8 Terrestrial Ecology and Nature Conservation

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8 Terrestrial Ecology and Nature Conservation

8.1 Executive Summary

8.1.1 An assessment of terrestrial ecology effects arising from the construction and operation of the Proposed Development on the uninhabited island of Faray was undertaken and is presented, based on the Proposed Development layout and turbine dimensions.

8.1.2 Following consultation with Orkney Islands Council (OIC), NatureScot (formerly Scottish Natural Heritage, SNH) and Scottish Environment Protection Agency (SEPA), a range of ecological studies were undertaken, to identify the terrestrial ecological interests of the Proposed Development and to establish the ecological baseline for the ecological impact assessment (EcIA). This included identification of existing wildlife records and nearby sites designated for nature conservation (compiled for the desk study) and survey of the habitats and faunal interests of the site. The following field surveys were undertaken:

- Habitats: extended Phase 1 habitat survey and National Vegetation Classification (NVC) assessment;
- Otter survey;
- Seal survey; and
- Bat survey.

8.1.3 The primary habitats identified on site above the shoreline (listed in order of size) are:

- Improved grassland;
- Semi-improved acid grassland; and
- Marshy grassland.

8.1.4 A range of small pools are present across the island, many of which are ephemeral. Several wet and dry ditches cross the island and a single and very short burn is present within the Study Area, outwith the development footprint. This flows directly west to the shore from two springs which rise in an area of marshy grassland to the west of the island centre.

8.1.5 The desk study identified the presence of five sites of international and national importance designated for nature conservation, 15 designated seal haul-outs and two local nature conservation sites within 10 km of the site. The presence of grey seals and otter use of the island was also noted.

8.1.6 Through a standardised evaluation method devised by the Chartered Institute of Ecology and Environmental Management (CIEEM) (CIEEM, 2018), Important Ecological Features (IEFs) were identified and brought forward for assessment. IEFs taken forward to assessment include:

- Faray and Holm of Faray Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) (designated for grey seals, supporting the second-largest breeding colony of grey seals in the UK);
- Designated seal haul-outs;
- Standing water;
- Intertidal boulders/rocks;
- Groundwater-dependent terrestrial ecosystem (GWDTE) marshy grassland with springs;
- Otter; and
- Non-breeding grey seals.

8.1.7 Potential impacts of the construction and operation phases are presented, prior to an assessment of the effects of those impacts. In line with the CIEEM guidelines, the impact assessment process assumes the application of standard mitigation measures. Additional measures to control remaining impacts are also detailed, including development of Method Statements and Species Protection Plans. Of particular importance is a commitment to avoid construction works within the grey seal breeding season, the most sensitive period of the local seal population's lifecycle. With these in place, residual effects are assessed to be, at most, **negligible** adverse during construction for all described IEFs. During operation, there will be, at most, temporary **minor** adverse impacts to individual seals, if maintenance visits or major repairs are required during the breeding season. Overall, both construction and operational effects are therefore considered **not significant** under the EIA Regulations.

8.1.8 With a lack of connectivity to any other wind farms, or other types of developments, no cumulative effects are anticipated for the terrestrial (i.e. non-avian) interests of the site.

8.1.9 The assessment concludes that there will be no significant adverse effect on any of the terrestrial ecological interests of the site, resulting from the construction and operation of the Proposed Development.

8.2 Introduction

8.2.1 This chapter sets out the methods used to describe and evaluate the non-avian ecological features within the area of the Proposed Development. It documents the baseline conditions and includes an assessment of the likely effects of the Proposed Development on ecological features above a certain value, and defines mitigation and compensation measures where significant effects are predicted.

8.2.2 Marine ecological features are described and assessed in Chapter 16 Ornithological features are described and assessed in Chapter 7. Hydrological and geological features are described and assessed in Chapter 11.

8.2.3 This chapter has been authored by ITPE and is supported by baseline data provided within the following technical appendices:

- Appendix 8.1 - Habitat Survey and Ecological Desk Study;
- Appendix 8.2 - Otter (*Lutra lutra*) Survey;
- Appendix 8.3 - Seal Survey;
- Appendix 8.4 - Storm Petrel and Bat Activity Survey; and
- Appendix 8.5 – Report to Inform Habitats Regulations Appraisal (HRA).

8.2.4 The "Study Area" for the ecological surveys included a variable radius buffer beyond the shoreline (with Mean Low Water Springs, MLWS, taken as the limit of the island), depending upon the survey; see paragraph 8.5.3 below and Appendices 8.1-8.4. Assessment is extended out to the designated seal haul-outs between Faray and the port facilities of Hatston Quay, on mainland. Below the MLWS line, impacts to ecological features are assessed in Chapter 16 Underwater Noise.

8.2.5 The specific objectives of the chapter are to:

- Describe the ecological impact assessment (EcIA) methodology and criteria used to make the assessment;
- Describe the ecological baseline conditions;
- Describe the likely effects of the Proposed Development, including direct, indirect and cumulative effects in the presence of standard mitigation;
- Describe any additional mitigation measures proposed to address significant effects; and
- Assess any residual effects.

Statement of Competence

8.2.6 The assessment has been carried out in accordance with the Code of Professional Conduct of the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018). This chapter has been prepared by Mark Berry (BSc (Hons), MSc, MSc, MSc, MCIEEM PIEMA), an ecologist with over 19 years' experience.

