12 Traffic and Transport

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12.1 Executive Summary

12.1.1 The Proposed Development will be accessed from the existing access track providing access to Wee Fea, to the west of Lyness. In order to construct the Proposed Development, bulk materials such as concrete and specialist loads such the turbine components will arrive on Hoy by ship and will be transported to site using specialist vehicles from Lyness Quay.

12.1.2 The construction activities will lead to increased traffic volumes on the B9047, B9048 and Wee Fea access track during the construction phase only. Following commissioning of the Proposed Development, traffic flows will fall to two vehicles every fortnight.

12.1.3 An assessment of likely potential effects using IEMA guidelines has been undertaken. This determined that **moderate/minor**, non-significant residual effects could be expected on the Wee Fea access track, relating to the increase in traffic operating on the route during the construction phase. There are no residual effects associated with the operational phase of the Proposed Development.

12.2 Introduction

12.2.1 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.

12.2.2 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 (IEMA)) Guidelines for the Environmental Assessment of Road Traffic. The document is referred to as the IEMA Guidelines in this chapter.

12.2.3 The chapter should be read in conjunction with Appendix 12.1 Transport Assessment.

12.3 Legislation, Policy and Guidelines

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

Legislation

12.3.2 There is no legislation applicable to this chapter.

Policy & Guidance

12.3.3 Chapter 5 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

12.3.4 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)

12.3.5 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.

12.3.6 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.

Onshore Wind Turbines; Online Renewables Planning Advice (May 2014)

12.3.7 The most recent Scottish Government advice note regarding onshore wind turbines was published in 2014. The advice note identifies the typical planning considerations in determining applications for onshore wind turbines including landscape impact, impacts on wildlife and ecology, shadow flicker, noise, ice throw, aviation, road traffic impacts, cumulative impacts and decommissioning.

12.3.8 In terms of road traffic impacts, the guidance notes that in siting wind turbines close to major roads, pre-application discussions are advisable as this is important for the movement of abnormal indivisible loads during the construction period, ongoing planned maintenance and for decommissioning (if applicable).

Orkney Local Development Plan

12.3.9 The Orkney Local Development Plan (LDP) was adopted by the Council in April 2017 and is the established planning policy for Orkney. It sets out a settlement strategy and spatial framework for how the Council foresees development occurring in the forthcoming twenty-year period.

12.3.10 Within the plan, relevant transport elements include:

"Developments that have the potential to generate significant levels of freight will be directed to industrial allocations beside key ports and harbour facilities (Hatston, Copland's Dock and Lyness)."

"Development will only be permitted where due regard has been paid to Designing Streets and the proposal demonstrates that:

i. It is well connected to the existing network of roads, paths and cycleways and will not create a barrier to future development;

ii. It can be safely and conveniently accessed by service, delivery and other goods vehicles, as appropriate to the development;

iii. Any new access, or upgrades to an existing access, linking to the adopted road network has been designed to an adoptable standard as defined by the National Roads Development Guide (new accesses should be resource efficient, safe for all road users, and convenient for sustainable travel modes);

iv. It is designed to cause minimal impact on the character of the site and the surrounding area; and

v. There are satisfactory arrangements to ensure that there is provision for the long-term maintenance."

12.3.11 A Supplementary Energy Guidance note is included within the LDP. With regards to transport and access, the supplementary note advises that:

"The developer must liaise with the Council as Roads Authority in relation to access and egress from the proposed development site. This must include for all works associated with alterations to the existing roads infrastructure required to transport materials to and from the development site and to all works associated with construction, maintenance and decommissioning.
Depending on the scale of the turbine(s) and the sensitivity of the site, all scales of wind energy developments could be required to submit a method statement for the construction of their proposal in support of the application. This statement would cover the phasing of construction, associated timescales and methods for transporting equipment to and from the site. This is to ensure minimal impacts on the surrounding environment and users."

12.4 Consultation

12.4.1 Table 12.1 summarises the consultation responses in regards to traffic and transport and the Proposed Development.

