relevant Policy & Guidance**

- 11.3.3 Chapter 16 of the EIA Report provides an overview of all the relevant planning policy. Of particular relevance to this chapter are:

### **Planning Advice Note (PAN) 75**

- 11.3.4 Planning Advice Note (PAN) 75: Planning for Transport provides advice on the requirements for Transport Assessments. The document notes that:

*“... transport assessment to be produced for significant travel generating developments. Transport Assessment is a tool that enables delivery of policy aiming to integrate transport and land use planning.”*

*“All planning applications that involve the generation of person trips should provide information which covers the transport implications of the development. The level of detail will be proportionate to the complexity and scale of the impact of the proposal...For smaller developments the information on transport implications will enable local authorities to monitor potential cumulative impact and for larger developments it will form part of a scoping exercise for a full transport assessment. Development applications will therefore be assessed by relevant parties at levels of detail corresponding to their potential impact.”*

### **Transport Assessment Guidance (2012)**

- 11.3.5 Transport Scotland’s (TS) Transport Assessment Guidance was published in 2012. It aims to assist in the preparation of Transport Assessments (TA) for development proposals in Scotland such that the likely transport effects can be identified and dealt with as early as possible in the planning process. The document sets out requirements according to the scale of development being proposed.
- 11.3.6 The document notes that a TA will be required where a development is likely to have significant transport effects but that the specific scope and contents of a TA will vary for developments, depending on location, scale and type of development.

### **North Ayrshire Local Development Plan (November 2019)**

- 11.3.7 The Local Development Plan, adopted by NAC in November 2019 indicates that the Council will support renewables proposals where there is have no unacceptable adverse impact on road safety on the local and trunk road networks.

## **11.4 Consultation**

- 11.4.1 Consultation has been undertaken with North Ayrshire Council Roads Department and Transport Scotland as detailed below in Table 11.1.

**Table 11.1 – Consultation Summary**

<b>Organisation</b>	<b>Summary / Concerns Raised</b>	<b>Action Required</b>
Transport Scotland	No site specific issues raised.	No actions required.
North Ayrshire Council (NAC)	Requests that a Transport Assessment is prepared and that this identifies mitigation.	A Transport Assessment has been prepared and is attached as Appendix 11.1.
	Reference to the NAC Local Development plan should be made to inform committed development flows to identify if there are any residential schemes that should be included in the assessment.	A review of the NAC LDP has been undertaken and no significant residential developments have been identified within close proximity to the proposed Development.
	Use of Low National Road Traffic Forecasts is acceptable	Low NRTF assumptions have been used in the assessment.
	An accident data review for three years is acceptable for presentation in the Transport Assessment.	A review of accident data over three years has been undertaken.

## 11.5 Assessment Methodology and Significance Criteria

11.5.1 The methodology adopted in this assessment involved the following key stages:

- determine baselines;
- review development for impacts;
- evaluate significance of effects on receptors;
- identify mitigation; and
- assess residual effects.

### **Consultation**

11.5.2 Formal consultation was undertaken via EIA Scoping. More detailed consultation on items such as the study area, traffic count data and traffic growth assumptions were held with North Ayrshire Council as detailed in Table 11.1.

### **Study Area**

11.5.3 Discussions with North Ayrshire Council were held to discuss the likely scope of the Transport Assessment (TA). These discussions centred around data collection count sites and likely points of origin for materials to assist in developing a suitable study network.

- 11.5.4 Recent experience from wind farm developments has helped identify likely access routes for construction materials, whilst likely locations for staff residences has been used to help inform the extents of the likely study area.
- 11.5.5 The study area for this assessment is as follows:
- Craigmarnloch Road;
  - C118 Routenburn Road;
  - the A78 between Largs and Irvine; and
  - the A760 between Largs and Kilbirnie.
- 11.5.6 Craigmarnloch Road and Routenburn Road provide the linkages from the site access to the trunk road network of the A78. Both minor roads provide access to residential properties and farmland to the east of the A78 corridor.
- 11.5.7 The A78 provides trunk road connections between Ayr and Greenock and is the principal access corridor for the communities along the Clyde coastline. The road is operated on behalf of Scottish Ministers by Transport Scotland and maintained by Scotland Transerv.
- 11.5.8 The A760 provides east – west connections between Largs on the coast and Kilbirnie in the east. The road is owned and maintained by North Ayrshire Council.
- 11.5.9 The study area network is illustrated in Figure 11.1.

