

# 3 Proposed Development

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## 3 Proposed Development

### 3.1 Executive Summary

- 3.1.1 The Proposed Development consists of six turbines, up to 149.9 m to tip. A number of ancillary elements are also proposed, including access tracks, crane hardstandings, underground cabling, possible external transformers, on-site substation and maintenance building, temporary construction compounds, borrow pits, a permanent meteorological mast, a new extended slipway and landing jetty.
- 3.1.2 Construction will take approximately 24 months and environmental impacts will be controlled, mitigated and monitored through the implementation of a Construction Environmental Management Plan (CEMP).
- 3.1.3 It is predicted that during the normal operation of the site there would be up to two vehicle movements per week to Kirkwall Harbour (the likely start and end point for boat trips to and from Faray) for maintenance purposes.
- 3.1.4 The Applicant is seeking in-perpetuity consent for the Proposed Development. However, should the Proposed Development be decommissioned it is expected that decommissioning would take approximately eight months. The environmental effects of decommissioning are considered to be no greater than construction effects but experienced over a much shorter time period. All turbine components will be carefully removed, and foundations removed to 1 m below ground level. Hardstandings will be removed and/or grassed over, however it is likely that the access junction and sections of access track may be left in situ to assist with agricultural access. Likewise, it is likely that the marine infrastructure may be left in place to allow continued access to the island.

### 3.2 Introduction

- 3.2.1 This chapter provides a description of the site and its geographical context and presents a description of the Proposed Development.
- 3.2.2 The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (Scottish Government, 2017) require that the EIA Report must *include "a description of the location of the development; and a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases"* Schedule 4, 1 (a) and (b).
- 3.2.3 Similarly, the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) require that the EIA Report must include *"a description of the works, including...a description of the location of the works, the physical characteristics of the whole works, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases, the main characteristics of the operational phase of the works, and an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases"* Schedule 4, 1 (a) – (d).

### 3.3 Site Status and Context

- 3.3.1 The site comprises the island of Faray, an uninhabited island to the north and west of Eday and south-east of Westray in the Orkney Islands. A smaller uninhabited island Holm of Faray is immediately to the north and can be reached from Faray on foot at low tide. Faray is approximately 17 km north-east of Orkney Mainland, and approximately 25 km from Kirkwall. The island extends to approximately 168 hectares (ha) and is centred on British National Grid (BNG) 353112, 1036752 (refer to Figure 1.1).
- 3.3.2 The topography of the island comprises two low hills. The southern of the two forms approximately the central point of the island, rising to 32 m Above Ordnance Datum (AOD). Approximately 700 m

to the north a second hill rises to 31 m AOD. The ground level falls away fairly gently from the two hills, the steepest slope being near the coast to the west of the southern hill. The coastline is generally defined by rocky cliffs with geos and caves, except on the west coast near the north of the island and on the far south-east coast, where there are stretches of beach.

- 3.3.3 The island comprises open fields of improved pasture, a number of abandoned buildings and a slipway. The current land use is sheep farming.
- 3.3.4 There are no major surface watercourses on the island. There are however, two springs located near the centre of the island from which a small stream flows west towards the sea.
- 3.3.5 There are no residential properties within the site boundary. The closest dwelling is North Guith c.1.6 km east of the nearest proposed turbine.

## 3.4 Description of the Proposed Development

- 3.4.1 The Proposed Development would consist of six wind turbines of up to a maximum of 149.9 m height from ground to blade tip when vertical. The likely installed capacity of the Proposed Development will be approximately 28.8 MW<sup>1</sup>. The actual installed capacity may be greater or less dependent on turbine model selection but will not be greater than 50 MW. A number of ancillary elements are also proposed, including access tracks, crane hardstandings, underground cabling, possible external transformers, on-site substation and maintenance building, temporary construction compounds, borrow pits, permanent meteorological mast, a new extended slipway and a landing jetty. The proposed site layout is shown in Figure 1.2.
- 3.4.2 Whilst the location of the infrastructure described below has been determined through an iterative environmental based design process, there is the potential for these exact locations to be further optimised through micro-siting allowances prior to construction. In this regard, there will be a micro-siting allowance of up to 50 m in all directions in respect of each turbine and its associated infrastructure in order to address any potential difficulties which may arise in the event that preconstruction surveys identify unsuitable ground conditions or environmental constraints that could be avoided.
- 3.4.3 The assessments within this EIA report have included the considerations of this 50 m micro-siting and it does not alter the conclusions formed as to likely effects.

