

## 18 Highways and Transportation

### 18.1 Introduction

- 18.1.1 Since the submission of the previous application for Beaw Field, there have been no changes to the highways and transportation baseline and given that the infrastructure of the Consented Development is not changing, there would be no highways and transportation effects. The findings of the previous highways and transportation assessment therefore remain valid, and the previous highways and transportation chapter is set out in full below, with a brief update included in relation to planning policy.
- 18.1.2 This Chapter considers the likely significant effects on receptors along the transport routes as a result of vehicle movements associated with the construction, operation and decommissioning of the Proposed Development. The specific objectives of the chapter are to:
- Outline the relevant legislative framework;
  - Describe the transport baseline;
  - 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.
- 18.1.3 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 (IEMA)) Guidelines for the Environmental Assessment of Road Traffic<sup>1</sup>. The document is referred to below as the IEMA Guidelines.
- 18.1.4 The assessment was carried out by WYG Environment Planning Transport Limited, of WYG Group.
- 18.1.5 The chapter is supported by Appendix 18.1: Transport Assessment.
- 18.1.6 No cumulative impacts are anticipated as a result of the Proposed Development as no other significant developments that would impact on the study area are anticipated to be under construction (the main period of traffic generation) within the same timescale. Cumulative effects have therefore been scoped out of the assessment.

### 18.2 Legislative framework

- 18.2.1 The Scottish National Planning Framework (NPF) sets the context for development planning in Scotland and provides a framework for the spatial development of Scotland as a whole. It sets out the Government's development priorities over the next 20-30 years and identifies national developments which support the development strategy. Scotland's third National Planning Framework 3 was laid in the Scottish Parliament on June 23, 2014. Draft NPF4 has now been published, which once adopted will replace NPF3.

- 18.2.2 Planning Advice Note 75 – Planning for Transport (2005) aims to create greater awareness of how linkages between planning and transport can be managed. It provides good practice guidance which planning authorities, developers and others should carry out in their policy development, proposal assessment and project delivery.
- 18.2.3 Transport Assessment Guidance (July 2012) published by Transport Scotland also provides information relevant to the preparation of Transport Assessments for development proposals in Scotland. The guidance is intended to ensure that mechanisms are in place to specify, assess, revise, implement, monitor and review the impacts that development will have on the transport system.
- 18.2.4 For relevant planning policies the reader is directed to Chapter 4 of this EIAR which sets out those policies relevant to the Proposed Development.

## 18.3 Methodology

### Sensitivity

- 18.3.1 The Institution of Environmental Management and Assessment (IEMA) ‘Guidelines for Environmental Impact Assessment’ (2005)<sup>2</sup> 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 major new developments. The guidelines intend to complement professional judgement and the experience of trained assessors. The document 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 various receptors. This is summarised in Table 18.1.

**Table 18.1: Classification of receptor sensitivity**

<i>Sensitivity</i>				
<i>Sensitivity</i>	<i>Negligible</i>	<i>Low</i>	<i>Medium</i>	<i>High</i>
Location – road users within local settlements	Individual dwellings or scattered settlements with no facilities	Small rural settlement, few community or public facilities or services	Intermediate sized rural settlement, containing some community or public facilities and services	Large rural settlement containing a high number of community and public services and facilities
Road network and associated users	Roads with no adjacent settlements including new strategic trunk roads that would be little affected by additional traffic and suitable for AILs	Little or no traffic calming or traffic management measures	Some traffic calming or traffic management measures	Traffic control signals, waiting and loading restrictions, traffic calming measures
Road structure and classification	New strategic trunk road junctions	Trunk or A-class road, constructed	Local A or B class roads, capable of	Minor rural roads, not constructed to

capable of accommodating ALLs	to accommodate significant HGV composition	regular use by HGV traffic	accommodate frequent use by HGVs
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18.3.2 All users of the roads are considered receptors subject to the same level of sensitivity as the road or location through which the road passes, whichever is higher.

### Magnitude of change

18.3.3 The following rules, also taken from the IEMA Guidelines were used to determine which links in 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.

18.3.4 The IEMA Guidelines identify the key impacts that are most important when assessing the magnitude of traffic effects from an individual development: Table 2.2 of Volume 11, Section 2, Part 5 of the Design Manual for Roads and Bridges (DMRB)<sup>3</sup> entitled Assessment and Management of Environmental Effects sets out four levels against which the magnitude of change should be assessed – major, moderate, minor and negligible. The impacts and levels of magnitude are discussed below:

- Severance – the IEMA Guidelines state 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 suggest 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 in severance respectively; and
- Accidents and safety – professional judgement would be used to assess the implications of local circumstances or factors that may elevate or lessen risks of accidents.

