

11 Traffic and Transport

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11 Traffic and Transport

11.1 Executive Summary

11.1.1 This Chapter presents the changes in transport and access impacts that area associated with the 2020 Layout of the Proposed Development in comparison against those presented against the 2019 Layout. The chapter details changes in material volumes and what effect that this has on vehicle numbers during the construction phase.

11.2 Introduction

11.2.1 Chapter 11 of the 2019 EIA Report detailed the access and transport arrangements, estimated traffic impact and proposed mitigation associated with the 2019 Layout of the Proposed Development.

11.2.2 This chapter presents the changes in transport and access impacts that area associated with the proposed 2020 Layout and can be compared against those presented against the 2019 Layout. The chapter details changes in material volumes and what effect that this has on vehicle numbers during the construction phase. A review of suitable mitigation measures is also provided.

11.3 Differences between the 2019 and 2020 Layout

11.3.1 The differences between the two layouts are provided in Chapter 3 of the 2020 SEI. The principal differences where there could be a material impact on traffic volumes are detailed below in Table 11.1.

Table 11.1 – Layout Differences

Infrastructure	2019 Layout	2020 Layout
Number of turbines	29	23
Number of borrow pit search areas	Nine	Seven
Number of construction compounds	Four (including substation construction compound)	Three (including substation construction compound)
Length of new permanent floated access track	18.35 km	12.5km
Length of new permanent dug access track	1.75 km	990 m
Length of new temporary floated access track	980 m	720 m
Length of upgraded existing track	1.05 km	1.05 km

11.3.2 In addition to these details, the concrete volumes of turbine foundations has been revised in the concrete estimates to better reflect the ground conditions associated with the site. The revised figures are detailed in later sections of this Chapter¹.

11.4 Response to Consultation Responses

Transport Scotland

11.4.1 Transport Scotland has not raised any objections to the Proposed Development.

Shetlands Islands Council – Roads Department

11.4.2 The Roads Department of Shetland Island Council (SIC) have not raised any objections, subject to the following:

- Further detailed design details of the proposed site access junction being provided and confirmation that lighting from the site does not affect the public road.
- That road condition surveys are carried out between any of the potential material sources or transportation hub points to the site.
- That potential ferry capacity issues with regard to imported aggregate is investigated in detail with the Councils Ferry Service.
- That any changes with regard to peat removal from site be proviso to additional consent so that appropriate control or mitigation measures can be ensured.

11.4.3 Within their response, the Roads Department suggests that on-site roads should be 3 m wide, with 1m verges. This is not correct as the road running surface will be between 4.5 m and 5 m.

11.4.4 The Applicant can confirm that a detailed access junction design (including the public section Old Cullivoe Road) would be undertaken to Road Construction Consent (RCC) standards post consent. This will be based upon a detailed topographical survey of the junction and its areas and will include visibility splay requirements to the higher speeds noted by SICas well as details of site lighting arrangements during the construction phase.

11.4.5 The Applicant will also provide a Construction Traffic Management plan (CTMP) that will detail the operational steps necessary to reduce the impact on the road and ferry network. This will be discussed in detail with SIC and Ferry stakeholders prior to construction activities commencing on site. The CTMP will also provide details of any changes associated with changes in peat works on the site. The Applicant is happy for the requirement for a CTMP to be a condition of the consent of the Application.

11.4.6 The Applicant also confirms that they are willing to agree to a Section 96 (or similar) agreement to cover the repair of any damage to the public road caused by construction activities.

11.4.7 The Applicant is content for all of the above to be made subject to suitably worded planning conditions.

Shetlands Islands Council – Harbour Master

11.4.8 The Harbour Master has raised no objections, subject to the following details being provided:

- That information regarding the proposed barge/vessel used for delivering turbine components is supplied.

¹ It should be noted that there is no difference in overall external size of the foundations between the 2019 Layout and the 2020 Layout, just the estimate of the volume of concrete required.

- That a detailed proposal which would indicate how the operation of transporting turbine components to the site would avoid conflict with the ferry timetables, taking note of the blue light requirements to access the Northern Isles; and
- That the Traffic Management Plan is designed so as to avoid the peak travelling hours for islanders.

11.4.9 The Applicant can confirm that a detailed CTMP will be authored prior to construction to address all of the above, and the Applicant is happy for these to be delivered by means of a suitably worded planning condition.

11.5 Assessment of Residual Effects

11.5.1 The techniques for assessing the impacts and effects of the 2020 Layout on the study area road network have not altered from the original assessment.

11.5.2 The differences in material volumes has resulted in traffic flow differences and these are detailed below for the areas and sections where change has occurred.

Construction

11.5.3 The changes in materials associated with the changes to the 2020 Layout are described in the following sections.

Abnormal Load Traffic Movements

11.5.4 The number of turbines has decreased from 29 to 23. Table 11.2 illustrates the revised Abnormal Indivisible Loads (AIL) for the transport of components to site associated with the 2020 Layout.