### ***Turbines and Turbine Foundation***

- 3.4.4 The Proposed Development will comprise a maximum of six wind turbines with a maximum height from ground to blade tip, when vertical, of 149.9 m (refer to Figure 3.1). The total generating capacity is anticipated to be approximately 28.8 MW; however, this will depend on turbine models which are available at the time of confirming a turbine supply contract, and which fit within the physical parameters used for the purposes of this EIA. In any case, the total generating capacity will not exceed 50 MW.
- 3.4.5 The proposed locations of the turbines have been defined in order to enable the EIA to describe fully the Proposed Development for which permission is being sought. The British National Grid coordinates denoting where each of the turbines are proposed to be located, along with their approximate height above ordnance datum (AOD) are listed in Table 3.1 below.

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<sup>1</sup> 28.8 MW is an indicative capacity. Actual installed capacity may be greater or less dependent on turbine model selection but will not be greater than 50 MW (i.e. will not breach the 50 MW threshold that would require the application to be determined under Section 36 of the Electricity Act 1989 (as amended)).

**Table 3.1 – Wind Turbine Coordinates (British National Grid)**

<b>Turbine</b>	<b>Easting</b>	<b>Northing</b>	<b>AOD (m)</b>
T1	352884	1037440	17
T2	353193	1037075	17
T3	352836	1036575	15
T4	353379	1036155	21
T5	353333	1036155	13
T6	352973	1035840	9

3.4.6 Each of the turbines comprises the following components:

- blades;
- tower;
- nacelle;
- hub; and
- transformer.

3.4.7 Each turbine will consist of a tapered tubular steel tower and a nacelle containing the gearbox or direct drive, generator and associated equipment, to which are attached a hub and rotor assembly including three blades. At the base, the turbine will be approximately 5 m in diameter.

3.4.8 The turbines will not require night-time lighting as they are below the 150 m threshold stipulated in Civil Aviation Authority Guidance. Each turbine will however be fitted with medium intensity fixed red LED obstruction lights (2000 cd) for daylight hours only. The intensity can be reduced in conditions of high visibility. If the horizontal meteorological visibility in all directions from every wind turbine generator is more than 5 km, the intensity for the light may be reduced to not less than 10 % of the minimum peak intensity; i.e. 200 cd. This can be achieved automatically with turbine mounted sensors, measuring both visibility and light levels for daylight hours use only. In addition to the reduction of intensity under conditions of good visibility, the intensity also reduces sharply when observed from beneath the light, with reference to the horizontal. At -1 degree the intensity recommended by the CAA (via ICAO Annex 14 Volume 1 to the Chicago Convention) should not exceed 56 % of the maximum intensity, falling to 4 % at -10 degrees. Aviation and radar are covered in further detail in Chapter 14.

3.4.9 An elevation drawing of a typical turbine is illustrated in Figure 3.1. The turbines will be of a typical modern, three-blade, horizontal axis design in semi-matt white or light grey with no external advertising or lettering except for statutory notices. The specific turbine manufacturer and model has not yet been selected as this will be subject to a tendering exercise and will be confirmed post consent. Therefore, for the purposes of the EIA likely turbine dimensions and operational attributes have been established as a maximum development scenario.

3.4.10 A transformer will be sited either within the base of each tower or externally sited a few metres from the turbine tower. For the purpose of the EIA it has been assumed that the transformers would be external and have the approximate dimensions of 6 m long by 3 m wide by 2.5 m high.

3.4.11 The turbine foundations are anticipated to be an inverted “T” in section consisting of a reinforced central concrete pedestal with a reinforced concrete slab. The tower is proposed to be attached to the foundations via an anchor cage which is then tension anchored to the tower. Until detailed

ground investigations have been undertaken the exact size and depth of foundations required cannot be determined. Therefore, for the purposes of this EIA Report, the following approximate dimensions have been used:

- reinforced concrete slab approximately 12 m -15 m in diameter; and
- depth of the foundations approximately 3 m – 3.5 m.

3.4.12 An illustration of a typical turbine foundation is provided in Figure 3.2. The actual foundation design will be specific to the site conditions as verified during detailed site investigations undertaken before construction commences. In the unlikely event that ground conditions are unsuitable for the standard foundation design described above, a piled foundation design may be required, involving the installation of a series of concrete piles per turbine, with each pile being bored or driven until the underlying bedrock is reached.