Table 12.1 – Consultation Summary

Organisation	Summary / Concerns Raised	Action Required
Orkney Islands Council – Scoping Opinion	A Transport Assessment (TA) for the Proposed Development should be prepared. This should consider land and sea access and any impacts on the Mainland of Orkney.	A TA has been prepared and is provided in Appendix 12.1. This includes consideration of land and sea access and includes and assessment of construction traffic on the Mainland of Orkney.
	The TA should cover the construction, operation and decommissioning phases of the Proposed Development.	The TA and the assessment in this chapter cover the construction and operation of the Proposed Development. The application is for the development to exist in perpetuity, however, should decommissioning occur the effects are not anticipated to be greater than the construction phase. It should however be noted that as elements of the Proposed Development would be retained should the site ever be decommissioned (i.e. the access junction and other elements such as sections of track that may assist with recreational access, etc.) and as such, the assessment of the construction phase is the worst case scenario. Should the site be decommissioned a Traffic Management Plan could be produced at that time to review access and transport issues.

Organisation	Summary / Concerns Raised	Action Required
	Details of the weights and sizes of vehicles used in the construction process should be provided.	Details of the abnormal loads have been provided in the Route Survey Report within Appendix 12.1. All other vehicles will comply with the Construction & Use Regulations and as such, no further weight details are necessary. This Chapter and Appendix 12.1 detail the numbers of additional vehicles associated with the construction phase at the peak of activity.
	A Section 96 Agreement to cover abnormal wear and tear on the road network may be required.	A Section 96 Agreement is noted and included as potential mitigation for the Proposed Development.
	There is one Core Path (H7) within the study area. There are no specific rights of way within the site.	Further details of Core Path H7 are discussed in Chapter 16.
Orkney Islands Council – Harbours Team	Access for abnormal loads would be best achieved via the Lyness Quay.	The Route Survey Report assumes access from Lyness and notes that there are no significant physical infrastructure constraints at the pier.
	A swept path assessment of the route from the pier to the public road will be required.	The Route Survey Report contains the required drawings and assessment.
	A Port Management Plan will be required to manage abnormal load deliveries and other marine traffic at Lyness.	A commitment to a Port Management Plan is contained in the mitigation proposals.
Transport Scotland	There are no trunk roads on Orkney. Transport Scotland will only have an input on any loads accessing ports from the Scottish Mainland.	There are no significant traffic flows on the Scottish mainland that would affect the trunk road network.
	The assessment should illustrate the impact on the Scottish Mainland	There is no impact on the Scottish Mainland trunk road network.

Organisation	Summary / Concerns Raised	Action Required
	trunk road network of construction and abnormal loads.	
Orkney Ferries Ltd	Include Orkney Islands Council Marine Services in consultation.	Consultation with the Marine Services team has been undertaken.
	Submission needs to consider HGV access to Hoy given the limits on the current ferry network. Consideration should be given to use of geared vessels.	Consideration has been made and is detailed in the chapter and Transport Assessment.

12.5 Assessment Methodology and Significance Criteria

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

- determine the baseline;
- review the Proposed Development for impacts;
- evaluate significance of effects on receptors;
- identify mitigation; and
- assess residual effects.

Consultation

12.5.2 Consultation was undertaken with the following:

- Orkney Islands Council – Roads Team; and
- Orkney Islands Council – Harbours Team.

12.5.3 The results of these consultations have been included in the evolution of the design and access strategy for the Proposed Development and are detailed in Section 12.4 above.

Desk Study & Site Visit

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.

12.5.4 The desk review was later confirmed by a site visit and walk over of the Proposed Development site. This included a detailed review of Lyness Quay and the route leading to and from the Proposed Development site.

Study Area

12.5.5 The study area for this assessment is as follows and is illustrated in Figure 12.1:

- The B9048 leading from Lyness ferry terminal through to its junction with the B9047;
- The B9047 within Lyness and to the south to Hurliness, (including the area for off-site peat remediation (see the outline Habitat Management Plan (Appendix 8.5) for further details);
- The access track leading to Wee Fea; and
- The A964 on the Orkney Mainland between Houton and Kirkwall.

12.5.6 The Wee Fea access track covers the access route to site and principal route for HGV access and site staff.

12.5.7 The B9048 provides connections from the ferry terminal to the wider road network on Hoy. It connects with the B9047 which forms the main north – south distributor road for the island. The B9047 also provides connections to potential quarry facilities located on the south of Hoy near Hurliness. This quarry was proposed for use in the consented Binga Fea wind turbine scheme.