### ***Desk Study & Site Visit***

- 11.5.10 The desk study included reviews and identification of the following:
- relevant transport planning policy;
  - accident data;
  - any other traffic sensitive receptors in the area (core paths, routes, communities, etc);
  - Ordnance Survey (OS) plans;
  - potential origin locations of construction staff and supply locations for construction materials to inform extent of local area roads network to be included in the assessment; and
  - constraints to the movement of Abnormal Indivisible Loads (AILs) through a Route Survey including swept path assessments.
- 11.5.11 The desk review was later confirmed by a site visit and walk over of the Proposed Development site in September 2019.

### ***Assessment of Likely Potential Effect Significance***

- 11.5.12 The Institution of Environmental Management and Assessment (IEMA) ‘Guidelines for Environmental Impact Assessment’ (2005) notes that the separate ‘Guidelines for the Environmental Assessment of Road Traffic’ (1993) document should be used to characterise the environmental traffic and transport effects (off-site effects) and the assessment of significance of the effects of major new developments. The guidelines intend to complement professional judgement and the experience of trained assessors.

### ***Receptor Sensitivity***

- 11.5.13 In terms of traffic and transport impacts, the receptors are the users of the roads within the study area and the locations through which those roads pass.
- 11.5.14 The IEMA Guidelines includes guidance on how the sensitivity of receptors should be assessed. Using that as a base, professional judgement was used to develop a classification of sensitivity for users based on the characteristics of roads and locations. This is summarised in Table 11.2.

**Table 11.2 – Classification of Receptor Sensitivity**

Receptor	Sensitivity			
	High	Medium	Low	Negligible
Users of Roads	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs.  Includes roads with traffic control signals, waiting and loading restrictions, traffic calming measures.	Where the road is a local A or B class road, capable of regular use by HGV traffic.  Includes roads where there is some traffic calming or traffic management measures.	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition.  Includes roads with little or no traffic calming or traffic management measures.	Where roads have no adjacent settlements.  Includes new strategic trunk roads that would be little affected by additional traffic and suitable for Abnormal Loads and new strategic trunk road junctions capable of accommodating Abnormal Loads.
Users / Residents of Locations	Where a location is a large rural settlement containing a high number of community and public services and facilities.	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.	Where a location is a small rural settlement, few community or public facilities or services.	Where a location includes individual dwellings or scattered settlements with no facilities.

11.5.15 The classifications are based upon the activities that can be expected in different areas and different types of streetscape.

11.5.16 Where a road passes through a location, users are considered subject to the highest level of sensitivity defined by either the road or location characteristics.

**Magnitude of Impact**

11.5.17 The following rules, also taken from the IEMA Guidelines are used to determine which links within the study area should be considered for detailed assessment:

- Rule 1 – include highway 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.

11.5.18 The IEMA Guidelines identify the key impacts that are most important when assessing the magnitude of traffic impacts from an individual development: the impacts and levels of magnitude are discussed below:

- Severance – the IEMA Guidance states that, “severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery.” Further, “Changes in traffic of 30%, 60%, and 90% are regarded as producing ‘slight’, ‘moderate’, and ‘substantial’ [or minor, moderate, and major] changes in severance respectively”. However, the Guidelines acknowledge that “the measurement and prediction of severance is extremely difficult”. (Para 4.28).
- Driver delay – the IEMA Guidelines note that these delays are only likely to be “significant [or major] when the traffic on the network surrounding the development is already at, or close to, the capacity of the system” (Para 4.32).
- Pedestrian delay – the delay to pedestrians, as with driver delay, is likely only to be major when the traffic on the network surrounding the development is already at, or close to, the capacity of the system. An increase in total traffic of approximately 30% can double the delay experienced by pedestrians attempting to cross the road and would be considered major.
- Pedestrian amenity – the IEMA Guidelines suggests that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or its lorry component) is halved or doubled (Para 4.39). It is therefore considered that a change in the traffic flow of -50% or +100% would produce a major change in pedestrian amenity.
- Fear and intimidation – there are no commonly agreed thresholds for estimating levels of fear and intimidation, from known traffic and physical conditions. However, as the impact is considered to be sensitive to traffic flow, changes in traffic flow of 30%, 60% and 90% are regarded as producing minor, moderate and major changes respectively.
- Accidents and safety – professional judgement would be used to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents.

11.5.19 While not specifically identified, as more vulnerable road user, cyclists are considered in similar terms to pedestrians.