### ***Crane Hardstandings***

3.4.13 To enable the construction of the turbines, a crane hardstanding area will be required to accommodate assembly cranes and construction vehicles. This will comprise a crushed stone hardstanding area measuring, approximately 3,685 m<sup>2</sup>, with a typical thickness of approximately 600 mm, but subject to the specifications required by the selected crane operator and following detailed ground investigations prior to construction. The crane hardstandings will remain in place during the lifetime of the Proposed Development to facilitate maintenance works.

3.4.14 In addition to the permanent crane hardstanding, a temporary turbine laydown area and a turning circle will be constructed adjacent to each turbine. This will consist of crushed stone hardstanding approximately 300 mm in depth covering an area of 1,320 m<sup>2</sup> per turbine. This will be removed and completely reinstated following construction.

3.4.15 The crane hardstandings are illustrated as part of the site layout on Figure 1.2.

### ***Access to the Proposed Development Site***

3.4.16 The Proposed Development will be accessed from new marine access points to be constructed on the south of the island. The new access will comprise of:

- a new extended slipway to replace the existing facility, which would need to be replaced regardless of the Proposed Development as the current slipway is badly damaged and access to the island is still required for agricultural purposes. The extant slipway is c.20 m long by 3.5 m wide, though this was originally longer. This would be upgraded to a maximum 36 m long and 8 m wide. The design of the slipway would be sufficient to enable access by larger vessels with the bow or stern gate and would be built to a standard design for the Orkney Islands to allow access for local vessels; and
- a new landing jetty to accommodate abnormal loads. The jetty would comprise a causeway up to 55 m long and 10 m wide, terminating in square structure for docking measuring up to 20 m by 20 m. The square docking structure would likely be constructed on site from sheet piles. The causeway would be in-filled and capped-off with concrete batched on-site.

3.4.17 The underwater noise assessment and the marine water and sediment quality chapters (refer to chapters 16 and 17 respectively) provide further details with respect to the new extended slipway and landing jetty and Figure 3.3 illustrates their anticipated location and extent.

3.4.18 A Transport Assessment (refer to Chapter 12 and Appendix 12.1) has been prepared in support of the application for the Proposed Development and this provides greater detail on access routes to the site for construction vehicles. Chapter 12 (Traffic and Transport) includes a review of the proposed route, construction traffic impacts, and an abnormal load route review.

- 3.4.19 Prior to construction, appropriate highway safety measures for the roads on The Mainland of Orkney will be agreed with Orkney Island Council (OIC), with necessary signage or traffic control measures implemented throughout the construction phase on the agreed basis.

### ***On-Site Access Tracks***

- 3.4.20 The access tracks within the site boundary will generally be c.4.5 m wide, although will be wider on some bends and where passing places will be installed. It is anticipated that approximately 500 m of existing tracks would be upgraded and approximately 4057 m of new access tracks constructed.
- 3.4.21 Construction of the access tracks will require stripping existing unsuitable material to a suitable bearing or the designed formation and placing a filter membrane and or geotextile reinforcement membrane (depending on site conditions) on the ground. Aggregate will then be layered, with the access track capped with a layer of Type 1 or similar material.
- 3.4.22 The proposed layout of access tracks within the site is shown on Figure 1.2 and illustration of a typical access track is provided in Figure 3.4.

### ***Drainage***

- 3.4.23 A detailed drainage design will be developed and provided to SEPA and OIC prior to construction.
- 3.4.24 The detailed drainage design will largely be based on good practice and the following guidance:
- The Construction Industry Research and Information Association (CIRIA), 'Environmental Good Practice on Site (C650)' (2005);
  - CIRIA, 'Control of Water Pollution from Construction Sites (C532)' (2001); and
  - SEPA flood mapping.
- 3.4.25 It will take into account activities during the construction and operational phases of the Proposed Development, including:
- access roads;
  - turbine foundations; and
  - hardstanding areas and buildings (including crane hardstandings, construction compound, substation compound, and associated infrastructure).
- 3.4.26 Illustration of a typical drainage design is provided in Figure 3.5