12.5.8 The B4097 also provides connections to the proposed off-site peat remediation site.

12.5.9 The A964 provides connections between the ferry terminal at Houton and Kirkwall on the Mainland of Orkney. It is anticipated that this route will be generally used for staff movements from temporary lodgings in Kirkwall to the ferry links between the Mainland and Hoy.

Assessment of Likely Effect Significance

12.5.10 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

12.5.11 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.

12.5.12 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 12.2.

Table 12.2 – 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	Where the road is a local A or B class road, capable	Where the road is Trunk or A-class, constructed to accommodate	Where roads have no adjacent settlements. Includes new strategic trunk

Receptor	Sensitivity			
	High	**Medium**	**Low**	**Negligible**
	frequent use by HGVs. Includes roads with traffic control signals, waiting and loading restrictions, traffic calming measures.	of regular use by HGV traffic. Includes roads where there is some traffic calming or traffic management measures.	significant HGV composition. Includes roads with little or no traffic calming or traffic management measures.	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.

12.5.13 The classifications are based upon the activities that can be expected in different areas and different types of streetscape. Professional judgement is used to reflect these generalised descriptions to study areas, especially those in remote areas where settlement size, function and facilities are more important than the category descriptors suggest.

12.5.14 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

12.5.15 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.

12.5.16 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.

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

Significance of Effects

12.5.18 To determine the overall significance of effects, the results from the receptor sensitivity and magnitude of impact 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 12.3.

Table 12.3 – Significance of Effects

Receptor Sensitivity	**Magnitude of Impacts**			
	Major	**Moderate**	**Minor**	**Negligible**
High	major	major / moderate	moderate / minor	minor
Medium	major / moderate	moderate	minor	minor / negligible
Low	moderate / minor	minor	minor	minor / negligible
Negligible	minor	minor	minor / negligible	negligible

12.5.19 In terms of the EIA Regulations, effects would be considered of significance where they are assessed to be major or moderate. Where an effect is Moderate/Minor, professional judgement will be used to determine whether the effect is significant on a case by case basis.

Requirements for Mitigation

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

Residual Effects

12.5.21 Residual effects will be assessed following a similar methodology as the likely effects but taking into consideration the identified mitigation.

Cumulative Effects

12.5.22 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

12.5.23 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.

12.5.24 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.

12.5.25 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 surrounding areas may alter to those presented in the assessment.

12.6 Baseline Conditions

Pedestrian and Cyclist Networks

12.6.1 There are no specific rights of way recorded by Orkney Islands Council near the Proposed Development. The B9047 and B9048 do not have any dedicated pedestrian or cyclist infrastructure.

12.6.2 Core Path H7 (Wea Fee) connects the junction of the B7047 and B7048 with the former naval buildings at Wee Fea.

12.6.3 The areas with the highest pedestrian use are in the vicinity of the ferry terminal and the Scapa Flow Museum, located to the west of the ferry terminal.

12.6.4 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 on Hoy. The A964 between Kirkwall and Kirkbister is part of NCR 1.

12.6.5 The access track from the B9047 / B9048 junction is used by hill walkers accessing Wee Fea but does not feature any specific infrastructure.

Road Access

12.6.6 Access to the site would be taken directly from the existing access track which would be widened and improved to enable HGV and turbine load access. The access track would be re-surfaced and re-constructed to adoptable standards (within the current limits of road adoption). The section leading into the wind farm site would be surfaced for the first 20 m in the interests of keeping the remaining road clear of mud and site debris.

12.6.7 The B9047 and B9048 are both local access roads. Both roads are approximately 6 m in width and are subject to a 60 mph speed limit.

12.6.8 The A964 is also subject to a 60 mph speed limit within the main study area, although this reduces in urban areas. The road is a local distributor road and provides access between the southern communities of the Mainland of Orkney.

Existing Traffic Conditions

12.6.9 Traffic flows on Hoy are low given the current population and that access is available for car by one ferry link from the Orkney Mainland.