**Significance of Effect**

11.5.20 To determine the overall significance of effects, the results from the receptor sensitivity and magnitude of change assessments are correlated and classified using a scale set out in Table 2.4 of Volume 11, Section 2, Part 5 of the Design Manual for Roads and Bridges (DMRB) and summarised in Table 11.3

**Table 11.3 – Significance of Effects**

<i>Receptor Sensitivity</i>	<i>Magnitude of Impacts</i>			
	<b>Major</b>	<b>Moderate</b>	<b>Minor</b>	<b>Negligible</b>
<b>High</b>	Major	Major / Moderate	Moderate / Minor	Minor
<b>Medium</b>	Major / Moderate	Moderate	Minor	Minor / Negligible
<b>Low</b>	Moderate / Minor	Minor	Minor	Minor / Negligible
<b>Negligible</b>	Minor	Minor	Minor / Negligible	Negligible

- 11.5.21 In terms of the EIA Regulations, effects would be considered of significance where they are assessed to be major or moderate. Where an effect could be one of Major/Moderate or Moderate/Minor, professional judgement would be used to determine which option should be applicable on a case by case basis.

#### ***Requirements for Mitigation***

- 11.5.22 If significant likely potential effects are identified appropriate mitigation will be implemented to remove and reduce the significance of the effects where possible.

#### ***Residual Effects***

- 11.5.23 Residual effects will be assessed following a similar methodology as the potential effects but taking into consideration the identified mitigation.

#### ***Cumulative Effects***

- 11.5.24 Cumulative effects will take into consideration other developments in planning, under construction or in operation which, with the addition of the Proposed Development could cumulatively impact upon receptors.

#### ***Limitations to Assessment***

- 11.5.25 The assessment is based upon an assumed construction programme for the Proposed Development. Alterations in this programme, may increase or decrease traffic flows per month.
- 11.5.26 This assessment is based upon average traffic flows. There may be localised peaks with construction days where flows can be higher for a specific hour, such as a shift change on site.
- 11.5.27 Assumptions on the origin points for materials have been made to provide a worst-case assessment scenario. Should these origin points change, the effects on study area may alter to those presented in the assessment.

## **11.6 Baseline Conditions**

#### ***Pedestrian, Equestrian and Cyclist Networks***

- 11.6.1 Core Path NC10 is recorded by North Ayrshire Council running the length of Craigmarnloch Road and Routenburn Road. The path is joined by Core Paths NC11 and NC91, approximately 1500 m to the south from the Proposed Development site access junction. These two paths provide linkages from the coast through to Noddsdale, to the north of Largs.
- 11.6.2 Horse riding warnings signs are located on Craigmarnloch Road, to advise drivers of possible rider interaction, indicating equestrian use of the road.
- 11.6.3 Neither Craigmarnloch Road nor the majority of Routenburn Road have pedestrian footways. Footways on Routenburn Road terminate to the north of the junction with Netherpark Crescent.
- 11.6.4 A review of the Sustrans cycle network plan of the United Kingdom indicates that there are no recommended National Cycle Routes (NCR) within the study area.

#### ***Road Access***

- 11.6.5 Access to the site would be taken directly from Craigmarnloch Road via a new priority junction. The junction would be surfaced and constructed so that the junction bellmouth would be to adoptable standards (within the current limits of road adoption). The remaining tracks within the site would be private.
- 11.6.6 The access junction would have the first 5 m surfaced in a bituminous macadam and appropriate junction markings and reflective junction markers would be provided at the access bell-mouth. The

- throat of the junction would be widened to a minimum of 5.5 m to ensure that opposing vehicles can pass in safety.
- 11.6.7 Visibility splays of 160 m in both directions with a set-back distance of 4.5 m from the centre of the junction would be provided.
- 11.6.8 Craigmarnloch Road is an unclassified road providing access to residential properties and farmland to the east of the A78 corridor. The road width varies from 3.5m to 4.5m in places and has a number of passing places along its length. The road connects to Routenburn Road to the south.
- 11.6.9 Routenburn Road (C118) provides access to a number of residential properties to the north of Largs and connects the A78 to Craigmarnloch Road. Within Largs, the road is wide enough for passing traffic and has pedestrian footways on either side. Once out of the town, the road narrows to a similar standard to Craigmarnloch Road. An advisory speed limit of 30 miles per hour (mph) is suggested to reflect the roads dual use as a core path.
- 11.6.10 Both Routenburn Road and Craigmarnloch Road in their current configurations are too narrow for the safe transport of wind turbine abnormal loads. Both roads will need to be widened to 4.5 m minimum to comply with turbine supplier safety standards.
- 11.6.11 The A78 is a district distributor road connecting Ayr with Greenock. The road is of a modern design standard within the study area and is approximately between 6 m and 7.3 m in width and is subject to a 60 mph speed limit outwith urban areas. Within towns, the speed limit falls to 30 mph.