### ***Electrical Connection***

- 3.4.27 The electrical power produced by the individual turbines will be fed to an on-site substation within the site via underground cables. The proposed location for the on-site substation is shown in Figure 1.2.
- 3.4.28 On-site cables installed by the Applicant within the site will be laid in trenches, typically up to a maximum of 0.5 m deep and 1 m wide. The trenches will also carry earthing and communication cables for the operation of the Proposed Development. Cabling will be located mainly adjacent to the access tracks. The cables will be laid on a sand bed and the trenches backfilled using suitably graded material.
- 3.4.29 The on-site substation compound will measure approximately 30 m by 60 m and will accommodate all the equipment necessary for automatic remote control and monitoring of the Proposed Development, in addition to the electrical switchgear, fault protection and metering equipment required to connect the Proposed Development to the electricity transmission network, and a hardstanding area for vehicle parking constructed from crushed stone to a depth of approximately 600 mm. The substation building will measure approximately 25 m by 15 m with an approximate height of 7.6 m. This may reduce in scale subject to the final detailed design of the substation. Indicative elevation drawings of the on-site substation are provided in Figure 3.6. It will be

constructed and finished in accordance with details to be approved by OIC through an appropriately worded condition.

3.4.30 The Proposed Development would contribute to the investment required for the delivery of an electricity interconnector between Orkney and the Scottish Mainland. The interconnector is a nationally important infrastructure project (identified in NPF3) that could lead to considerable economic benefits enabling the construction and operation of wind farms and infrastructure to help a constrained marine sector, and downstream benefits to other parts of the local energy industry.

3.4.31 Connection of the Proposed Development to the grid will be subject to a separate consenting process.

### ***Meteorological Monitoring Mast***

3.4.32 A permanent on-site meteorological monitoring mast will be required to monitor wind speeds for the operational life of the Proposed Development. It is expected that the mast will be of a height of up to 90 m and will be situated on a reinforced concrete foundation of approximately 5 m by 5 m (refer to Figure 3.7).

3.4.33 The final location and height of the meteorological mast will be determined in consultation with the confirmed wind turbine manufacturer prior to construction of the Proposed Development. It is proposed that these details and any requirements for aviation lighting will be addressed through an appropriately worded condition.

### ***Temporary Construction Compounds***

3.4.34 A secure, temporary construction and material storage compound will be required during the construction period. The location of the compound is shown in Figure 1.2 and measures 100 m by 100 m.

3.4.35 The compound will house temporary portable cabin structures to be used as the main site office and welfare facilities, including toilets, clothes drying and kitchen, and provision for sealed waste storage and removal. This area will also be used for the storage and assembly of turbine components, parking for vehicles, containerised storage for tools and small parts, and oil and fuel storage.

3.4.36 A smaller temporary construction compound (50 m by 50 m), located in the vicinity of the access point (Figure 1.2) will be required for the construction of the new extended slipway and landing jetty.

3.4.37 The compounds will be constructed using the same methodologies as for the site access tracks and will be removed<sup>2</sup> and the land will be restored following completion of the construction phase.

3.4.38 The detailed location, size and engineering properties of the construction compounds will be confirmed prior to the start of construction, after the turbine supplier and model have been confirmed.

### ***Borrow Pits***

3.4.39 A borrow pit is an area where material is excavated for use at another location.

3.4.40 To minimise the volume of imported material brought onto the site and any associated environmental impact, on-site borrow pits will be utilised where practical.

3.4.41 Potential temporary, borrow pit search areas have been identified and it is proposed that the actual borrow pits would be located within these search areas. The locations of the search areas are shown on Figure 1.2.

3.4.42 Detailed site investigations will be carried out prior to construction to confirm the rock type, rock characteristics and suitability, as well potential volumes to be extracted from the search areas. The

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<sup>2</sup> With the exception of the area that will house the substation.



final borrow pits identified during the geotechnical evaluation will be defined within the Construction Environmental Management Plan (CEMP). The pollution control measures to be implemented during usage of the borrow pits and its reinstatement will also be covered within the CEMP.

- 3.4.43 Environmental considerations have influenced the location of the borrow pit search areas to minimise the effect on ecology, hydrology and landscape, and to allow successful reinstatement measures to be put in place as appropriate.