12.6.10 The volume of construction traffic that the Proposed Development will attract to this type of road network will exceed the criteria for assessment and interventions. This is due to the low existing levels of traffic on the network.

12.6.11 The ferries to Hoy at peak service operate six crossings to and from Hoy. MV Hoy Head is the largest of the two ferries to operate to Lyness and has capacity for 24 cars (OIC – the vessel has capacity for twenty four cars or three HGV and seven cars). As the ferry also serves Flotta, it is assumed that throughout the day 80 % of the total journey capacity would be available for vehicle transport to Hoy. With this assumption, up to 231 vehicles per day could be expected to travel to and from the ferry terminal. This traffic would then turn onto the B9047, to the north or south. For B9047 flows, it is assumed that the flows are those of the B9048.

12.6.12 Hoy has a population of circa 272 residents according to the latest census data. 84 % of the general Orkney population are of an age where it is legal to drive, indicating a potential driving population of 228 people. With a vehicle ownership rate of 92 %, this would suggest approximately 210 vehicles on the island (not all of which would be used daily).

12.6.13 The total of thirty vehicles per day are assumed to use the access track to Wee Fea for access to the residential properties, farms and for recreational uses. This is based upon the number of properties on the road, an estimate of likely service and agricultural vehicle movements and the capacity of the viewpoint parking area.

12.6.14 Department for Transport (DfT) data is available for the A964 and this has been used in the assessment elements in the Mainland of Orkney.

12.6.15 Construction of the project could commence in 2024 / 2025 and its assumed for the purpose of the assessment that the peak period is likely to occur during 2025 if consent is granted. Itis anticipated to take up to 18 months depending on weather conditions and ecological considerations.

12.6.16 Given the constrained nature of traffic growth that is possible on Hoy, it is assumed that no traffic growth would occur, providing a worst case scenario for the impact assessment.

Table 12.4 – 2025 24 Hour Average Traffic Flows

Location	Cars & Lights	HGV	Total
Site Access Track	*30*	*0*	*30*
B9047	231	0	231
B9048	231	0	231
A964	1005	49	1054

Accident Review

12.6.17 Road traffic accident data for the five-year period commencing 1st January 2015 through to 31st December 2019 was reviewed using the online resource crashmap.co.uk which uses data collected by the police about road traffic crashes occurring on British roads.

12.6.18 The statistics indicate that there have been no recorded traffic accidents on Hoy in that period. Only one accident is recorded on the A964 in the same period. This was a "Slight" category accident occurring on 14th October 2017 and involving car traffic, resulting in damage to vehicles only.

Construction Phase

12.6.19 During the 18 month construction period, the following traffic will require access to the site:

- staff transport, either cars or staff minibuses;
- construction equipment and materials, deliveries of machinery and supplies such as crushed rock and concrete; and
- abnormal loads consisting of the wind turbine sections and also a heavy lift crane, transported to site in sectional loads.

12.6.20 Average monthly traffic flow data were used to establish the construction trips associated with the site based on the assumptions detailed in Appendix 12.1.

12.6.21 The distribution of 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 existing Wee Fea access track.

12.6.22 Staff trips are assumed to originate from the directions of Kirkwall and within Hoy. 40 % of staff will be based on Hoy and will travel to site by car. The remaining 60 % will be resident in Kirkwall and will access the site by minibus, taking the ferry to Lyness. At Lyness a further minibus will provide access to the development site. General site deliveries are also assumed to all originate from Kirkwall.

12.6.23 All bulk materials (concrete aggregate, cement, cabling sand, etc) will originate from sources within Orkney or the Scottish Mainland and will be transported to Hoy by ship (not the existing scheduled ferry for capacity reasons). A temporary concrete batching plant will be established at Lyness to provide concrete for all foundation works.

12.6.24 General construction, building supply deliveries, geotextile, cable and reinforcement deliveries will be made from the UK Mainland direct to Hoy by ship.

12.6.25 The track network located on the Proposed Development has been designed to have a neutral cut and fill balance. A small amount of material will be required to construct the access track improvements on the Wee Fea access track and it is proposed that this will be extracted from an existing quarry at Hurliness (subject to commercial considerations). Access to this site will be taken via the B9047.