## Significance criteria

- 18.3.5 To determine the overall significance of the effects, the results from the receptor sensitivity and magnitude of change are correlated and classified using a scale set out in Table 2.4 of Volume 11, Section 2, Part 5 of the DMRB and summarised in Table 18.2.

**Table 18.2: Significance of effects**

<i>Sensitivity of the receptor</i>	<i>Magnitude of change</i>			
	<i>Major</i>	<i>Moderate</i>	<i>Minor</i>	<i>Negligible</i>
<i>High</i>	Large	Large/Moderate	Moderate/Slight	Slight
<i>Medium</i>	Large/Moderate	Moderate	Slight	Slight/Neutral
<i>Low</i>	Moderate/Slight	Slight	Slight	Slight/Neutral
<i>Negligible</i>	Slight	Slight/Neutral	Slight/Neutral	Neutral

- 18.3.6 In terms of the EIA Regulations, effects would be considered to be of significance where they are assessed to be large or moderate. Where an effect could be one of Large/Moderate or Moderate/Slight, professional judgement would be used to determine which option should be applicable.

- 18.3.7 The assessment of effects is summarised in Table 18.9 at the end of this chapter.

## 18.4 Baseline

- 18.4.1 The baseline review focuses on the nature of the surrounding road infrastructure and the current level of traffic use and was informed by desktop studies and consultation, comprising the following:

- Site visits;
- Review of relevant transport planning policy;
- Consideration of potential origin locations of construction staff and potential supply locations for construction materials to inform extent of local area roads network to be considered in the assessment;
- Collection of traffic flow and speed data;
- Review of the relevant roads hierarchy;
- Review of sensitive locations;
- Review of any areas of road safety concerns;
- Review of accident data;
- Review of any other traffic sensitive receptors in the area (routes, communities, buildings etc.); and
- Review of Ordnance Survey (OS) plans to derive a study area roads network.

## Study Area

- 18.4.2 The Proposed Development would take access via a new junction with the B9081 approximately 3.5km north east of the Ulsta Ferry Terminal. Construction traffic would use the A968 and B9081 on Yell to access the site and based on the locations of potential suppliers of materials, it is also likely that the A968, B9076 and A970 on Mainland would be used by construction traffic.
- 18.4.3 The Study Area therefore comprised the following road links:
- B9081 between its junctions with the A968 north of the Ulsta Ferry Terminal and north of Mid Yell;
  - A968 on Yell between the Ulsta Ferry Terminal and its junction with the B9081;
  - A968 between Toft and Hillside, Mainland;
  - B9076 between Pund of Loot and Brae, Mainland; and
  - A970 between Hillside and its junction with the B9075, Mainland.
- 18.4.4 The Study Area is indicated in Figure 18.1 .
- 18.4.5 Based on the classifications set out in Table 18.1, the B9081 and A968 on Yell are considered to be receptors of medium sensitivity and the A968 on Mainland, B9076 and A970, receptors of low sensitivity.
- 18.4.6 The settlement of Hillside, located on Mainland adjacent to the A968, is considered a receptor of medium sensitivity.

## Traffic data

- 18.4.7 Traffic flow, speed and accident data was obtained to further enhance the understanding of the road network in the study area and to identify potential constraints on the network.

### Traffic flows

- 18.4.8 Automatic Traffic Count (ATC) data was collected by independent traffic survey specialists, Streetwise, for the week commencing Friday 6th June 2015 during what is considered a normal period within the calendar year. The locations of the traffic count sites relevant to this assessment are illustrated in Figure 18.1 and summarised below:
- B9081 in the vicinity of the proposed site access junction;
  - A968 north of the Ulsta ferry terminal;
  - A968 south of the Toft ferry terminal;
  - B9076 west of its junction with the A968;
  - A968 south of its junction with the B9076; and
  - A970 south of its junction with the A968 at Hillside.
- 18.4.9 The traffic counters allowed the traffic flows to be split into vehicle classes. The data was summarised into cars / lights and HGVs (all goods vehicles >3.5 tonnes gross maximum weight).
- 18.4.10 Table 18.3 summarises the 24 hour average weekday traffic data collected at the six sites.

**Table 18.3: Existing traffic conditions (weekday average two-way flows)**

<i>Survey location</i>	<i>Cars &amp; lights</i>	<i>HGV</i>	<i>Total</i>
B9081 in vicinity of proposed site access junction	172	58	230
A968 north of Ulsta ferry terminal	452	142	594
A968 south of Toft ferry terminal	561	162	723
B9076 west of junction with A968	1027	377	1404
A968 south of junction with B9076	910	353	1263
A970 south of junction with A968	2,777	958	3735

### Speed data

18.4.11 The ATC sites used to provide traffic volume data were also used to collect speed statistics. The two way 5-day average and 85<sup>th</sup> percentile speeds observed at the count locations are summarised below in Table 18.4 **Error! Reference source not found..**