8.3 Legislation, Policy and Guidelines

Legislation

8.3.1 The relevant legislation and guidance documents have been reviewed and considered as part of this ecological impact assessment (EcIA). Of particular relevance are:

- Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (the "Habitats Directive") (EEC, 1992);

- The Conservation (Natural Habitats &c.) Regulations 1994 (as amended in Scotland) (the "Habitats Regulations") (UK Government, 1994);
- The Wildlife and Countryside Act 1981 (as amended) (WCA) (UK Government, 1981);
- The Conservation of Habitats and Species Regulations 2010 (as amended) (UK Government, 2010);
- Nature Conservation (Scotland) Act 2004 (as amended) Scottish Government, 2004);
- Marine (Scotland) Act 2010 (Scottish Government, 2010);
- The Protection of Seals (Designation of Haul-Out Sites) (Scotland) Order 2014 (Scottish Government, 2014a); and
- The Wildlife and Natural Environment (Scotland) Act 2011 (as amended) (the "WANE Act") (Scottish Government, 2011a).

Planning Policy

8.3.2 Chapter 5 of the EIA Report provides an overview of all the relevant planning policy. Of particular relevance to this chapter are:

- National Planning Framework 3 (Scottish Government, 2014b);
- Scottish Planning Policy (SPP; Scottish Government, 2014c); and
- Orkney Local Development Plan (OIC, 2017a).

8.3.3 Planning Advice Note (PAN) 60: Planning for Natural Heritage provides guidance relevant to this assessment and the Proposed Development (Scottish Government, 2008).

Biodiversity Priorities

Scottish Biodiversity List

8.3.4 Scottish Ministers created the Scottish Biodiversity List (SBL) (Scottish Government, 2013) to satisfy the requirements under Section 2(4) of the Nature Conservation (Scotland) Act 2004, assist public bodies in carrying out conservation of biodiversity, and provide the general public with information regarding conservation within Scotland. The SBL comprises species and habitats listed using both scientific and social criteria. Only scientific criteria are considered relevant to this chapter. They include the following:

- All UK Priority Species present in Scotland;
- Species which Scotland has an international obligation to safeguard;
- All species defined as nationally rare at a UK level that are present in Scotland;
- Species with populations present (resident, wintering or breeding) in 5 or fewer 10 km squares or sites in Scotland;
- All species that are endemic to Scotland;
- Any sub-species or race that is widely recognised and accepted by the scientific (or other relevant) community and that is endemic to Scotland, if it also meets one of the other criteria; and
- Natural and semi-natural habitats that are known to be particularly important for supporting assemblages of plant or animal groups that are data deficient, such as fungi, bryophytes, lichens, algae and invertebrates.

Local Biodiversity Reporting

8.3.5 The Orkney Local Biodiversity Action Plan (LBAP) is a targeted action plan for the period 2018 – 2022 (Orkney's Biodiversity Steering Group, 2018). The LBAP addresses biodiversity planning in Orkney through the following four themes: greenspace, farmland, peatland and the marine environment.

Guidance

8.3.6 Further key guidance documents relating to the assessment of effects of wind farms on terrestrial (non-avian) ecological receptors that have been referenced in this assessment include the following:

- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018);
- Good Practice during Wind Farm Construction (SNH, 2019);
- Monitoring the Otter *Lutra Lutra* (Chanin, 2003a);
- Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation (Scottish Natural Heritage *et al*., 2019)
- Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016); and
- Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (SEPA, 2017).

8.3.7 Where appropriate, more detail relating to specific legislation, guidance or policy is provided in the corresponding technical appendix for each specialist input supporting this chapter (i.e. Appendices 8.1 to 8.4).

8.4 Consultation

8.4.1 Table 8.1 provides details of consultations undertaken with relevant stakeholders, together with actions undertaken by the Applicant in response to consultation comments.

Table 8.1 – Consultation Relevant to Non-avian Ecology

Consultee	Key Consultee Comments	Applicant Action
Orkney Islands Council (OIC); scoping opinion received 26/04/19	Noted a requirement for: ▪ A description of the baseline; ▪ Identification of relevant receptors; ▪ A description of likely effects resulting from the development, including cumulative effects; and, ▪ Mitigation measures. Recognised Scottish Natural Heritage's (SNH) (now NatureScot) requirements regarding seals (see below). Recognised Scottish Environment Protection Agency's (SEPA) requirements regarding groundwater-dependent terrestrial ecosystems and pollution prevention (see below).	▪ The ecological baseline presented in Section 8.6; ▪ Relevant receptors are identified in Section 8.8 and 8.9; ▪ Likely effects described in Sections 8.11, 8.13 and 8.14; and, ▪ Mitigation measures are detailed in Sections 8.10 and 8.12.