### ***Existing Traffic Conditions***

- 11.6.12 In order to assess the impact of the Proposed Development traffic on the study area, data from a series of Automatic Traffic Count (ATC) sites were obtained. The locations and sources for the data are indicated below:
- Site 1: Craigmarnloch Road (obtained by ATC count undertaken between 4th and 10th November);
  - Site 2: Routenburn Road, near to the A78 junction (obtained by ATC count undertaken between 4th and 10th November);
  - Site 3: A78 Greenock Road, near to the Routenburn Road junction (obtained by ATC count undertaken between 4th and 10th November);
  - Site 4: A78 Largs Town centre (obtained from the Department for Transport traffic counts);
  - Site 5: A78 at West Kilbride (obtained from the Department for Transport traffic counts);
  - Site 6: A78 near Ardeer Golf Course (obtained from the Department for Transport traffic counts); and
  - Site 7: A760 near Blairpark (obtained from the Department for Transport traffic counts).
- 11.6.13 The locations of the ATC sites are illustrated in Figure 11.2.
- 11.6.14 Construction of the Proposed Development could commence during 2022 if consent is granted and is anticipated to take up to 14 months.
- 11.6.15 To assess the likely effects during the construction and typical operational phase, base year traffic flows were determined by applying a National Road Traffic Forecast (NRTF) low growth factor to the surveyed traffic flows.
- 11.6.16 Discussions with North Ayrshire Council were held to ascertain potential committed development flows that should be included in the baseline traffic assessments. A review of the LDP was undertaken and this indicated that there were no significant committed development schemes within the immediate area that could significantly alter traffic flows. As such, Low NRTF were applied to existing flows to also account for potential development driven traffic growth in the area.

- 11.6.17 The traffic flows were brought to a common year of 2022 using National Road Traffic Forecasts (Low Growth estimates). The 2022 baseline flows are presented in Table 11.4 and these flows will be used in the Construction Traffic Impact Assessment.

**Table 11.4 – 2022 Base Traffic Flows**

Location	Cars & Lights	HGV	Total
Craigmarloch Road	49	1	50
Routenburn Road	251	1	252
A78 Greenock Road	8201	45	8245
A78 Largs Town Centre	14108	235	14343
A78 near West Kilbride	7904	396	8299
A78 near Ardeer	17663	900	18564
A760 near Blairpark	4150	333	4482

### **Accident Review**

- 11.6.18 Road traffic accident data for the three year period commencing 01 January 2016 through to the 31st December 2018 (in line with discussions with North Ayrshire Council) was obtained from the online resource crashmap.co.uk which uses data collected by the police about road traffic crashes occurring on British roads.
- 11.6.19 The statistics are categorised into three categories, namely “Slight” for damage only incidents, “Serious” for injury accidents and “Fatal” for accidents that result in a death. Tables 11.5, 11.6 and 11.7 summarise the accidents noted on the road links in the immediate area (A78, Routenburn Road and Craigmarloch Road).

**Table 11.5 – Accident History Summary**

<i>Accident Severity</i>	<i>Number of Recorded Incidents</i>
Slight	11
Serious	4
Fatal	0

- 11.6.20 There are fifteen recorded incidents, all occurring on the A78, of which four were classified as serious and are clustered on the A78 to the north of St Phillans. There are no recorded fatal accidents within the review period.

**Table 11.6 – Accident Casualty Summary**

<i>Accident Severity</i>	<i>Cyclist</i>	<i>Child</i>	<i>Motorcyclist</i>	<i>Pedestrian</i>
Slight	1	2	0	3
Serious	0	1	0	0
Fatal	0	0	0	0

**Table 11.7 – Vehicles Involved in Accidents Summary**

<i>Accident Severity</i>	<i>Cyclist</i>	<i>Motorcycle</i>	<i>Car</i>	<i>HGV</i>	<i>Bus</i>	<i>Young Driver</i>
Slight	1	1	5	2	2	1
Serious	0	0	4	1	0	1
Fatal	0	0	0	0	0	0

11.6.21 The statistics indicate that the majority of accidents are “Slight” in nature and that HGVs were involved in three incidents (two “Slight” and one “Serious”). Of the two “Slight” HGV incidents, one involved a child pedestrian, whilst the other involved an adult pedestrian.