12.6.26 If the quarry near Hurliness is not suitable, material will be imported from alternative sources within Orkney or the Scottish Mainland to Lyness.

12.6.27 All abnormal loads would be unloaded at Lyness Quay and would access the site via the B9048 and the Wee Fea access track. Full details of these loads are provided in Appendix 12.1.

12.6.28 Excess peat from the site will be used for peatland habitat restoration, with material being exported from the site to a location to the south using the B9047 (Figure 12.1).

12.6.29 Using the assumptions above and details measured from the site layout plan (refer to Figure 1.2), a construction programme has been developed for the Proposed Development. This has been used to determine timescales for the various deliveries and trips and is detailed in Table 12.5.

12.6.30 The results conclude that Month 7 is likely to be the peak period for the construction phase. The activities are anticipated to generate an average of 46 movements per day (23 trips inbound and 23 trips outbound), of which 16 would be made by light vehicles (site staff) and 30 by HGV.

12.6.31 Using the distribution of traffic described in Appendix 12.1, the proposed traffic flows on the study area network at the peak of construction are illustrated in Table 12.6.

12.6.32 Please note that the figures quoted in Table 12.5 are average flows that have been rounded to the nearest whole number. As such, there may be minor rounding errors reported.

Table 12.5 – Construction Traffic Generation Profile

Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Site Establishment	20	30	30														40	40
General Site Delivery	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Access Track Works			10	90	90	90	90	10										
Peat Extraction			122	122	122	122	122	122										
Reinforcement							11	11	11	11								
Concrete Deliveries							384	384	384	384								
Cable Deliveries										10	4							
Cabling Sand										90	90	90	90					
Geotextile Deliveries			26							10								
Substation Deliveries															50	50	50	
Cranage												20					20	
AIL Deliveries													38	38	38	38		
AIL Escorts													21	21	21	21		
Commissioning																	132	132
Staff	139	202	282	361	361	361	361	361	361	361	361	361	361	361	282	202	139	139
Total HGV per Day	3	3	10	11	11	11	30	26	20	25	6	7	8	4	6	6	7	4
Total Cars / LGV per Day	6	9	13	16	16	16	16	16	16	16	16	16	17	17	14	10	12	12
Total per Day	**9**	**12**	**23**	**28**	**28**	**28**	**46**	**42**	**36**	**41**	**22**	**23**	**25**	**21**	**20**	**16**	**19**	**16**

Table 12.6 – Peak Construction Month Daily Traffic Data

Location	Cars & Lights	HGV	Total
Site Access Track	*16*	*30*	*46*
B9048	16	20	36
B9047	0	10	10
A964	2	2	4

12.6.33 The peak month traffic data was combined with the future year (2025) traffic data to allow a comparison between the baseline results to be made. The increase in traffic volumes is presented in percentage increases for each class of vehicle and is illustrated in Table 12.7.

Table 12.7 – 2025 Peak Month Daily Traffic Data

Location	Cars & Lights	HGV	Total	Cars & Lights % Increase	HGV % Increase	Total Traffic % Increase
Site Access Track	46	30	76	55%	n/a*	153%
B9048	247	20	267	7%	n/a*	16%
B9047	231	10	241	0%	n/a*	4%
A964	1007	51	1058	0.2%	4%	0.4%

* Infinite number due to no existing HGV traffic flow in base case

12.6.34 A review of existing road capacity has been undertaken using the Design Manual for Roads and Bridges, Volume 15, Part 5 "The NESA 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 12.1. The assessment clearly indicates that there are no road capacity issues associated with the Proposed Development.

Operational Phase

12.6.35 It is predicted that during the operation of the site there would be up to two vehicle movements per week for maintenance purposes. There may be occasional abnormal load movements to deliver replacement components in the unlikely event of a major failure.

12.6.36 Given the low level of traffic generation associated with the operational phase, no further assessment has been undertaken.

12.7 Receptors Brought Forward for Assessment

12.7.1 The impact assessment indicates that traffic levels will not exceed the 30% threshold for total traffic on the B9048, B9047 or on the A964. The threshold for HGV traffic is exceeded on the B9047, B9048 and the site access track, requiring a further assessment, as detailed below.