**Table 18.4: Speed summary (weekday average two way)**

<i>Survey location</i>	<i>Average speed (mph)</i>	<i>85th Percentile speed (mph)</i>	<i>Speed limit (mph)</i>
B9081 in vicinity of proposed site access junction	37.9	47.9	60
A968 north of Ulsta ferry terminal	43.1	51.1	60
A968 south of Toft ferry terminal	45.1	57.0	60
B9076 west of junction with A968	57.9	72.0	60
A968 south of junction with B9076	55.1	63.0	60
A970 south of junction with A968	55.5	63.4	60

18.4.12 The speed survey data indicates that average and 85<sup>th</sup> percentile speeds at all sites on Yell are substantially lower than the speed limit. On Mainland, while the average speeds were all recorded as being below the speed limit, 85<sup>th</sup> percentile speeds at all locations except immediately south of the Toft ferry terminal were in excess of the speed limit.

### Accident history

18.4.13 Road traffic accident data for the three year period commencing January 2011 was obtained from the online resource crashmap.co.uk which uses data collected by the police about road traffic crashes occurring on British roads where someone is injured.

- 18.4.14 Section 5 of Appendix 18.1 provides a summary and analysis of the personal injury accident data recorded over the Study Area network which is approximately 180km in length (two way). This indicates that an average of 3 accidents occur every year of which 78% are classified as 'slight' by the police officer(s) reporting and recording the personal injury accident.
- 18.4.15 In summary, it is noted that the majority of accidents were slight and involved single vehicles, all the accidents involved cars, and over half occurred when the road surface was affected by snow, frost, ice or rain. None of the accidents involved a goods vehicle which is important to note as the majority of movements associated with the Proposed Development will be undertaken by goods traffic.

### **Path network**

- 18.4.16 The Shetland Islands Council (SIC) Core Path Plan does not indicate any Core Paths in the vicinity of the proposed site. However, a circular walking route, the 'Ward of Otterswick Walk' which links with the 'Catalina Walk' leading to the Catalina Memorial for those lost in an air crash, follows the B9081 from Hamnavoe, passes the site entrance to the Arisdale Farm, heads north to Ward of Otterswick and then south back to Hamnavoe. The section of the route which follows the B9081 between the site access junction and the Arisdale Farm entrance would be used by construction or operational traffic serving the Proposed Development in addition to the traffic that currently uses the road.
- 18.4.17 North of Hamnavoe and within the Site, the route would also be crossed and followed for a short length by the main site access road. The route will therefore also be affected by construction traffic. Within the site, the walking route is considered a receptor of high significance.
- 18.4.18 The full route is indicated in Figure 18.2.

### **Future baseline traffic flows**

- 18.4.19 Construction of the project is due to be undertaken during 2019 if consent is granted and is likely to take between 18 and 24 months. For the purpose of this assessment, and to consider the most onerous construction traffic figures, the shorter 18 month construction period was assumed.
- 18.4.20 Any lengthening in the programme however, will have a reduced effect on the surrounding road network in peak period trip generation terms.
- 18.4.21 To assess the likely effects during the construction phase (and as agreed with SIC roads officers), base year traffic flows were determined by applying a National Road Traffic Forecast (NRTF) low growth factor to the surveyed traffic flows.
- 18.4.22 The NRTF low growth factor is 1.0276. This factor was applied to the 2015 survey data to estimate the 2019 Base traffic flows shown in Table 18.5.

**Table 18.5: 2019 Base traffic conditions (weekday average two-way flows)**

<i>Survey location</i>	<i>Cars &amp; lights</i>	<i>HGV</i>	<i>Total</i>
B9081 in vicinity of proposed site access junction	177	60	237
A968 north of Ulsta ferry terminal	465	146	611
A968 south of Toft ferry terminal	577	167	744
B9076 west of junction with A968	1056	388	1444
A968 south of junction with B9076	936	363	1299
A970 south of junction with A968	2854	985	3839

### **Abnormal Indivisible Load (AIL) routing**

18.4.23 The most suitable port of entry for turbine components bound for the Site has been identified as the construction jetty at Sullom Voe. Components would then be transported overland to Toft to be shipped to Yell via the existing Toft / Ulsta ferry.

18.4.24 From Sullom Voe, loads would:

- Follow an unclassified road onto the B9076;
- continue eastwards on the B9076, turning left onto the A968 at Pund of Loot;
- continue northwards on the A968 to Toft Voe Pier and take the ferry to the Ulsta Ferry Terminal;
- depart ferry at Ulsta and continue on A968 before turning right onto B9081; and
- continue on B9081 to the proposed site access, turning left off the road.