***Traffic activities during the Construction Phase***

- 11.6.22 During the 14 month construction period, the following traffic will require access to the site:
- staff transport, either cars or minibuses;
  - construction equipment and materials, deliveries of machinery and supplies such as crushed rock and cement; and
  - abnormal loads consisting of the wind turbine sections and also a heavy lift crane.
- 11.6.23 Average monthly traffic flow data were used to establish the construction trips associated with the site based on the assumptions detailed in Appendix 11.1.
- 11.6.24 The distribution of Proposed Development trips on the network will vary depending on the types of loads being transported. All traffic will enter and exit the site by way of the site access junction on the Craigmarnloch Road.
- 11.6.25 Staff trips are assumed to originate from the directions of Largs and Skelmorlie in equal proportions. All of these trips would access the site via the southern end of Craigmarnloch Road / Routenburn Road. A quarter of staff are assumed to be based in Largs, with the remainder distributed to the southern A78 corridor. No construction traffic access from the north end of Craigmarnloch Road at Skelmorlie would be permitted.
- 11.6.26 Concrete would originate to the east of the site, with loads accessing the site via the A760 and A78.
- 11.6.27 General construction and building supply deliveries will be made via the A78 from the south to reflect main supply lines and the proximity of potential quarry suppliers.
- 11.6.28 All abnormal loads would be unloaded at King George V Docks (KGV) in Glasgow or the Port of Ayr and would access the site via the A78 from the south, before turning onto Routenburn Road and Craigmarnloch Road. A detailed Route Survey Report is included within Appendix 11.1. This notes that a series of upgrade and street furniture modifications will be required along the route, The greatest area of modification is located along Craigmarnloch Road and Routenburn Road, where road widening works and verge vegetation / tree canopy trimming will be necessary.
- 11.6.29 A construction programme has been developed for the Proposed Development. This has been used to determine timescales for the various deliveries and trips. The trip programme has been developed and is illustrated in Table 11.8.
- 11.6.30 The results conclude that Month 10 is likely to be the peak period for the construction phase. This corresponds with the final deliveries of ready mix concrete for the turbine foundations, completion of the access track network, start of cable trenching, the start of abnormal load deliveries and general site deliveries and staff. The activities are anticipated to generate an average of 62 movements per day (31 trips in and 31 trips out), of which 32 would be made by light vehicles (site staff) and 30 by HGV.
- 11.6.31 The traffic impact assessment focuses on the peak period traffic flows to illustrate the potential effects on the study network.

**Table 11.8 – Construction Traffic Generation Profile**

Activity	Month													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Site Establishment	50	20												
Access Tracks, Culverts & Hardstand		20		10	20				10					
Access Track Geotextiles		12												
Public Road Works		304	304	304										
Turbine Foundations						400	400	400	400	400				
Turbine Reinforcement						12	12	12	12	12				
Cabling Sand								58	58	58	58			
Cabling Materials								7	7	7	7			
Turbine Delivery										85	85	85		
Turbine Escorts										91	91	91		
Control Building & Ancillary Works										59	23	23		
Site Reinstatement & Commissioning													20	50
Staff	246	370	616	616	616	616	616	616	616	616	616	616	370	246
General Site Deliveries	40	40	40	40	40	40	40	40	40	40	40	40	40	40
<b>Total HGV</b>	<b>90</b>	<b>396</b>	<b>344</b>	<b>354</b>	<b>60</b>	<b>452</b>	<b>452</b>	<b>517</b>	<b>527</b>	<b>660</b>	<b>212</b>	<b>147</b>	<b>60</b>	<b>90</b>
<b>Total Cars / LGV</b>	<b>246</b>	<b>370</b>	<b>616</b>	<b>616</b>	<b>616</b>	<b>616</b>	<b>616</b>	<b>616</b>	<b>616</b>	<b>707</b>	<b>707</b>	<b>707</b>	<b>370</b>	<b>246</b>
<b>Total Movements</b>	<b>336</b>	<b>766</b>	<b>960</b>	<b>970</b>	<b>676</b>	<b>1068</b>	<b>1068</b>	<b>1133</b>	<b>1143</b>	<b>1367</b>	<b>919</b>	<b>854</b>	<b>430</b>	<b>336</b>
<b>Total HGV per Day</b>	<b>4</b>	<b>18</b>	<b>16</b>	<b>16</b>	<b>3</b>	<b>21</b>	<b>21</b>	<b>23</b>	<b>24</b>	<b>30</b>	<b>10</b>	<b>7</b>	<b>3</b>	<b>4</b>
<b>Total Cars / LGV per Day</b>	<b>11</b>	<b>17</b>	<b>28</b>	<b>28</b>	<b>28</b>	<b>28</b>	<b>28</b>	<b>28</b>	<b>28</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>17</b>	<b>11</b>
<b>Total per Day</b>	<b>15</b>	<b>35</b>	<b>44</b>	<b>44</b>	<b>31</b>	<b>49</b>	<b>49</b>	<b>51</b>	<b>52</b>	<b>62</b>	<b>42</b>	<b>39</b>	<b>20</b>	<b>15</b>

11.6.32 Using the distribution of traffic described Appendix 11.1, the proposed traffic flows on the study area network at the peak of construction are illustrated in Table 11.9.