Consultee	Key Consultee Comments	Applicant Action
OIC Policy Officer: Environment; scoping opinion 14/05/19	Noted the Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) designations for the island and wider area; and the need to avoid works during the seal breeding season. Also noted the potential presence of the European Protected Species (EPS) Eurasian otter on the island and the presence of cetacean species in the waters off the island.	Informed the survey design, with particular reference to seals and otter (see Sections 8.5 - 8.6 and Technical Appendices 8.1 - 8.4); cetacean presence is noted in Section 8.6.
SNH (now NatureScot); scoping opinion received 15/05/19	Advised that the most significant natural heritage interests likely to be affected by the proposal are the grey seals (*Halichoenus grypus*) of the Faray & Holm of Faray SAC and harbour seals (*Phoca vitulina*) of the Sanday SAC.	Designated sites are identified in Section 8.6; assessment is in Section 8.11 - 8.13.
	Requirement for a HRA to be undertaken for both SACs, though effects are not anticipated. Faray is within the 40-50 km harbour seal foraging distance of the Sanday harbour seal population. Noted: "*The commitment to undertake construction work outwith the grey seal breeding season is particularly important in avoiding any adverse effect on Faray & Holm of Faray SAC*."	Impacts on the SAC are included in this chapter. The requirement for HRA is fulfilled in a separate report accompanying this EIA Report (see Appendix 8.5).
	Seal count survey required (outline of methodology also provided).	A survey was conducted and is reported in Appendix 8.3.
SEPA; scoping opinion received 21/05/19	Advised to identify and map any groundwater-dependent ecosystem (GWDTE) areas.	GWDTE presence has been considered within Section 8.6 and in Chapter 11 Geology Hydrology and Hydrogeology
SEPA; consultation information received 11/08/20	Provided a standard guidance note, which includes: ▪ A requirement to ensure protection of any GWDTEs within the development area; and ▪ Pollution prevention and environmental management to be included in the mitigation measures.	▪ GWDTE presence has been considered within Section 8.6, below, and in Chapter 11: Geology Hydrology and Hydrogeology; and, ▪ Included within the standard mitigation of Section 8.9.

8.5 Assessment Methodology and Significance Criteria

Ecological Desk Study

8.5.1 In line with the CIEEM (2018) guidelines, an ecological desk study was undertaken; this is presented within Appendix 8.1. This data was used to confirm the presence of any statutory and non-statutory

nature conservation sites and legally protected or otherwise notable species within 10 km of the site.

Field Surveys

8.5.2 As documented within Appendices 8.1 to 8.4, a range of ecology surveys were undertaken for the site and adjacent area:

- Extended Phase 1 habitat survey and National Vegetation Classification (NVC) undertaken in May 2019 and covering the full area of the island of Faray to LWMS (see Appendix 8.1).
- Otter survey of suitable habitat within the island and its shoreline to LWMS, undertaken in August 2019 (see Appendix 8.2).
- Seal survey conducted as a series of monthly visits from April to September 2019, inclusive, and in February and March 2020, avoiding the breeding season. Survey included the island shoreline and the sea to 500m offshore (see Appendix 8.3).
- Bat activity surveys were undertaken in April-July 2019 of structures identified with bat roosting potential. Three surveys (one dusk, one dawn and one combined dusk and dawn survey) were conducted from two static locations (see Appendix 8.4). Owing to the exposed nature and northern latitude of the island, other remote detector surveys or transect surveys were not undertaken.

Evaluation Methods for Ecological Features

8.5.3 Table 8.2 lists the criteria used to determine the value of the non-avian ecological features in a geographical context.

Table 8.2 – Geographical Evaluation Criteria

Scale of Ecological Value	Criteria	Examples
International	Nature conservation resource, i.e. designated nature conservation area, habitat or populations of species, of international importance. N.B. For designations, such as an SAC, this may also include off-site features on which the qualifying population(s) or habitat(s) are considered, from the best available evidence, to depend.	International nature conservation areas: ▪ Any SAC; and ▪ Any candidate SAC (cSAC). Significant numbers of a designated population outside the designated area. A site supporting more than 1% of the EU population of a species.
National (Scotland)	Nature conservation resource, i.e. designated nature conservation area, habitat or populations of species, of national importance. N.B. For designations, such as a SSSI or a National Nature Reserve (NNR), this may also include off-site features on which the	National nature conservation areas: ▪ Any SSSI or NNR designated for biological feature(s). A site supporting more than 1% of the UK population of a species. Nationally important population/assemblage of an EPS or species listed on Schedule 5 of the WCA.

Scale of Ecological Value	Criteria	Examples
	qualifying population(s) or habitat(s) are considered, from the best available evidence, to depend.	
Council area (Orkney)	Nature conservation resource, i.e. nature conservation designation, habitat or species, of importance on a council area scale.	Statutory and non-statutory nature conservation designations: ▪ Any Local Nature Reserve (LNR); ▪ Any Local Nature Conservation Site (LNCS); ▪ Any Scottish Wildlife Trust (SWT) reserve; and ▪ Any Local Biodiversity Site (LBS). A council area-scale important population / area of a species or habitat listed on the SBL (Scottish Government, 2013) as requiring conservation action. A council area-scale important population/area of a species or habitat listed on the local Biodiversity Action Plan (LBAP). A council area-scale important population / assemblage of an EPS or species listed on Schedule 5 of the WCA.
Local (i.e. within 2 km of the site)	Nature conservation resource, e.g. a habitat or species of importance in the context of the local district.	A breeding population of a species or a viable area of a habitat that is listed in a LBAP because of its rarity in the locality. An area supporting 0.05-0.5 % of the UK population of a species. A breeding population of a species on the SBL. All breeding populations of EPS or species listed on Schedule 5 of the WCA.
Less than local	Unremarkable, common and widespread habitats and species of little/no intrinsic nature conservation value.	Common, widespread, modified and/or impoverished habitats. Common, widespread, agricultural and/or exotic species.