Table 11.2 – 2020 Layout AIL Movement Traffic Generation

<i>Turbine Component</i>	<i>No. of Loads per Turbine</i>
Rotor Blades	3
Tower Sections	5
Nacelle	1
Other Components	5
Site Parts (shared load)	0.2
Total Movements	14.2
Number of Turbines	23
Total Journeys²	654

11.5.5 The reduction of turbines results in fewer HGV traffic movements on the road network than that previously assessed.

Abnormal Load Escort Traffic Movements

11.5.6 The change in turbine sections deliveries will also be reflected in the number of Police and civilian escorts required to access the site. Using the same methodology used in the previous assessment, the number of escort journeys will reduce to 680 journeys.

² This is calculated as the total number of vehicle trips for 23 turbines (367) including the equivalent return trips.

Construction Staff Traffic Movements

- 11.5.7 The number of staff required on site will also fall as a result in the reduction of turbines proposed under the 2020 Layout and the reduction in access tracks and associated infrastructure. The staff estimates are illustrated in Table 11.4 and have been calculated using the same assessment methodology previously used.

Concrete and Associated Traffic Movements

- 11.5.8 It is proposed that on-site batching will be used at the Proposed Development for the production of concrete used in the turbine foundations and on the substation / control building foundation.
- 11.5.9 A review of a typical foundation mix has been undertaken to estimate the number of dry mix deliveries. Cement would be delivered by powder tanker, whilst sand / aggregate mix would be delivered in 20 tonne tipper HGVs.
- 11.5.10 It is proposed that each turbine will require 1810 m³ of concrete in each foundation. This is an increase from the previous assessment and represents a more accurate estimation of the actual foundations that would be required.
- 11.5.11 Up to 100 m³ of concrete would be required for the substation / control building foundation and other minor works located within the site. The total concrete requirement is therefore approximate 41,730 m³.
- 11.5.12 The resulting calculations for concrete deliveries are presented in Table 11.3.

Table 11.3 – Concrete Delivery Estimates

<i>Element</i>	<i>Volume (m³)</i>
Cement	11035
Sand	15891
Aggregate	4871

- 11.5.13 Based upon the delivery vehicle capacities noted in Paragraph 11.5.9, the resulting number of concrete delivery vehicles is 2828 journeys.
- 11.5.14 The amount of steel required in each turbine foundation is 120 tonnes. A further provision of 20 tonnes has been made for the substation / control building foundation. The total number of steel reinforcement journeys is therefore 186 journeys.
- 11.5.15 A provision for the delivery of batching plant has also been made with up to 60 journeys during the construction period allocated to this element.

Access Track Capping Layer Traffic Movements

- 11.5.16 The capping layer of the access tracks is still predicted to be imported into the site as a worst case scenario. As the number of access tracks has fallen, as has the number of crane pads required, the total volume of imported road material is now 22559 m³. This results in a total of 4062 journeys during the construction period.
- 11.5.17 The associated geotextile deliveries also reduces as a result of a shorter access track network and the resultant number of journeys under the 2020 Layout is 22 journeys.

Cabling Traffic Movements

- 11.5.18 The reduction in track lengths and number of turbines also shortens the cable connections and associated need for infrastructure. The total number of journeys associated with the import of cabling sand is 826 journeys, whilst the revised number of cable delivery journeys is now 22 journeys.

Substation Building Traffic Movements

11.5.19 A total of 150 journeys has been accounted for to include the deliveries of blockwork, roof trusses, roofing materials, fencing and other associated materials associated with the construction of the substation and control building.

Revised Construction Traffic Programme

11.5.20 The overall construction period of 24 month has remain unchanged. The revised traffic flow estimates have been applied to the programme to identify the peak construction period. Table 11.4 illustrates the revised construction programme and trip estimates.

Table 11.4 – Construction Programme and Trip Generation Profile

Activity	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
Site Establishment	120	120										
General Site Deliveries	4	12	20	24	30	30	32	360	40	40	40	40
Plant Delivery	10	20	30									
Aggregate			406	406	406	406	406	406	406	406		
Reinforcement				19	19	19	19	19	19	19	19	19
Concrete				236	236	236	236	236	236	236	236	236
Cable Deliveries								3	3	3	3	3
Cabling Sand								103	103	103	103	103
Geotextile Deliveries								4	4	4	4	4
HV Electrical Deliveries									16	16	16	16
Substation Building						25	25	25	25	25	25	
Cranage												
AIL Deliveries												
AIL Escorts												
Staff	206	618	1029	1235	1544	1544	1647	1853	2059	2059	2059	2059
Total per Month	340	770	1486	1920	2234	2259	2364	3008	2910	2910	2504	2479
Total HGV / Day	6	7	21	31	31	33	33	53	39	39	20	19
Total Car / Day	9	28	47	56	70	70	75	84	94	94	94	94

Table 11.4– Construction Programme and Trip Generation Profile (continued)