12.7.2 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 12.8 and are based upon the descriptions contained in Table 12.2.

Table 12.8 – Receptor Sensitivity Summary

Receptor	Sensitivity
Road Users of the B9048 and B9047	Medium Sensitivity
Road Users of the Wee Fea Access Track	High Sensitivity
Residents of Lyness	Low Sensitivity

The B9047 and B9048 are both B Class distributor roads and are both capable of accommodating regular HGV traffic as a result of their road width and geometry. The access track to Wee Fea is currently not suited to HGV traffic given its width, poor road surface condition and the provision of cattle grids.

The A964 is an A class local distributor road that provided connectivity from Kirkwall through to the communities of the south of the Mainland of Orkney. The road currently features HGV movements along its length and is an appropriate width to accommodate these movements.

Lyness has been classified as having low sensitivity given its size, lack of community facilities and distributed location of residential properties.

12.8 Standard Mitigation

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

Construction Phase

12.8.1 Subject to consent the Applicant will prepare a Construction Traffic Management Plan (CTMP) for agreement with Orkney Islands Council prior to construction works commencing. The following measures would be implemented through the CTMP during the construction phase:

- All materials 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.

12.8.2 The Applicant will cover the cost of abnormal wear and tear on roads not designed for that purpose and proposes that this is imposed by a planning condition.

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

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

12.8.5 There will 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

12.8.6 All abnormal load deliveries will 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 will travel in the early morning periods, before peak times while general construction traffic would generally avoid the morning and evening peak periods.

12.8.7 The majority of potential conflicts between construction traffic and other road users will occur with abnormal load traffic. General construction traffic is not likely to come into conflict with other road users as the vehicles are narrower and road users are generally more accustomed to them.

12.8.8 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:

- Where loads depart the storage areas at Lyness Quay and enter the B9048;
- On the B9048 and B9047; and
- At the junction of the B9047 and B9048.

12.8.9 To avoid impacts on ferry traffic, no abnormal loads will be moved within 30 minutes of a ferry arrival or departure. This will allow unimpeded access to the ferry terminal for other road users.

12.8.10 Advance warning signs will 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).

12.8.11 The location and numbers of signs will be agreed post consent and would form part of the wider traffic management proposals for the Proposed Development.

12.8.12 Information on the turbine convoys will be provided to local media outlets such as local papers and local radio to help assist the public.

12.8.13 Information would relate to expected vehicle movements from Lyness Quay through to the site access junction. This will assist residents becoming aware of the convoy movements and may help reduce any potential conflicts.

12.8.14 The Applicant will also ensure information was distributed through its communication team via the project website, local newsletters and social media.

12.8.15 A police escort will 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.

12.8.16 The abnormal loads convoys will 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.

12.8.17 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

12.8.18 An Abnormal Load Transport Management Plan will 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 popular local events 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

12.8.19 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.

12.9 Likely Effects

Construction

An assessment of the likely effects has been undertaken using the previously described thresholds. The results of this are summarised below in Table 12.9. The likely effects have assumed that the proposed mitigation measures are in place.

Table 12.9 – Construction Phase Effects Assessment

Receptor	**Severance**	**Driver Delay**	**Pedestrian Delay**	**Amenity**	**Fear**	**Accidents & Safety**
Road Users of the B9048 and B9047	**minor**	**minor**	**minor**	**moderate**	**minor**	**moderate**
Road Users of the Wee Fea Access Track	**major**	**minor**	**moderate**	**major**	**moderate**	**major**
Residents of Lyness	**minor**	**minor**	**minor**	**moderate**	**minor**	**minor**

12.9.1 The effects on the Wee Fea access track are classified as being significant and as such will require specific mitigation. These measures will also assist with addressing some of the moderate and minor issues noted on the B9047 and for residents of Lyness.

Operation

12.9.2 As per previous sections of this chapter, no operational effects are anticipated.

Decommissioning

12.9.3 The Applicant is seeking in-perpetuity consent for the Proposed Development. In the event of decommissioning, or replacement of turbines, it is anticipated that the levels of effect would be similar but of a lesser level than those during construction. Decommissioning would be undertaken in line with best practice processes and methods at that time and will be managed through an agreed Decommissioning Environmental Management Plan.