8.5.4 Where a feature qualifies under two or more criteria, the higher value is applied to the feature.

8.5.5 In this chapter any ecological feature of local or higher value is considered an Important Ecological Feature (IEF).

Impact Assessment Methods

8.5.6 The approach to the EcIA follows the CIEEM guidelines (CIEEM, 2018) and considers the factors described below.

Ecological Zone of Influence

8.5.7 The Ecological Zone of Influence (EZoI) is defined as the area within which there may be ecological features subject to effects from the Proposed Development. Such effects could be direct (e.g. habitat loss resulting from land-take or removal of a building occupied by bats), or indirect (e.g. noise or visual disturbance causing a species to move out of the EZoI). The EZoI was determined through:

- Review of the existing baseline conditions based on desk study results, field surveys and information supplied by consultees;
- Identification of sensitivities of ecological features, where known;
- The outline design of the Proposed Development and approach to construction; and
- Through liaison with other technical specialists involved in the assessment, e.g. hydrologists and noise specialists.

Temporal Scope

8.5.8 Likely impacts on ecological features have been assessed in the context of how the predicted baseline conditions within the EZoI might change between the surveys and the start of construction.

Characterising Ecological Impacts

8.5.9 In accordance with the CIEEM (2018) guidelines, the following definitions are used for the terms 'impact' and 'effect':

- Impact – Actions resulting in changes to an ecological feature. For example, the construction activities of a Development removing a hedgerow.
- Effect – Outcome to an ecological feature from an impact. For example, the effects on a species population from loss of a hedgerow.

8.5.10 In accordance with the CIEEM (2018) guidelines, when determining impacts on IEFs, reference is made to the following:

- Beneficial or adverse – i.e. whether the impact has a beneficial or adverse effect in terms of nature conservation objectives and policy;
- Impact magnitude – i.e. the size of an impact, in quantitative terms where possible;
- Extent – i.e. the area over which an impact occurs;
- Duration – i.e. the time for which an impact is expected to last;
- Timing and frequency – i.e. whether impacts occur during critical life stages or seasons; and
- Reversibility – i.e. a permanent impact is one that is irreversible within a reasonable timescale or for which there is no reasonable chance of action being taken to reverse it. A temporary impact is one from which a spontaneous recovery is possible.

8.5.11 Both direct and indirect impacts are considered. Direct ecological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat occupied by a species during the construction process. Indirect ecological impacts are attributable to an action but affect ecological resources through effects on an intermediary ecosystem, process or feature, e.g. fencing of a development site may cause scrub to invade marshy grassland.

8.5.12 Impact magnitude refers to size, amount, intensity and volume. The CIEEM (2018) guidelines state that it should be quantified, if possible, and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population. That approach has been followed here, where possible. However, following the language of other chapters in the EIA Report, impact magnitude has also been categorised with reference to the definitions in Table 8.3, below.

Table 8.3 – Impact magnitude

Level of impact	Definition
No impact	No detectable impacts on the ecological resource, even in the immediate term
Negligible	Detectable impact but reversible within 12 months. Not expected to affect the conservation status of the nature conservation designation, habitat or species under consideration
Minor	Detectable impacts, and may be irreversible, but either of sufficiently small scale or of short-term duration to have no material impact on the conservation status of the nature conservation designation, habitat or species population
Moderate	Detectable impact on the status of the nature conservation designation, habitat or species population in the medium term but is reversible/replaceable given time, and not a threat to the long-term integrity of the feature
Major	Irreversible impact on the status of the nature conservation designation, habitat or species and likely to threaten the long-term integrity of the feature. Not reversible or replaceable. Will remain detectable in the medium and long term
The following definitions have been applied in respect to timescales: Immediate: Within approximately 12 months; Short term: Within approximately 1-5 years; Medium term: Within approximately 6-15 years; and Long term: More than 15 years.	

Determining Ecologically Significant Effects

8.5.13 An EcIA is undertaken in relation to the baseline conditions that would be expected to occur in the absence of a proposed development and, therefore, may include possible predictions of future changes to baseline conditions, such as environmental trends and other completed or planned development. Both adverse and beneficial impacts/effects are possible.

8.5.14 A significant effect, in ecological terms, is defined as an effect (whether adverse or beneficial) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area, including cumulative and in-combination impacts. In accordance with the CIEEM guidelines, the approach adopted in this chapter aims to determine if the effect of

an impact is significant or not based on a discussion of the factors that characterise it, i.e. the ecological significance of an effect is not dependent on the value of the feature in question. Rather, the value of a feature that will be significantly affected is used to determine the geographical scale at which the effect is significant.

8.5.15 In accordance with the CIEEM (2018) guidelines, effects of impacts are assessed in the presence of standard mitigation measures. Additional mitigation may be identified where it is required to reduce a significant effect.

8.5.16 Any significant effects remaining post-mitigation (the residual effect), together with an assessment of the likelihood of success of the mitigation, are the factors to be considered against legislation, policy and development control in determining the application.