### 3.5 Construction

- 3.5.1 The construction period of the Proposed Development will occur outwith the breeding season for grey seals. i.e. unless otherwise agreed with OIC and NatureScot, construction will not take place between the 15<sup>th</sup> of September and 31<sup>st</sup> of December inclusive.
- 3.5.2 Wherever possible, all vegetation clearance will occur outside the bird breeding season (i.e. between December – March, inclusive), to ensure that no active nests are damaged or destroyed by the proposed works. If work is required after March 31<sup>st</sup>, the Suitably Qualified Ecologist (SQE) will search areas of clearance in advance of works and buffer active nests as appropriate.
- 3.5.3 The estimated construction period for the Proposed Development is approximately two years and includes a programme to reinstate all temporary working areas. It is anticipated that once ecological and weather constraints have been applied, activity will largely be focussed on 17 months of the two year period. Given the remote location of the Proposed Development, it is proposed that construction hours will be 07:00 – 20:00, seven days a week. The Environmental Health Officer (EHO) stated the following when consulted on working hours *“Given the unique location and probability that weather could have a major impact on scheduling deliveries to site I have no objection in principle to an application for 7 day a week working.”*
- 3.5.4 Details of the construction programme will be provided to OIC in the CEMP prior to the commencement of construction and secured via an appropriately worded condition.
- 3.5.5 Any construction out with these hours, due to weather windows and/or health and safety requirements will be in line with the noise limits as assessed in Chapter 9 (Noise) and advance warning of any works out with the agreed working hours will be provided to OIC EHO and local residents.
- 3.5.6 An indicative construction programme is shown below:

**Table 3.2 – Indicative Construction Programme**

Activity	Mar	April	May	June	July	Aug		Mar	April	May	June	July	Aug
Site Establishment													
Emergency Access Works													
Slipway Fill Materials													
Slipway Concrete Material Imports													
Landing Jetty Sheet Piles													
Landing Jetty Fill Materials													
Landing Jetty Concrete Materials													
General Site Deliveries													

Activity	Mar	April	May	June	July	Aug		Mar	April	May	June	July	Aug
Access Track & Compound Material Imports													
Reinforcement													
Concrete Aggregate & Cement Deliveries													
Cable Deliveries													
Cabling Sand													
Geotextile / Duct Deliveries													
Substation Deliveries													
Cranage													
AIL Deliveries													
Commissioning													
Reinstatement Works													

3.5.7 The main materials likely to be required in part or total for the construction of the track, turbine, new extended slipway and landing jetty and control building foundations, hardstanding areas and cable trenches are described below:

- crushed stone;
- precast concrete pipes or uPVC twin wall pipes for culverts;
- geotextile;
- ready mixed concrete;
- sand;
- steel reinforcement;
- electrical cable;
- sheet piles/blunt end;
- tie rods;
- precast concrete or cofferdams for slipway construction; and
- bulk fill material and gabion material/riprap.

3.5.8 It is envisaged that concrete will be batched on-site, with supplies coming from sources on Orkney.

3.5.9 Should surface water run-off or groundwater enter the excavation during construction, appropriate pumping measures to divert the run-off will be taken to ensure the works are safely carried out and the excavation is sufficiently dry to allow concrete placement. Once the concrete is cast, the excavated material will be used for backfill and compacted to the required design density. Once this backfill is completed, the hardstanding areas will be constructed.

3.5.10 The proposed method for constructing the wind turbines is as follows. The turbines will be erected using a large mobile crane or crawler crane, positioned on the hardstanding adjacent to the turbine base. A smaller tail crane will be positioned adjacent to the delivery position of the turbine components. The two cranes will lift the tower sections and blades into their assembly positions, and the main crane will lift the tower sections, nacelle and blades into their operational positions.

3.5.11 As soon as practical, once installation is complete, the immediate construction area will be restored to its original profile, although the crane hardstandings will be retained for future maintenance. The topsoil will be replaced and reseeded where appropriate and as advised by an on-site Environmental Clerk of Works (ECoW). The ECoW will be responsible for pre-construction surveys and will be on-site through construction and post-construction as required. Further details of their role will be provided in the CEMP.

### ***Traffic and Transportation***

3.5.12 A detailed Transport Assessment is provided within Chapter 12 (Traffic and Transport) of this EIA Report.

3.5.13 Construction traffic associated with the construction and maintenance of the Proposed Development falls into two categories, namely Abnormal Indivisible Loads (AIL) and Construction/Maintenance Loads. Details of both types of vehicles are as follows:

- AILs:
  - wind turbine blade transporter;
  - nacelle/tower section transporter;
  - assembly crane; and
  - transformer transporter.
- Construction/Maintenance Loads:
  - 4-axle large tipper Heavy Goods Vehicle (HGV);
  - standard low-loader; and
  - Land Rover/Transit vans, general personnel transport.