18.4.25 The route is indicated in Figure 18.3.

18.4.26 Use of the Toft / Ulsta ferry link could be restricted to quiet periods during the day when one or two smaller components could be transported with other traffic. The use of the vessels at night time is also considered a practical delivery schedule for larger sections as it may not always be feasible to transport blade / tower components at the same time as general traffic.

18.4.27 A detailed assessment, including swept path analysis, was undertaken of the route. This identified a number of constraint points which are indicated in Figure 18.3 and are discussed in the mitigation measures section of this Chapter.



## 18.5 Assessment of impacts

### Construction impacts

#### Types of vehicle traffic

- 18.5.1 During the assumed 18 month construction period, the following traffic would require access to the Site:
- Staff transport, either cars or staff minibuses;
  - Construction equipment and materials, deliveries of machinery and supplies such as concrete raw materials;
  - ALLs consisting of the wind turbine components and also heavy lift crane(s); and
  - Escort vehicles for ALL deliveries.
- 18.5.2 With the exception of the turbine elements, the vast majority of traffic would be normal construction plant and would include grading tractors, excavators, high capacity cranes, forklifts and dumper trucks. Most would arrive on site on low loaders.
- 18.5.3 The turbines are delivered in component sections for transport and would be assembled at the site. The nacelle, hub, drive train, blade, tower sections are classified as ALL due to their weight and / or length, width and height when loaded.
- 18.5.4 The components can be delivered on a variety of transport platforms with typical examples illustrated in Section 9 of Appendix 18.1.
- 18.5.5 In addition to the turbine deliveries, up to two high capacity erection cranes would be needed to offload a number of components and erect the turbine. The cranes are likely to be mobile cranes with a capacity up to 1,000 tonnes that are escorted by boom and ballast trucks to allow full mobilisation on Site. Smaller erector cranes will also be present to allow the assembly of the main cranes and to ease overall erection of the turbines.

#### Construction vehicle movements

- 18.5.6 The assessment is based upon information provided by the Applicant and developed from experience of other wind farms of a similar scale which is detailed in Section 6 of Appendix 18.1.
- 18.5.7 Materials will be required to construct the wearing course of the access tracks, crane hardstandings and turning heads, foundations for the temporary construction compounds and electrical control building. For the purposes of this assessment it was assumed that the majority of material will be extracted from the four borrow pits that have been identified on site and only the top 200mm of dressing stone will be delivered from off-site quarries.
- 18.5.8 For all other materials, including ready mix concrete for turbine foundations, a worst case scenario where all materials were imported was assumed. It is considered highly likely that the worst case estimates would be reduced through the use of onsite batching of concrete
- 18.5.9 To enable comparison of the estimated 2019 Baseline traffic movements with total volumes including predicted construction traffic, average daily two-way movements for each month assuming a 22-day working month were determined. Traffic movements were also split by vehicle type in line with the

Baseline data and the peak period for construction traffic determined. The final daily construction profile is set out in Table 18.6.

**Table 18.6: Daily construction traffic movements (weekday average two-way flows)**

<b>Vehicle type</b>	<b>Month</b>																	
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>
Car/Light	4	12	20	24	30	30	32	36	40	40	40	40	40	40	33	22	4	4
HGV	22	27	21	21	28	38	38	32	24	26	26	25	24	7	0	1	8	8
Total	26	39	41	45	58	68	70	68	64	66	66	65	54	47	33	23	12	12

18.5.10 The maximum traffic movements associated with construction of the Proposed Development are predicted to occur in month 7 of the programme. During this month, an average of 38 HGV movements are predicted per day and it is estimated that there would be a further 32 car and light van movements per day to transport construction workers to and from the site.

#### Development traffic distribution

18.5.11 The distribution of development traffic on the network would vary depending on the types of loads being transported. The full set of assumptions underlying the construction traffic distributions is set out in Section 6 of Appendix 18.1, they include:

- Staff trips all originate in Lerwick and workers commute to the site each day, a very robust assumption given that other residential options exist;
- All abnormal turbine and crane loads would access the site via B9076 / A968 / Toft-Ulsta Ferry / A968 / B9081; and
- All imported aggregate (dressing layer) and concrete raw materials would likely be sourced from local quarries and ready mix suppliers and would also access the site via the Toft-Ulsta Ferry / A968 / B9081.

#### Predicted impacts

18.5.12 To estimate the total trips through the Study Area during the peak of the construction phase, construction traffic was distributed through the network and combined with the 2019 Baseline traffic data. The resulting figures were compared with the weekday 2019 Baseline traffic; the percentage change in movements during the peak month of construction is set out in Table 18.7.