8.5.17 In addition to determining the significance of effects on valued ecological features, this chapter also identifies any legal requirements in relation to wildlife.

Limitations to Assessment

8.5.18 The habitat, otter and bat surveys were carried out according to current recommended guidelines, at appropriate times of year, and during favourable weather conditions, and with full access across the site. As such, no significant limitations have been identified for these surveys.

8.5.19 The seal survey programme relied on good weather conditions, resulting in some delays to survey; however, this is not considered a significant limitation, as the general monthly pattern of use was still possible to ascertain. The breeding season was also avoided, to prevent unduly disturbing animals at this particularly sensitive time, an avoidance which will mirror the construction programme. Additionally, Covid 19 restrictions prevented further survey beyond March 2020.

8.6 Baseline Conditions

8.6.1 This Section of the chapter details the results of the desk study and field surveys conducted across the site and respective Study Areas, which provides the baseline conditions from which the impact assessment is based.

Desk Study

Statutory Nature Conservation Designations

8.6.2 Five statutory nature conservation designations, two of which overlap, and which are designated for non-avian ecological features, are present within 10 km of the site. There are no statutory local designations, such a Local Nature Reserves, within the 10 km search area. These designations are shown in Figure 8.1 and described in

8.6.3 Table 8.4, below. It should be noted that designations for ornithological interests are described within Chapter 7: Ornithology.

8.6.4 Consideration of the marine designations was extended to 20 km. In addition to the Faray and Holm of Faray SAC and SSSI, designated for grey seal presence, the Sanday SAC is designated for harbour seals. Though this area is c.11 km east of the site boundary at its closest point, harbour seals are noted to forage in a range of 40-50 km (SNH, 2011, SCOS, 2019), therefore the Sanday SAC requires to be included within development effect considerations. Following this logic, the East Sanday Coast SSSI is also included in consideration, as this also covers the seal haul-out areas of the Sanday SAC.

Table 8.4 – Designated Sites (terrestrial ecology) within 10 km of the Proposed Development

Site	Designation	Distance to Site	Non-ornithological Reasons for Designation
Faray and Holm of Faray	SAC	Partly overlaps with the site	Species: Grey seal

Site	Designation	Distance to Site	Non-ornithological Reasons for Designation
	SSSI	Partly overlaps with the site	Species: Grey seal(noted as an important breeding and haul-out site)
Sanday	SAC	10.7 km east	Habitats: Intertidal mudflats and sandflats, reefs and subtidal sandbanks Species: Harbour seal
East Sanday Coast	SSSI	11.4 km east	Habitats: Vascular plant assemblage, rocky shore and sandflats Species: Harbour seal
Wyre and Rousay Sounds	Marine Protected Area (MPA)	6.3 km south-west	Habitats: Kelp and seaweed communities on sublittoral sediment and maerl beds
Muckle and Little Green Holm	SSSI	7.8 km south	Species: Grey seal
Rousay	SSSI	8.2 km south-west	Habitats: Blanket bog, maritime cliff, mesotrophic loch and subalpine wet heath. Species: Vascular plant assemblage

8.6.5 With grey seal presence identified by the SAC and SSSI citations (including the SSSI noting the importance of the islands as a haul-out location), no individually designated haul-outs are on or immediately adjacent to Faray. As described in Appendix 8.3, 15 designated haul-out sites are present within 10 km of the site. Of these, only four are within 5 km and two, Rusk Holm and South Westray, within relatively close proximity to Faray and the Holm of Faray (at 0.92 km west and 1.8 km north, respectively). A further 15 haul-out sites are within 20 km, with five of these on the likely route between Kirkwall Hatston Quay and Faray.

Non-statutory Nature Conservation Designations

8.6.6 Two Local Nature Conservation Sites (LNCS) are located within 2 km of the site boundary. In terms of non-avian interests, Braehead LNCS, which is located c.1.31 km east of the site, on the west of Eday, is designated for nationally important upland heath, blanket bog and oligotrophic and dystrophic lake habitats. Resting Hill LNCS is located c.1.66 km east of the site, and adjacent to Braehead LNCS; non-avian interests for this designation include are nationally important upland heath and blanket bog habitats (OIC, 2017b).

Protected or Otherwise Notable Species

Invasive Species

8.6.7 No records were identified for non-native, invasive species within a 2 km search radius of the site boundary.

Terrestrial/Marine Animals

8.6.8 Data provided by the Orkney Wildlife Information and Records Centre (OWIRC) include records of eleven protected or otherwise notable faunal species from locations within 10 km of the site boundary and dating from within the last 10 years, as summarised in Table 8.5, which shows the highest level of legal protection: there are no offences under the other protections not already covered. A note of national and local biodiversity interest is also included, as appropriate.