**Table 11.9 – Peak Construction Month Daily Traffic Data**

Location	Cars & Lights	HGV	Total
Craigmarloch Road	36	30	66
Routenburn Road	36	30	66
A78 Greenock Road	20	29	49
A78 Largs Town Centre	20	29	49
A78 near West Kilbride	12	11	23
A78 near Ardeer	12	11	23
A760 near Blairpark	0	18	18

- 11.6.33 The peak month traffic data was combined with the future year (2022) traffic data to allow a comparison between the baseline results to be made. The increase in traffic volumes is presented below as predicted flows and in percentage increases for each class of vehicle in Table 11.10.

**Table 11.10 – 2022 Peak Month Daily Traffic Data (Baseline + Construction Flows)**

Location	Cars & Lights	HGV	Total	Cars & Lights % Increase	HGV % Increase	Total Traffic % Increase
Craigmarloch Road	85	31	116	73.4%	2905.5%	131.2%
Routenburn Road	287	31	318	14.3%	2905.5%	26.0%
A78 Greenock Road	8221	74	8294	0.2%	64.0%	0.6%
A78 Largs Town Centre	14128	264	14392	0.1%	12.3%	0.3%
A78 near West Kilbride	7915	406	8322	0.1%	2.7%	0.3%
A78 near Ardeer	17675	911	18586	0.1%	1.2%	0.1%
A760 near Blairpark	4150	351	4500	0.0%	5.4%	0.4%

- 11.6.34 A review of existing road capacity has been undertaken using the Design Manual for Roads and Bridges, Volume 15, Part 5 “The NESAs Manual”. The theoretical road capacity has been estimated for each of the road links that makes up the study area and the assessment is presented in Appendix 11.1. The assessment clearly indicates that there are no road capacity issues associated with the

Proposed Development as spare network capacity ranges between 63% and 99% within the study area.

### ***Traffic activities during the Operational Phase***

- 11.6.35 It is predicted that during the operation of the site there would be up to two vehicle movements per fortnight for maintenance purposes. There may be occasional abnormal load movements to deliver replacement components in the unlikely event of a major failure.
- 11.6.36 Given the low level of traffic generation associated with the operational phase, no further assessment has been undertaken.

### ***Traffic activities during the Decommissioning Phase***

- 11.6.37 When the Proposed Development is decommissioned, it is likely that elements of the site such as access tracks would be retained. As such, the traffic generated by future decommissioning works would be less than those associated with the Construction Phase. As such, an assessment of these works has been scoped out in agreement with the Council As the impacts would be similar or less than those associated with the construction phase.

## **11.7 Receptors Brought Forward for Assessment**

### ***Receptor Overview***

- 11.7.1 The impact assessment indicates that traffic levels will exceed the 30% threshold for total traffic or HGV flows on Craigmarnloch Road, Routenburn Road and A78 Greenock Road. As such, Rule 1 of the IEMA guidance is exceeded.
- 11.7.2 Rule 2 notes that an assessment should be undertaken if traffic flows exceed 10% in particularly sensitive areas.
- 11.7.3 A review of receptors has been undertaken to allow assessment against the criteria laid out in the IEMA guidance and the supporting thresholds. The receptor sensitivities within the study area are noted below in Table 11.11 are based upon the descriptions contained in Table 11.2.

**Table 11.11 – Receptor Sensitivity Summary**

<b>Receptor</b>	<b>Sensitivity</b>
Users of Craigmarnloch Road and Routenburn Road	High Sensitivity
Residents of Craigmarnloch and Routenburn Road	High Sensitivity
Residents of A78 Greenock Road	Medium Sensitivity ( due to the trunk road nature of the A78)

- 11.7.4 Based upon the results noted in the impact assessment, the 10% threshold is also exceeded on Routenburn Road, Craigmarnloch Road and the A78 Greenock Road.

## 11.8 Standard Mitigation

The mitigation measures set out in the following section are considered good practice for well-run wind farm construction sites and can be considered to be part of normal construction activities for a site of this nature.

### **Construction Phase**

11.8.1 A Construction Traffic Management Plan (CTMP) would be prepared and agreed with North Ayrshire Council prior to construction works commencing. The following measures would be implemented through the CTMP during the construction phase:

- All material delivery lorries (dry materials) will be sheeted to reduce dust and stop spillage on public roads.
- Specific training and disciplinary measures will be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway.
- Wheel cleaning facilities will be established on the site.
- Appropriate traffic management measures will also be put in place at the site access junction to advise drivers to slow down and be aware of turning traffic.
- Provision of construction updates on the project website and distribution of a newsletter to residents within an agreed distance of the site.
- Requirement for all delivery drivers to attend an induction to include a safety briefing, the need for appropriate care and speed control, particularly in sensitive areas, identification of specific sensitive areas, identification of the specified route, and the requirement not to deviate from the specified route.
- The production and implementation of a Staff Travel Plan which will include pick up times and car sharing information for those travelling to and from site.