**Table 18.7: Percentage Increase in 2019 Total Traffic vs Baseline Traffic Flows**

<b>Survey Location</b>	<b>Cars &amp; Lights</b>	<b>HGV</b>	<b>Total</b>
B9081 in vicinity of proposed site access junction	18%	63%	29%
A968 north of Ulsta ferry terminal	7%	26%	11%
A968 south of Toft ferry terminal	6%	23%	9%
B9076 west of junction with A968	0%	7%	2%
A968 south of junction with B9076	3%	3%	3%
A970 south of junction with A968	1%	1%	1%

- 18.5.13 The results indicate that total traffic movements are not predicted to increase by more than 10% on any routes on Shetland Mainland. On the A968 between Ulsta and its junction with the B9081 and on the B9081, total traffic flows are anticipated to increase by 11% and 29% respectively.
- 18.5.14 HGV movements are anticipated to increase by less than 10% on the A970, A968 south of its junction with the B9076 and the B9076 itself. North of the junction of the A968 with the B9076, all roads considered are anticipated to experience uplifts in HGV traffic above 20% with the greatest impact, 63% anticipated on the B9081 between Ulsta and the site access junction.
- 18.5.15 Although the uplift on the B9081 is high in percentage terms, this is partly due to the very low baseline levels of HGV traffic on the link. In real terms, the additional number of HGV movements per hour averages less than four within this peak month of construction activity.
- 18.5.16 It should be noted that should on-site batching of concrete be progressed, the number of vehicle movements on the external road network associated with the construction of the turbine foundations would be reduced by around a third compared with the import of ready mix concrete.

#### Impact significance

- 18.5.17 With reference to the IEMA Guidelines, neither total nor HGV traffic movements are predicted to increase by more than 30% (or in fact 10%) on any sections of road located on Shetland Mainland. The effects are not therefore considered to be of significance and the A968 south of the Toft ferry terminal, the B9076, A970 and the settlement of Hillside were excluded from further assessment.
- 18.5.18 The A968 on Yell between the Ulsta Ferry Terminal and its junction with the B9081 and the B9081 were taken forward to further assessment.
- 18.5.19 For various receptors, Table 18.8 summarises the predicted magnitude and significance of the impact of the increase in traffic movements on the various receptors identified in the IEMA Guidelines with no mitigation in place.

**Table 18.8: Receptor review**

<b>Receptor</b>	<b>Potential Impact</b>	<b>Magnitude of Impact</b>	<b>Significance of Impact</b>	<b>Comment</b>
Users of / residents adjacent to A968, Yell and B9081 – medium sensitivity	Severance	Minor	Slight	<p>Increase in traffic could result in difficulties for people crossing the road or using the short length of the B9081 that forms part of the walking route during the construction period.</p> <p>Total traffic volumes are predicted to change by up to 29% over the 3.5km between the Ulsta ferry Terminal and the site access. However, crossing demand and use of the walking route are not observed to be high and there are only a very small number of dwellings along the route.</p>
	Driver delay	Minor	Slight	<p>Some delay to drivers may occur during the movement of AILs.</p> <p>The road network is not considered to experience operational difficulties as traffic movements are low. The change in traffic volumes would not take the system close to capacity limits. Any impact is therefore considered to be minor.</p>
	Pedestrian delay	Minor	Slight	<p>Pedestrians could experience delay if their movements conflict with that of construction, and particularly AIL traffic. Pedestrian demand is not observed to be high but the link does form part of a walking route.</p> <p>Total traffic volumes are predicted to change by up to 29% over the 3.5km between the Ulsta ferry Terminal and the site access which is considered could potentially lead to minor delays.</p>
	Pedestrian amenity	Moderate	Moderate	<p>Pedestrian amenity could be affected where movements conflict with those of construction and particularly AIL traffic.</p> <p>Although pedestrian flows are observed to be very low, as the lorry component of traffic movements is anticipated to increase by 63% on the section of the B9081 between the A968 and the site access, a short section of which is publicised as a walking route, it is considered to produce a moderate change during the construction period.</p>
	Fear and intimidation	Minor	Slight	<p>As total traffic volumes are anticipated to change by less than the 30% threshold on the B9081, the impact is considered to be minor.</p>
	Accidents and Safety	Moderate	Moderate	<p>There is potential for impact on safety due to driver frustration, particularly with regards to HGV movements and the transport of the AILs and due to potential conflict between HGVs and other traffic.</p>

**Table 18.8: Receptor review**

<b>Receptor</b>	<b>Potential Impact</b>	<b>Magnitude of Impact</b>	<b>Significance of Impact</b>	<b>Comment</b>
Users of the walking route within site – high sensitivity	Severance	Major	Large	The walking route may be temporarily severed during construction of the site access road. The impact would therefore only be temporary.  Pedestrian movements are not observed to be high.
	Pedestrian delay	Moderate	Moderate	Pedestrians could experience delay if their movements conflict with that of construction, and particularly AIL traffic.  Pedestrian movements are not observed to be high.
	Pedestrian amenity	Major	Large	Pedestrian amenity could be affected where their movements conflict with that of construction, and particularly AIL traffic.  Although pedestrian flows are noted to be very low, as there are currently no vehicles crossing the walking route, it is considered that the impact magnitude should be considered major.