Table 8.5 – Records of Protected or Otherwise Notable Species from within 10 km of the Site

Common Name	Scientific Name	Legal / Conservation Status	Records
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	EPS SBL priority species Orkney LBAP priority species	Single record, 2014, Warness Sound, off Eday, 5 km south of Faray.
Bottle-nosed dolphin	*Tursiops truncatus*	EPS SBL priority species Orkney LBAP priority species	Single record, 2009, Westray.
Common porpoise	*Phocoena phocoena*	EPS SBL priority species Orkney LBAP priority species	Seventy-two records, 2009-17; x1 record south of Faray and x67 records in Warness sound, Eday.
Common dolphin	*Delphinus delphis*	EPS SBL priority species Orkney LBAP priority species	Single record, 2009, Westray.
Grey seal	*Halichoenus grypus*	Protected under the Marine (Scotland) Act 2010 Orkney LBAP priority species	Four records, 2012: x1 record of a harbour seal near Braeswick, Sanday, c. 7.6 km east; and x3 records for grey seals: Point of Geldibist, Rapness, Westray, c.2.6 km north-west; Bay of Stove, Sanday, c.4.5 km east; and just south of Braeswick, Sanday, c.6.6 km east.
Long-finned pilot whale	*Globicephala melaena*	EPS SBL priority species Orkney LBAP priority species	Single record, 2012, Twiness, Westray, 4.5 km north-west.

Common Name	Scientific Name	Legal / Conservation Status	Records
Minke whale	*Balaenoptera acutorostrata*	EPS SBL priority species Orkney LBAP priority species	Twenty-four records, 2009-17; x20 off Warness sound, Eday. Other records Eday, Westray, Sanday, Egilsay all >5 km from Faray.
Orca	*Orcinus orca*	EPS SBL priority species Orkney LBAP priority species	Seventeen records, 2013: x4 off Eday, c.4.0 km, x9 records Warness Sound, Eday, c.5.5 km south, x4 off Sanday, x1 each off Egilsay, Rousay, Papa Westray, Green Holm. All records >5 km from Faray.
Otter	*Lutra lutra*	EPS SBL priority species Orkney LBAP priority species	Twenty-six records, 2013-14, 0-10 km, on Faray, Eday, Egilsay and Sanday
Risso's dolphin	*Grampus griseus*	EPS SBL priority species Orkney LBAP priority species	Fourteen records, 2009-17; x9 Warness Sound, Eday, x3 off Sanday and x2 at Rapness, Westray. All records >5 km from Faray.
White-beaked dolphin	*Lagenorhynchus albirostris*	EPS SBL priority species Orkney LBAP priority species	Four records 2009-15; x3 off Warness Sound and x1 off Westray. All records >5 km from Faray.

Seals

8.6.9 The 2018 aerial survey of the Outer Hebrides, Orkney and the North Coast Mainland colonies was abandoned due to bad weather (SCOS, 2019). A full survey of the grey and harbour seal populations of the northern isles was being completed in 2019 (Duck and Morris, 2019), with the data yet to be published (only the scientific advice was updated by The Special Committee on Seals in 2019)). The following is, therefore, based on the most recent available data.

8.6.10 Data from The Special Committee on Seals (SCOS) (2019) for the grey seal population indicated the last survey to have been in 2016. Due to movements, i.e. dispersal of the grey seal population throughout the year, population counts are based on pup production. Pregnancy typically lasts for c.11.5 months, due to a period "delayed implantation" of c.3.5 months, when the embryo does not attach. This ensures that the annual timing of mating and pupping remains constant, with this covered by the term "breeding season".

8.6.11 Orkney pup production since 2000 is noted as relatively stable, but low in comparison to the rest of the UK (+0.2 % increase since 2014). Through data modelling, the overall 2018 UK grey seal population was estimated at 152,000 (SCOS, 2019), including infrequently monitored colonies; however, estimated pup production for 2016 indicated 65,378. Using the estimated pup production figures, the Orkney population was estimated at c. 23,849 animals, representing c.43.6 % of the Scottish population (54,741) and a significant 36.5 % of the UK total (SCOS, 2019). Specifically, for the Faray and Holm of Faray SAC, and indicating its importance to the Orcadian grey seal population, the SAC accounted for c.15% (c.3,578 animals) of Orkney grey seal pup production in 2010 (Russel *et al*., 2019).

8.6.12 In addition to the above, the harbour seal is also present across the Orkney Islands. Over the past 15 years, Scottish Mammal Research Unit surveys have recorded a continuing decline of more than 75% in counts of harbour seals in Orkney (Duck and Morris, 2019). Of a total of 1,349 animals recorded in the 2016 count for North Coast Scotland and Orkney, the vast majority (c.1,200 animals or c.89 %) were recorded on haul-outs around the islands (SCOS, 2019; Duck and Morris, 2019). The UK population appears to have increased, with the 2015-18 numbers almost back to the levels recorded in the 1990s, with a total of 26,864 noted for Scotland and a UK total of 32,971.

Bat species

8.6.13 Bats have very limited presence on the Orkney Islands (BCT, 2015). Only the common pipistrelle (*Pipistrellus pipistrellus*) has been recorded as resident on Orkney mainland (SNH, 2015; BCT, 2019), though other species have been identified as vagrants, e.g. brown long-eared bat (*Plecotus auritus*) recorded on North Ronaldsay, far beyond its breeding range, in 2006 (Scottish Bats, 2014). Nathusius' pipistrelle (*Pipistrellus nathusii*) and brown long-eared bat are also included in the LBAP (Orkney's Biodiversity Steering Group, 2018), which notes bat roosts being present within some of the mainland settlements, such as Finstown.