11.8.2 The Applicant will cover the cost of abnormal wear and tear on Routenburn Road and Craigmarnloch Road.

11.8.3 Video footage of the pre-construction phase condition of the abnormal loads access route and the construction vehicles route would be recorded to provide a baseline of the state of the road prior to any construction work commencing. This baseline would inform any change in the road condition during the construction stage of the Proposed Development. Any necessary repairs would be coordinated with North Ayrshire Council. Any damage caused by traffic associated with the Proposed Development, during the construction period that would be hazardous to road users, would be repaired immediately by the Balance of Plant contractor.

11.8.4 Any damage to road infrastructure caused directly by construction traffic would be made good, and street furniture that is removed on a temporary basis would be fully reinstated.

11.8.5 There would be a daily road edge review and any debris and mud removed from the public carriageway using an onsite road sweeper to keep the road clean and safe during the initial months of construction activity, until the construction junction and immediate access track works were complete.

### **Specific Abnormal Load Mitigation**

11.8.6 All abnormal load deliveries would be undertaken at appropriate times (to be discussed and agreed with the relevant roads authorities and police) with the aim to minimise the effect on the local road network. It is likely that the abnormal load convoys would travel in the early morning periods, before

- peak times while general construction traffic would generally avoid the morning and evening peak periods.
- 11.8.7 The majority of potential conflicts between construction traffic and other road users would occur with abnormal load traffic. General construction traffic is not likely to come into conflict with other road users as the vehicles are smaller and road users are generally more accustomed to them.
- 11.8.8 Potential conflicts between the abnormal loads and other road users can occur at a variety of locations and circumstances. The main potential conflicts are likely to occur:
- on the A78 where the loads may straddle the centre line, where fast moving oncoming traffic may be encountered, etc.;
  - at both ends of Routenburn Road and Craigmarloch Road;
  - where traffic turns at a road junction, requiring other traffic to be restrained on other approach arms; and
  - in locations where high speeds of general traffic are predicted.
- 11.8.9 Advance warning signs would be installed on the approaches to the affected road network. Information signage could be installed to help improve driver information and allow other road users to consider alternative routes or times for their journey (where such options exist).
- 11.8.10 The location and numbers of signs would be agreed post consent and would form part of the wider traffic management proposals for the Proposed Development.
- 11.8.11 Information on the turbine convoys would be provided to local media outlets such as local papers and local radio to help assist the public.
- 11.8.12 Information would relate to expected vehicle movements from the end of the dual carriageway section of the A78 through to the site access junction. This will assist residents becoming aware of the convoy movements and may help reduce any potential conflicts.
- 11.8.13 The Applicant would also ensure information was distributed through its communication team via the project website, local newsletters and social media.
- 11.8.14 A police escort would be required to facilitate the delivery of the predicted loads. The police escort would be further supplemented by a civilian pilot car to assist with the escort duty. It is proposed that an advance escort would warn oncoming vehicles ahead of the convoy, with one escort staying with the convoy at all times. The escorts and convoy would remain in radio contact at all times where possible.
- 11.8.15 The abnormal loads convoys would be no more than three AILs long, or as advised by the police, to permit safe transit along the delivery route and to allow limited overtaking opportunities for following traffic where it is safe to do so.
- 11.8.16 The times in which the convoys would travel will need to be agreed with Police Scotland who have sole discretion on when loads can be moved.

### ***Abnormal Load Transport Management Plan***

- 11.8.17 An Abnormal Load Transport Management Plan would also be prepared to cater for all movements to and from the Proposed Development site. This would include:
- Procedures for liaising with the emergency services to ensure that police, fire and ambulance vehicles are not impeded by the loads. This is normally undertaken by informing the emergency services of delivery times and dates and agreeing communication protocols and lay over areas to allow overtaking.
  - A diary of proposed delivery movements to liaise with the communities to avoid key dates such as local fetes etc.

- A protocol for working with local businesses to ensure the construction traffic does not interfere with deliveries or normal business traffic.
- Proposals to establish a construction liaison committee to ensure the smooth management of the project / public interface with the applicant, the construction contractors, the local community, and if appropriate, the police forming the committee. This committee would form a means of communicating and updating on forthcoming activities and dealing with any potential issues arising.

### **Operational Phase Mitigation**

11.8.18 Site entrance roads will be well maintained and monitored during the operational life of the development. Regular maintenance will be undertaken to keep the site access track drainage systems fully operational and the road surface in good condition and to ensure there are no adverse issues affecting the public road network.

## 11.9 Potential Effects

### **Construction**

11.9.1 An assessment of the likely effects has been undertaken using the previously described thresholds. The results of this are summarised below in Table 11.12. The likely effects have assumed that the proposed mitigation measures are in place.