## **Operational impacts**

### **Predicted impacts**

- 18.5.20 It is predicted that during the operation of the site there would be up to 2 vehicle movements per week for maintenance purposes. Also, there may be occasional abnormal load movements to deliver replacement components in the event of a significant component failure.

### **Impact significance**

- 18.5.21 In terms of the IEMA Guidelines, such a small number of traffic movements and the associated percentage uplift over Baseline traffic movements are not considered significant.

## **Decommissioning impacts**

### **Predicted impacts**

- 18.5.22 Prior to decommissioning of the site, a traffic assessment would be undertaken and appropriate traffic management procedures followed.
- 18.5.23 The decommissioning phase would result in fewer trips on the road network than the construction phase as it is considered likely that elements of infrastructure such as access tracks and electrical connections would be left in place and components may be broken up on site to allow transport by reduced numbers of standard HGVs.

## Impact significance

- 18.5.24 As decommissioning would result in fewer vehicle trips on the road network than the construction phase, the significance of any effects would not be greater. It can therefore be assumed that the assessment of the construction phase covers the worst case scenario.

## 18.6 Mitigation measures

### Mitigation during construction

#### General construction traffic

- 18.6.1 During the construction period, the project website would be regularly updated to provide the latest information relating to traffic movements associated with vehicles accessing the Site. This would be agreed with the local roads authority.
- 18.6.2 The short length of the walking route which follows the B9081 would be affected by traffic during the construction and decommissioning phases only. Access to it will be maintained or alternative provision made during these phases. Conflict between construction traffic and pedestrians will be prevented through appropriate traffic management and segregation. This will be managed through implementation of a Traffic Management Plan and Construction Traffic Management Plan (CTMP).
- 18.6.3 The section of the walking route which intersects the site access road may be temporarily severed during construction of the road and following that would be crossed by moving vehicles. The length of time the route is severed would be minimised and any conflicts managed through implementation of a Traffic Management Plan and Construction Traffic Management Plan (CTMP)
- 18.6.4 The following measures would be implemented during the construction phase through a Construction Traffic Management Plan:
- A Traffic Management Plan;
  - All materials delivery lorries (dry materials) should be sheeted to reduce dust and stop spillage on public roads;
  - Specific training and disciplinary measures should be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
  - Wheel wash facilities will be established at the site entrance;
  - Normal site working hours would be limited to between 7am and 7pm (Monday to Friday and 7am and 1pm (Saturday) though component delivery and turbine erection may take place outside these hours;
  - Appropriate traffic management measures would be put in place on the A968 and B9081 to avoid conflict with general traffic and pedestrians using the length of the B9081 which forms part of the walking route, subject to the agreement of the roads authority. Typical measures would include HGV Turning and Crossing signs and / or banksmen at the site access and warning signs;
  - Widening of and passing places on the B9081 to reduce potential conflicts. The works have been discussed in principal with Shetland Islands Council through scoping and at subsequent periods with Peel with no objections being raised, subject to the granting of technical approval through the appropriate road works licensing process. The Council has expressed an interest in undertaking

the required road design and implementation and Peel has confirmed that this would be acceptable subject to commercial considerations. Should this agreement be confirmed, the Council would undertake the design, permitting, construction and approvals necessary;

- Appropriate traffic management measures would be put in place on the site access road once constructed to avoid conflict with pedestrians using the walking route;
- Provide construction updates on the project website and a newsletter to be distributed to residents on Yell;
- Adoption of a voluntary speed limit of 30mph for all construction vehicles on the road network between Ulsta and the site access;
- To avoid and/or reduce the likelihood of otter mortality and injury during construction and operation provision will be made for on-site speed limits of 15mph for construction and maintenance traffic;
- All drivers would be required to attend an induction to include:
  - a safety briefing;
  - the need for appropriate care and speed control;
  - a briefing on driver speed reduction agreements (to slow site traffic at sensitive locations);
  - identification of specific sensitive areas;
  - identification of the specified route; and
  - the requirement not to deviate from the specified route.

18.6.5 The local authority may require an agreement to cover the cost of abnormal wear and tear on roads not designed for that purpose.

18.6.6 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 the Roads Authority. Any damage caused by traffic associated with the Proposed Development during the construction period that would be hazardous to public traffic would be repaired immediately.

18.6.7 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.

18.6.8 There would be a road edge review on a daily basis and any debris and mud removed from the carriageway using an onsite road sweeper to keep the road clean and safe.

18.6.9 The impact of construction traffic could be mitigated through the use of alternative methods of material sourcing such as batching of concrete onsite using a mobile batching plant. The use of onsite concrete batching could reduce the additional number of HGV movements by around a third compared with all concrete being imported.