Activity	Month											
	13	14	15	16	17	18	19	20	21	22	23	24
Site Establishment									60	60	60	60
General Site Deliveries	40	40	30	20	4	4	4	4	4	20	4	4
Plant Delivery		30										30
Aggregate												
Reinforcement	19											
Concrete	236	236	236									
Cable Deliveries	3	3	3									
Cabling Sand	103	103	103									
Geotextile Deliveries	4											
HV Electrical Deliveries	16	16										
Substation Building												
Cranage	30									30		
AIL Deliveries		82	82	82	82	82	82	82	82			
AIL Escorts		85	85	85	85	85	85	85	85			
Staff	2059	2059	2059	2059	2059	2059	2059	2059	1544	1029	206	206
Total per Month	2509	2653	2597	2245	2229	2229	2229	2229	1608	1109	270	300
Total HGV / Day	20	23	21	5	4	4	4	4	3	4	3	4
Total Car / Day	94	97	97	97	97	97	97	97	70	47	9	9

11.5.21 The peak month for traffic generation is Month 8. This results in a peak of 84 Cars & Light Goods (LGV) Vehicles and 53 Heavy Goods Vehicles (HGV) per day at the peak of construction activities.

11.5.22 The peak traffic has been applied to the two survey stations using the same base year as the 2019 Assessment. Table 11.5 illustrates the base traffic flows, whilst Table 11.6 illustrates the generated peak construction traffic.

Table 11.5 – Base Traffic Flows

	Base Year Traffic Flows		
Survey Location	Cars & LGV	HGV	Total
A968 Ulsta	389	129	518
A968 / Old Cullivoe Road	369	110	479

Table 11.6 – Construction Trip Generation

	Peak Construction Traffic Flows		
Survey Location	Cars & LGV	HGV	Total
A968 Ulsta	84	53	137
A968 / Old Cullivoe Road	84	53	137

11.5.23 Table 11.7 illustrates the peak construction traffic assigned to the study network combined with the baseline traffic flows. The percentage increase in traffic associated with the construction phase is also provided.

Table 11.7 – Base+ Construction Traffic Flows and Percentage Increases

	Base Year + Construction Traffic Flows		
Survey Location	Cars & LGV	HGV	Total
A968 Ulsta	442	213	655
A968 / Old Cullivoe Road	453	163	616
Percentage Increase in Traffic Flows			
Survey Location	Cars & LGV %	HGV %	Total %
A968 Ulsta	21.65%	40.70%	26.39%
A968 / Old Cullivoe Road	22.82%	47.73%	28.54%

11.5.24 The increase in overall traffic impact is less than that estimated in the 2019 EIA Report. The increase in HGV impact is slightly higher, a result of the increase in concrete deliveries to site (but only by 1 journey during the peak month).

11.5.25 The results of the previous mitigation to offset the potential impacts and associated effects are considered valid and as such, no further mitigation works are proposed.

Operation

11.5.26 There is no change to the operational phase of the Proposed Development.

Decommissioning

11.5.27 There is no change to the decommissioning phase of the Proposed Development.

11.6 Additional Mitigation

11.6.1 No additional mitigation is proposed as part of the revised assessment.

11.7 Assessment of Cumulative Effects

11.7.1 No further cumulative assessment has been undertaken.

11.8 Comparison of Effects

11.8.1 The 2020 Layout results in fewer construction journeys on the study network, with a reduction of 39 Cars & LGV journeys. HGV journeys are predicted to rise by 1 journey during the peak month.

11.8.2 The impact of overall construction traffic on the A968 at Ulsta reduces by 5.65 %, whilst a reduction of 8 % is predicted at the site access junction.

11.8.3 No additional traffic mitigation measures are proposed and the Applicant has advised that they are willing to accept suitably worded planning conditions to satisfy the queries raised to date by stakeholders.

Description of Effect	2019 Effects		Mitigation Measure	2020 Effects	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Construction					
Severance to users of Old Cullivoe Road / CPPY04 resulting from HGV traffic movements	Moderate	Adverse	Implementation of CTMP, application of speed limits, AIL movements controlled through TMP, traffic management on Old Cullivoe Road and at site access junctions, restricted delivery hours, segregation from construction traffic	Moderate	Adverse
Amenity of pedestrians (cyclists and horse riders) using Old Cullivoe Road / CPPY04 resulting from HGV traffic movements	Moderate	Adverse	Implementation of CTMP, application of speed limits, AIL movements controlled through TMP, traffic management on Old Cullivoe Road and at site access junctions, restricted delivery hours, segregation from construction traffic	Moderate	Adverse
Fear and Intimidation affecting pedestrians (cyclists and horse riders) using Old Cullivoe Road / CPPY04	Moderate	Adverse	Implementation of CTMP, application of speed limits, AIL movements controlled through TMP, traffic management on Old Cullivoe Road and at site access junctions, restricted delivery hours, segregation from construction traffic	Moderate	Adverse

Description of Effect	2019 Effects		Mitigation Measure	2020 Effects	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Operation					
No effects anticipated					
Decommissioning					
Effects will be similar to those identified during the construction period. However, as traffic flows are anticipated to be lower they are anticipated to be less significant					