3.5.14 Preferred access routes are detailed in Chapter 12 (Traffic and Transport).

3.5.15 The abnormal loads are those that will require an escort, either by private contractor or by police escort. Construction/maintenance loads are those that do not require any special escort or permissions and are only influenced by normal traffic regulations.

3.5.16 Delivery of materials to the island of Faray are considered within chapter 12 (Traffic and Transport).

3.5.17 The Applicant will ensure that the vehicles will be routed as agreed with OIC, to minimise disruption and disturbance to local residents. Further details regarding transport and access can be found in Chapter 12 (Traffic and Transport) of this EIA Report and controlled by the Construction Traffic Management Plan.

### ***Pollution Prevention and Health & Safety***

3.5.18 Prior to commencement of construction activities, a pollution prevention strategy, contained within a CEMP, will be agreed with SEPA to ensure that appropriate measures are put in place to protect watercourses and the surrounding environment. Further details regarding the contents of the CEMP are provided later in this chapter.

3.5.19 As with any development, during the construction stage there is the potential for threats to the quality of the water environment. These mostly arise from poor site practice so careful attention will be paid to the appropriate guidance and policies to reduce the potential for these to occur (refer to Chapter 11 (Geology, Hydrology & Hydrogeology) for further details).

3.5.20 Any fuel or oil held on-site will only be of an amount sufficient for the plant required. This will be stored in a bunded area to prevent pollution in the event of a spillage. There will be no long term storage of lubricants or petrochemical products on-site at the Proposed Development.

- 3.5.21 High standards of health and safety will be established and maintained. At all times, all activities will be undertaken in a manner compliant with applicable health and safety legislation and with relevant good practice as defined under applicable statutory approved codes of practice and guidance.
- 3.5.22 Further details of site specific storage and management of fuel and oil and protection of watercourses during construction are presented in Chapter 11 (Geology, Hydrology & Hydrogeology).
- 3.5.23 In terms of marine construction, all vessels will be MARPOL compliant to manage emissions to air and water and have Shipboard Oil Pollution Emergency Plan (SOPEPs) in place.

***Construction Environmental Management Plan (CEMP)***

- 3.5.24 As part of the construction contract, the Applicant will produce, and adhere to, a CEMP. The CEMP shall be developed in accordance with the joint Scottish Renewables, SNH, SEPA, Forestry Commission Scotland and Historic Environment Scotland guidance on Good Practice During Windfarm Construction (2019).
- 3.5.25 The CEMP shall describe how the Applicant will ensure suitable management of, but not limited to, the following environmental issues during construction of the Proposed Development:
- noise and vibration;
  - dust and air pollution;
  - surface and ground water;
  - ecology (including protection of habitats and species);
  - agriculture (including protection of livestock and land);
  - cultural heritage;
  - waste (construction and domestic);
  - underwater noise;
  - dredging operations and disposal;
  - pollution incidence response (for both land and water); and
  - site operations (including maintenance of the construction compound, working hours and safety of the public).
- 3.5.26 The Applicant shall provide the following for integration within the CEMP:
- details of the environmental mitigation which is described within this EIA Report (refer to Chapter 19 (Schedule of Environmental Commitments)) that is required during construction of the Proposed Development, and of how the Applicant will implement this mitigation and monitor its implementation and effectiveness;
  - details of how the Applicant will abide by the local and national legislative requirements e.g. The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (amended 2013);
  - details of how the Applicant will implement and monitor construction best practice techniques e.g. the control of noise and dust;
  - details of how the Applicant will implement the Joint Nature Conservation Committee (JNCC) piling protocol to minimise potential impacts to marine mammals from underwater noise associated with piling of the new landing jetty;
  - details of any additional underwater noise mitigation measures, specifically the use of a bubble curtain;