#### Abnormal indivisible loads

18.6.10 An Access Route review was undertaken. This highlighted a number of constraint points which were assessed using swept path assessment software. Remedial works to accommodate the predicted loads were identified as follows; the locations (POI) are indicated in Figure 18.3:

- POI 22, B9076 / A968 Pund of Loot – left turn at junction. Loads will oversail and overrun the inside of the left turn and oversail the outside of the turn. To permit oversail and overrun on the inside of the turn, two chevron signs, one road sign and three bollards would need to be removed and a load bearing surface would need to be laid;
- POI 23, A968 Sandside – left hand bend. Loads will oversail the inside of the bend and oversail and overrun the outside of the bend. To permit oversail and overrun on the outside of the bend, a section of Armco barrier, a fence, two lighting columns, four chevron signs, two road signs and five bollards would need to be removed, a bus shelter would need to be relocated, load bearing surfaces would need to be laid and a bank would need to be re-profiled;
- POI 24, A968 Booth of Toft – right hand bend. Loads will oversail the inside of the bend and oversail and overrun the outside of the bend. To permit oversail and overrun through the bend, two chevron signs, one road sign, a section of fence and a gate would need to be removed and a load bearing surface would need to be laid;
- POI 25, Ulsta ferry Terminal Exit – three point turn. Loads will oversail and overrun various areas while undertaking the manoeuvre. To permit oversail and overrun four signs, two lighting columns and four bollards would need to be removed, a load bearing surface would need to be laid and parking would need to be suspended on the exit from the terminal;
- POI 26, A968 / B9081 – right turn at junction. Loads will oversail the inside of the turn and oversail and overrun the outside of the turn. To permit oversail and overrun through the turn, four signs, two bollards and a section of fence would need to be removed, a load bearing surface would need to be laid and a culvert would need to be upgraded;
- B9081 – general. The B9081 will be upgraded to 5.0m width with passing places to be provided at locations to be agreed;
- POI 27, B9081 Flukes Hole – culvert. Culvert to be widened;
- POI 28, B9081 Whinnerhoul – low utilities. Overhead utility search required to ensure height clearances are suitable for normal temperature ranges;
- POI 29, B9081 Loch of Ulsta – right hand bend. Loads will oversail the outside of the bend and oversail and overrun the inside of the bend. To permit overrun through the bend, a load bearing surface would need to be laid;
- POI 30, B9081 Hill of Ulsta – right hand bend. Loads will oversail the inside of the bend and oversail and overrun the outside of the bend. To permit overrun through the bend, a load bearing surface would need to be laid;
- POI 31, B9081 Hamna Voe – bridge. Loads will oversail the inside and outside of the bend on approach to the bridge though no mitigation would be required. The bridge would need to be upgraded to meet turbine manufacturer’s minimum standards and the parapets lowered to allow the passage of components; and
- B9081 proposed site access – left turn. A new access junction would be created to include a tarmac surfaced track, load bearing surface and clear visibility splays.

18.6.11 Works to accommodate the turbine transports on the mainland and on the B9081 on Yell have been discussed with Shetland Islands Council through the scoping discussions and at subsequent periods with Peel. The works have been discussed in principal with no objections being raised, subject to the granting of technical approval through the appropriate road works licensing process.



18.6.12 SIC has expressed an interest in undertaking the required road design and implementation and Peel has confirmed that this would be acceptable subject to commercial considerations. Should this agreement be confirmed, SIC would undertake the design, permitting, construction and approvals necessary for the works identified in this chapter.

18.6.13 Before the AILs traverse the route, the following tasks would be undertaken to ensure load and road user safety:

- A review of clear heights with utility providers and the transport agencies along the route. The developer would ensure with providers that there is sufficient clearance with an appropriate safety factor, especially with respect to power lines;
- Ensure any vegetation which may foul the loads is trimmed back to allow passage;
- Confirm there are no roadworks or closures that could affect the passage of the loads;
- Check no new or diverted underground services on the proposed route are at risk from the abnormal loads;
- Confirm the police are satisfied with the proposed movement strategy; and
- The Applicant contacts the appropriate agencies to ensure that the above points are reviewed before the transport of components commences.

### **Mitigation during operation**

18.6.14 No mitigation measures during operation are proposed as it is predicted that there would only be a very small number of vehicle movements per week for maintenance purposes. Consideration may have to be given to the very occasional AIL movement to deliver replacement components, although any required mitigation to allow for this would have to be determined at the time.

### **Mitigation during decommissioning**

18.6.15 Given that similar operations are required to decommission the Proposed Development, the mitigation measures would be comparable with those indicated for the delivery and construction period.