Field Surveys

Habitats

8.6.14 The results of the extended Phase 1 habitat survey and NVC are outlined in this section and shown on Figure 8.2, which illustrates the location and extent of habitat types recorded within the Study Area. For a full description of the habitat survey results, please refer to Appendix 8.1.

8.6.15 The island is currently uninhabited but previously supported farmsteads, some of which remain, and the effects of past practises, including drainage and agricultural improvement, remain evident, and the island continues to be grazed by sheep. The land use is therefore predominantly agricultural grazing, which extends to the coastal cliff or beaches, and little natural or semi-natural vegetation is present. A total of twelve habitats, including two boundary features, were recorded within the Study Area. Only four habitats could be assigned to an NVC community; NVC results are described within the relevant broad Phase 1 sections below. Table 8.6 presents the cover of each habitat.

Table 8.6 – Area Cover of site and Study Area Phase 1 Habitats

Phase 1 Habitat/NVC Code	Phase 1 Habitat Description	Extent in Study Area
B1.2	Semi-improved acid grassland	42.21 ha
B4	Improved grassland	81.80 ha
B5	Marshy grassland (two areas: 1.49 ha near the main borrow pit search area and 0.4 ha in the south of the island)	1.89 ha
G1	Standing water	0.70 ha
G2	Running water	1.89 km
H1.1	Intertidal sand	7.18 ha
H1.3	Intertidal boulders/rocks	32.46 ha
H8.1	Maritime cliffs	3.35 km

Phase 1 Habitat/NVC Code	Phase 1 Habitat Description	Extent in Study Area
J1.4.1	Exposed rock	1.23 ha
J2.4	Post and wire fence	4.76 km
J2.5	Drystone wall	0.43km
J2.6	Dry ditch	0.31 km
J3.6	Buildings	0.42 ha
J5	Track Graveyard	2.33 km 0.15 ha

8.6.16 A description of the Phase 1 habitats recorded within the Study Area is presented below: for full descriptions, scientific names and target notes please refer to Appendix 8.1 and Figure 8.2.

Semi-improved acid grassland

8.6.17 Short-grazed semi-improved acid grassland was recorded in three distinct locations: on the northern and southern tips of the island and eastern fringes of the island. Most of the habitat occurs in mosaic with improved grassland, with only one discrete (i.e. larger) area not present within a mosaic. Dominant grasses include short-grazed meadow-grass, Yorkshire fog, common bent and creeping bent. The range of associated forb species is locally modestly high.

8.6.18 The vegetation shows no clear affinity to any NVC type, reflecting the history of agricultural improvement and high level of sheep grazing. The vegetation locally resembles MC10 *Festuca rubra-Plantago spp*. maritime grassland, but some typical species of MC10, such as red fescue and plantain species were not recorded, whereas some of the species recorded, e.g. tufted hair-grass and marsh ragwort, are not associated with MC10 grassland.

Improved acid grassland

8.6.19 Improved grassland, used for grazing sheep is present across much of the island and forms the dominant habitat type. The dominant grass species recorded are perennial rye-grass, with meadow-grass, Yorkshire fog and sweet vernal-grass also present. Within the grassland are locally dense patches of sea mayweed, silverweed, common nettle, common daisy and tormentil. Sections of the improved grassland grade into semi-improved acid grassland, notably towards the coast and cliff edges.

8.6.20 The vegetation shows some affinity to MG11 *Festuca rubra-Agrostis stolonifera-Potentilla anserina* grassland, the *Lolium perenne* sub-community. This community is relatively common as pasture near the coast that has been subject to agricultural improvement.

Marshy grassland

8.6.21 Two areas of marshy grassland were recorded in the west and south-west of the island; the western area is associated with two springs and the southern area with a ditch. The larger section was recorded adjacent to an area of rock exposure, close to the mid-point of the western side of the island and associated with a pond and drainage channels which lead to the western coast. This area comprises a range of grass species but is dominated by tufted hair-grass and Yorkshire fog, with

yellow iris being the dominant forb species. A variety of other forbs are also present. The vegetation is a best fit with M28 *Iris pseudacorus-Filipendula ulmaria* mire, a widespread oceanic community.

8.6.22 The smaller section contains many of the same species, but is dominated by reed canary-grass. This vegetation keys out as S28 *Phalaris arundinacea* tall-herb fen.

Standing water

8.6.23 Pools are present throughout the island, including in a number of areas where they are linked with drainage channels, which were dry at the time of the habitat survey. In subsequent site work, a spell of heavy rainfall was observed to have created more pools in the area of mosaic semi-improved acid grassland at the north of the Island. The northern fringes of the island contained several small areas of standing water, with channels linking the pools which flood during heavy rain. The area of improved acidic grassland in the south-east of the site is presumed to have an increase in ephemeral pools following rainfall, as dry bare patches of cracked soil were evident on the slopes at the time of survey. Further areas of standing water were noted in the centre (including the largest of these features) and centre-west of the island, with further small pools noted in the centre-north and east of the island.