- details of a Waste Management Plan which will include opportunities to reduce and re-use waste on-site, recycling of waste which cannot be reused and disposal of waste to landfill;
  - details of dredging operations and dredging disposal plans; and
  - details on how the Applicant will liaise with the public and local landowners and how they will respond to any queries and/or complaints.
- 3.5.27 The Applicant shall consult with NatureScot, SEPA, Historic Environment Scotland and OIC on the relevant aspects of the CEMP. The Applicant shall amend and update the CEMP as required throughout the construction and decommissioning period.
- 3.5.28 The CEMP shall, where applicable, cross-reference and correspond with the Construction Traffic Management Plan (CTMP). The CTMP will detail the management of traffic to and from site, including abnormal loads and daily workers commute. It shall also include mitigation for impacts to public transport, local private access and public foot paths. The Applicant shall amend and update the CTMP as required throughout the construction and decommissioning period.
- 3.5.29 Specific requirements of the CEMP for each of the environmental topics assessed in the EIA are provided in the relevant EIA Report chapters and an outline CEMP is provided in Appendix 3.1.

## 3.6 Operation and Maintenance

- 3.6.1 It is predicted that during the operation of the site there would be up to two vehicle movements per week to Kirkwall Harbour (the likely start and end point for boat trips to and from Faray) for maintenance purposes.
- 3.6.2 Any diesel or oil stored on-site will be held within an appropriately bunded location within the on-site substation building.
- 3.6.3 Health and safety will also be controlled as in the construction phase, as set out above in 3.5.21.
- 3.6.4 In the event that a major turbine component requires replacement, vehicles delivering the components will use the new extended slipway and landing jetty, new access tracks and crane pads, utilising the same route as delivery of components during construction.

### ***Operation Environmental Management Plan***

- 3.6.5 The Applicant will implement an Operation Environmental Management Plan (OEMP). Similar to CEMP the OEMP will set out how the Applicant will manage and monitor environmental effects throughout operation. The OEMP will be developed in consultation with NatureScot, SEPA and OIC and will include but not be limited to:
- details on the track and turbine maintenance;
  - the control and monitoring of noise;
  - the control and monitoring of surface and groundwater;
  - a pollution prevention plan and a pollution incidence response plan (for both land and water);
  - details of how the Applicant will abide by the local and national legislative requirements e.g. The Water Environment (Controlled Activities) (Scotland) Regulations 2011; and
  - a Habitat Management Plan (if required) and relevant protected species management plans (discussed further in Chapter 8).

## 3.7 Decommissioning

- 3.7.1 The Applicant is seeking in-perpetuity consent for the Proposed Development. However, should the Proposed Development be decommissioned it is expected that decommissioning would take approximately eight months. The environmental effects of decommissioning are considered to be no greater than construction effects but experienced over a much shorter time period.

- 3.7.2 In the event of decommissioning, vehicles would access the site by the same routes used for delivery and construction.
- 3.7.3 Either the restored temporary construction compound would be re-established or a new construction compound would be developed as agreed with OIC at the appropriate time, to temporarily store decommissioned plant and equipment. The nacelles (including hubs) and blades would be removed using cranes situated on the crane pads as previously constructed. The towers would then be dismantled.
- 3.7.4 All components would be removed from the site for disposal and/or recycling as appropriate and in accordance with regulations in place at that time.
- 3.7.5 It is likely that exposed parts of the concrete foundations would be ground down to below 1 m below the surface and the remaining volume of the foundations would remain in situ. It is considered that leaving in situ will cause less environmental impact than that of complete removal.
- 3.7.6 Hardstandings will be removed and/or grassed over, however it is likely that sections of access track may be left in situ to assist with agricultural access. Likewise, it is likely that the marine infrastructure may be left in place to allow continued access to the island. The CEMP will be updated prior to decommissioning by the Principal Contractor to reflect current legislation and policy and will be agreed with OIC, NatureScot, SEPA and Historic Environment Scotland.

## 3.8 References

Specification for Highway Works (2016). Volume 1, Series 0800: Road Pavements – Unbound, Cement and other Hydraulically Bound Mixtures. Available at:  
<http://www.standardsforhighways.co.uk/ha/standards/mchw/vol1/pdfs/MCHW%20800.pdf>

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Scottish Government (2014). Scottish Planning Policy. Available at:  
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Scottish Renewables, SNH, SEPA, Forestry Commission Scotland and Historic Environment Scotland (2019). *Good Practice During Windfarm Construction*. Available at:  
<https://www.nature.scot/guidance-good-practice-during-wind-farm-construction>