## **18.7 Residual effects**

18.7.1 This section considers the assessment of traffic effects following the incorporation of the mitigation measures identified above. Effects during the operational phase were scoped out of the assessment, which therefore only considers those arising during the construction phase.

### **Residual effects during construction phase**

18.7.2 An evaluation of the potential effects of the increase in traffic on the local roads to be used as part of the route for construction traffic was undertaken. This considered the traffic effects on different environmental receptors identified in the IEMA Guidelines with no mitigation in place (Table 18.8). Table 18.9 summarises the assessment of residual effects identified in the evaluation with mitigation in place.

**Table 18.9: Assessment of residual effects post-mitigation**

<i>Receptor</i>	<i>Potential effect</i>	<i>Mitigation</i>	<i>Magnitude of change</i>	<i>Significance of residual effect</i>	<i>Residual significance</i>
Users of (including pedestrians on walking route)/ residents adjacent to A968, Yell and B9081 – medium sensitivity	Severance associated with increased traffic movements	Implementation of CTMP, application of speed limits, AIL movements controlled through TMP, traffic management on B9081 and at site access, restricted delivery hours	Minor	Slight	Not significant
	Driver delay associated with movement of AILs	Load escorts, advance warning signage, website. Implemented through TMP	Minor	Slight	Not significant
	Pedestrian delay associated with AIL and construction traffic movements	Implementation of CTMP, traffic management on C2031 and at site access restricted delivery hours	Minor	Slight	Not significant
	Pedestrian amenity associated with AIL and construction traffic movements	Implementation of CTMP, traffic management on C2031 and at site access, restricted delivery hours	Minor	Slight	Not significant
	Fear and intimidation associated with AIL and construction traffic movements	Implementation of CTMP and TMP	Minor	Slight	Not significant
	Accidents and safety	Appropriate management of movement of AILs, traffic management measures along access route. Implemented through TMP and CTMP	Minor	Slight	Not significant
Users of the walking route within site – high sensitivity	Severance associated with construction and use of access road	Implementation of TMP and CTMP	Moderate	Moderate	significant
	Pedestrian delay associated with AIL and construction traffic movements	Implementation of TMP and CTMP	Minor	Slight	Not significant

**Table 18.9: Assessment of residual effects post-mitigation**

<i>Receptor</i>	<i>Potential effect</i>	<i>Mitigation</i>	<i>Magnitude of change</i>	<i>Significance of residual effect</i>	<i>Residual significance</i>
	Pedestrian amenity associated with AIL and construction traffic movements	Implementation of TMP and CTMP	Moderate	Moderate	significant

### **Cumulative impacts**

18.7.3 No cumulative impacts are anticipated as a result of this Proposed Development as no other significant developments that would impact on the Study Area are anticipated to be under construction (the main period of traffic generation) within the same timescale.

## **18.8 Summary and Conclusions**

18.8.1 The Proposed Development would lead to increased traffic volumes on the local road network during the construction phase. Traffic volumes would fall off considerably outside the peak period of construction.

18.8.2 The maximum traffic impact associated with construction is predicted to occur in month 7 of the programme. The greatest impact would be felt on the A968 and B9081 between Ulsta and the proposed site access. During this month; an average of 38 HGV movements (or less than 4 per hour) is predicted per day with a further 32 car and light van movements to transport construction workers to and from the site.

18.8.3 No significant capacity issues are expected on any of the roads within the study area due to the additional construction traffic movements associated with the Proposed Development as background traffic movements are low, the links are of reasonable standard and appropriate mitigation is proposed.

18.8.4 A review of the local road network was undertaken to assess the feasibility of transporting turbines to the Site.

18.8.5 Traffic levels during the operational phase of Proposed Development would be one or two vehicles per week for maintenance purposes. Traffic levels during the decommissioning of the Proposed Development are expected to be lower than during the construction phase as some elements may be left in situ and others broken up onsite.

18.8.6 The movement of AILs would require remedial works at a number of locations along delivery route and would require a police escort.

18.8.7 Table 18.9 confirms that following the implementation of the identified mitigation, the residual effects considered to be significant in terms of the EIA Regulations are those on severance and pedestrian amenity on the walking route within the site that will be crossed by the site access road. The impacts are assessed to be potentially moderate; however pedestrian flows are observed to be low so the number of people that could be affected is likely to be minimal. Impacts will be minimised through



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development of the Traffic Management Plan and Construction Traffic Management Plan which will be agreed with SIC.



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- <sup>1</sup> Institute of Environmental Assessment, Guidelines for the Environmental Assessment of Road Traffic (1993)
  - <sup>2</sup> Institution of Environmental Management and Assessment (IEMA) 'Guidelines for Environmental Impact Assessment' (2005)
  - <sup>3</sup> Table 2.2 of Volume 11, Section 2, Part 5 of the Design Manual for Roads and Bridges (DMRB) (Highways Agency, 2008)