**Table 11.12 – Construction Phase Effects Assessment**

<b>Receptor</b>	<b>Severance</b>	<b>Driver Delay</b>	<b>Pedestrian Delay</b>	<b>Amenity</b>	<b>Fear</b>	<b>Accidents &amp; Safety</b>
Users of Craigmarnloch Road and Routenburn Road	Minor	Minor	Minor	Moderate	Moderate	Minor
Residents of Craigmarnloch and Routenburn Road	Minor	Minor	Minor	Minor	Minor	Minor
Residents of A78 Greenock Road	Minor	Minor	Minor	Minor	Minor	Minor

11.9.2 The effects on users of Craigmarnloch Road and Routenburn Road have been reviewed and have been classified as being either **minor** or **moderate**. Effects on residents on both roads and on residents of the A78 near Routenburn Road following standard mitigation measures are assessed as being minor.

### **Operation**

11.9.3 As noted in paragraphs 11.6.35-36, no operational effects are anticipated.

### **Decommissioning**

11.9.4 Decommissioning effects have been scoped out of the assessment as their impacts will be similar or less than the construction phase

## 11.10 Additional Mitigation

11.10.1 The following additional site specific mitigation will also be applied to reduce any remaining effects to minor or negligible:

- All site traffic to travel at a self-imposed speed limit of 20mph and to be made aware of the Core Path status of both Craigmarloch Road and Routenburn Road.
- The Balance of Plant contract will include clauses to restrict speed on Craigmarloch Road and Routenburn Road and for all HGVs accessing the site to have identification numbers of the site telephone number clearly displayed on them, to allow the public to note and advise site of anti-social driving practices.
- The Balance of Plant contract will allow the removal of staff found speeding or undertaking anti-social driving on Craigmarloch Road and Routenburn Road.
- The Balance of Plant contractor will review the self-imposed speed limit using spot checks and anyone found breaking this will be removed from the site.
- The road widening required for the wind turbine abnormal loads on Craigmarloch Road and Routenburn Road should be surfaced in a different material to the rest of the road so that it can be used by pedestrians and users of the Core Path outwith abnormal load deliveries. This will provide a more suitable and safer walking / riding environment for users.
- The Applicant will meet with North Ayrshire Council to consider further locations for passing places to be constructed within the existing adopted road boundary

## 11.11 Residual Effects

### ***Construction***

- 11.11.1 The assessment confirms that the effects will be **minor**. The traffic effects associated with the construction phase are temporary in nature and are confined to the construction period only. No long lasting detrimental transport or access issues are associated with the Proposed Development.

### ***Operation***

- 11.11.2 There are no residual effects associated with the operational phase of the Proposed Development.

### ***Decommissioning***

- 11.11.3 There are no additional residual effects associated with the decommissioning phase of the Proposed Development.

## 11.12 Cumulative Assessment

- 11.12.1 The use of Low NRTF growth assumptions has provided a basis for general local development growth within the study area. The use of NRTF covers other committed development traffic flows within the study area.

## 11.13 Summary

- 11.13.1 The Proposed Development will lead to increased traffic volumes on Craigmarloch Road and Routenburn Road during the construction phase. This increase will be temporary and will only occur during the construction phase.
- 11.13.2 An assessment of likely effect using IEMA guidelines has been undertaken. This determined that prior to the implementation of mitigation, a **moderate / minor** effect could be expected on Craigmarloch Road and Routenburn Road, relating to the increase in HGV traffic operating on the route. All other receptors with the study area assessment, to the south of Largs show a negligible effect caused by the Proposed Development within the study area.
- 11.13.3 With the implementation of appropriate mitigation, no significant long lasting residual effects are anticipated in respect of traffic and transport issues. The residual effects are all assessed to be **minor**. As they will occur during the construction phase only, they are temporary and reversible.

**Table 11.13 – Summary of Effects**

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Construction					
Users of Craigmarloch Road and Routenburn Road.	Moderate	Adverse	Construction Traffic Management Plan, enhanced BoP Contract, separate road widening surfacing, self-imposed speed limit and reviews	Minor	Adverse
Operation					
None	None	Neutral	None	Negligible	neutral
Decommissioning					
Users of Craigmarloch Road and Routenburn Road.	Moderate	Adverse	Construction Traffic Management Plan, enhanced BoP Contract, separate road widening surfacing, self-imposed speed limit and reviews	Minor	Adverse

**Table 11.14 – Summary of Cumulative Effects**

Receptor	Effect	Cumulative Developments	Significance of Cumulative Effect	
			Significance	Beneficial/ Adverse
None	None	None	Negligible	Neutral

## 11.14 References

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