12.10 Additional Mitigation and Enhancement

Port Management Plan

12.10.1 Following discussions with Orkney Islands Council's Ports team, a review of quay access will be required in order to access Lyness Quay and to use the nearby storage areas.

12.10.2 Following consent, the Applicant will need to undertake a procurement exercise with the turbine suppliers to agree timescales for the import of components through Lyness Quay. As part of this process, the turbine suppliers will be required to formulate a Port Management Plan with the harbour authorities. The management plan will:

- agree timescales for deliveries to be made;
- agree quay space and temporary storage areas;
- agree crane and stevedore access arrangements;
- book quay space;
- detail the vessels that will undertake the deliveries; and
- agree access rights along the access road from the pier and the convoy management with Orkney Islands Council, ports team and Police.

12.10.3 To ensure that there are no detrimental issues at Lyness, the Applicant would produce a Port Management Plan secured by planning condition that will be agreed prior to the delivery of the first turbine component.

12.10.4 The existing ferry links between Hoy and the Orkney Mainland are sensitive to changes in traffic volumes. As such, it is important to note that the construction phase would not be wholly dependent upon the existing service and where practical every effort would be made to use alternatives for the import of materials to Hoy.

Additional Measures on the Wee Fea Access Track

12.10.5 In addition to the proposed standard measures, the following additional elements will be incorporated into the Construction Traffic Management Plan for the site:

- a maximum speed limit on public roads on Hoy of 10 mph and 5 mph on the Wee Fea access track;
- use of warning beacons to illuminate all HGV movements;
- banning of reversing sounders and horns (except in emergencies) on the route from Lyness to the site;
- marking areas on the Wee Fea access track as passing areas for pedestrians and cyclists;
- improved signage warning users of the Wee Fea access track of construction activities; and
- a review to identify if further material can be extracted from the site to reduce the initial road building material deliveries through Lyness and the Wee Fea access track.

Additional Measures on the B9047

12.10.6 Additional road warning signage and traffic management measures will be used at the B9047 / B9048 junction and at the junctions used by construction traffic or peat remediation vehicles on the B9047.

12.10.7 These measures will help address the issues raised in the effect assessment.

12.10.8 Further options for the Core Path are detailed in Chapter 16.

12.11 Residual Effects

Construction

12.11.1 The assessment confirms that a number of the potential effects will be **moderate/minor** and non-significant following mitigation. This conclusion has been based upon professional judgement following a review of the actual numbers of movements on the proposed study area which whilst result in a statistically high percentage impact are low in physical numbers.

12.11.2 The traffic effects associated with the construction phase are however 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. The proposed measures will help reduce the impacts of construction traffic and will improve road safety for all road users during this period.

Operation

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

12.12 Cumulative Assessment

12.12.1 There are no significant committed developments within the vicinity of the Proposed Development that are expected to have a significant impact on the study area road network.

12.13 Summary

12.13.1 The Proposed Development will lead to increased traffic volumes on the B9047, B9048 and Wee Fea access track during the construction phase. This increase will be temporary.

12.13.2 An assessment of likely effect using IEMA guidelines has been undertaken. This determined that **moderate/minor**, non-significant residual effects could be expected on the Wee Fea access track, relating to the increase in traffic operating on the route during construction. There are no residual effects associated with the operational phase of the Proposed Development.

Table 12.10 – Summary of Effects

Description of Effect	Significance of Likely Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Construction					
Traffic impacts on the Wee Fea Access Track	**major (Significant)**	Adverse	Port Management Plan and enhancements to the Construction Traffic Management Plan	**moderate/ minor (not Significant)**	Adverse
Traffic impacts on the B9047 and B9048	**moderate (Significant)**	Adverse	Construction management plan and enhanced traffic management and warning signage.	**minor (not significant)**	Adverse
Operation					
No operational effects anticipated.					

Table 12.11 – Summary of Cumulative Effects

Receptor	Effect	Cumulative Developments	Significance of Cumulative Effect	
			Significance	Beneficial/ Adverse
Traffic impacts on the study network	**negligible**	There are no cumulative developments	No cumulative effects	

12.14 References

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