Running water

8.6.24 Two drainage ditches run across Faray, from coast to coast, and are effectively modified burns. They are approximately 0.3-0.7 m wide and flow from the centre of the island to the coast, both to the east and to the west. The ditches are overgrown with silverweed and other species characteristic of semi-improved grassland. A number of other wet (i.e. with a perceptible flow) ditches are also present around several field boundaries. Small burns/overflow ditches link standing water on the island and one was flowing during the survey. As identified in Chapter 11: Geology, Hydrology and Hydrogeology, surface water found on the island is mainly rainwater-derived and flows through a number of drainage channels. There are two springs located in the marshy grassland of the west-centre of the site, from which a small stream flows towards the western coast (i.e. located within the SAC and SSSI-designated area).

Intertidal mud/sand

8.6.25 Sand and shingle beaches are present along the south-west and south-east of the island. The sections of beach are made up of white sand, with large boulders and rocks above the high tide.

Intertidal boulders/rocks

8.6.26 Most of the shoreline (i.e. the site boundary) comprises exposed rock and cliffs. Macro algal cover on the western shoreline includes a range of fucoid species typical of a high-energy rocky shore. Other typical algal species include green algae, such as gut weed, on more sheltered parts of the upper shore and reds, such as the coralline alga *Corallina officinalis*, found on the lower and mid-shore. The bladder wrack growth is generally larger/longer on the more sheltered eastern shore, with egg/knotted wrack also part of the species mix. Kelp species are present on the rocks beyond the low tide line on both sides of the island.

Cliffs

8.6.27 Cliffs are a common feature of both the east and western coastlines of the island. The foreshore and intertidal zones beyond the cliffs frequently include tidal boulders and rocks.

Exposed rock (inland)

8.6.28 A section of exposed rock is present inland from the western shore, north of the marshy grassland in the centre of the site.

Fencing

8.6.29 Post and wire and electric fencing covers much of the centre of the island, following the fringes of the south and east of the island and also crossing the island east to west in two places. Fencing also surrounds many of the structures on the island and is used for managing the sheep.

Stone wall

8.6.30 A drystone wall is present around the north of the island, between the Holm of Faray causeway and the northern field of semi-improved grassland. A wall also surrounds the graveyard.

Dry ditch

8.6.31 A dry ditch extending approximately north-northwest to south-southeast, is present in the southern semi-improved grassland. Further dry ditches are also present around several field boundaries.

Buildings

8.6.32 There are 10 general clusters of buildings on the island, in various states of repair, ranging from roof-less walls through to an old school building with secure corrugated sheet metal roof and a plastic-roofed wooden lean-to shed on its northern side. Seven buildings were recorded as having part of or all of the roofing present; several of the older structures have parts of the original stone slab roofs in place to a certain degree (from c.25 % to 90 % coverage), while in addition to the old school building (used for storage), there are a further three structures with sound roofs – one with corrugated metal sheeting and two apparently with corrugated cement fibre panels. Vegetation around these structures typically comprises a mix of grasses and abundant common nettle, broad-leaved dock and silverweed.

8.6.33 A walled graveyard is located on the western side of the island, at the bottom of a slope, west of the marshy grassland.

Track

8.6.34 A grassed-over track, effectively connecting the majority of the buildings, runs from the south-east of the island in a northerly direction until it reaches the beginning of the mosaic of improved and semi-improved acid grassland at the north of the site.

Graveyard

8.6.35 A small walled graveyard is located on the western edge of the island. Moss cover is present on the drystone walling and the ground between the stone grave markers is covered by a grass sward of a mix similar to the adjacent improved grassland. The graveyard is gateless and therefore accessible to sheep, and it is consequently grazed.

Groundwater Dependent Terrestrial Ecosystems

8.6.36 The underlying geology indicates presence of an aquifer: British Geological Survey (BGS) hydrogeology mapping indicates that this is Old Red Sandstone, a moderately productive aquifer in which flow is virtually all in fractures and other discontinuities.

8.6.37 Following standard guidance (SEPA, 2017), one of the habitats on the island, the marshy grassland surrounding two springs, was identified as GWDTE; the vegetation immediately surrounding the springs will be groundwater dependent. The presence of the springs is indicative of groundwater seepage at the surface and this habitat is therefore fed by groundwater. As noted in Chapter 11, the bedrock is a moderately productive aquifer, dominated by fracture flow. The springs are likely the result of fracture flow reaching the surface at this specific location, providing water that sustains the marshy grassland in the immediate vicinity.

8.6.38 With the exception of the vicinity of the springs, the wetland area of the western part of the island appears to be surface water-fed, with a number of drainage ditches present in the immediate vicinity, crossing east-west (see Chapter 11: Geology, Hydrology and Hydrogeology for further information).

8.6.39 The second area of marshy grassland, to the south of the island and west of Ness, appears to be closely associated with a drainage ditch and believed to be sustained by rainwater and surface flows, rather than by groundwater.

Fauna

Otter

8.6.40 The shoreline surrounding the island was identified as providing suitable habitat for otter. The presence of freshwater on the island is also an important consideration for otter use; with both standing and running water identified, the overall island habitat is generally very suitable, despite the disturbance caused by sheep. This suitability was demonstrated by feeding remains and other otter field signs present along the island fringes, most notably the north-west corner of the island. The spread of evidence suggests a single or a low number of individuals using the island shores.

8.6.41 As documented in Appendix 8.2 and shown on Figure 8.3, the dedicated otter survey identified two hovers, one in the south-west of the island and the other in the north of the island. Both hovers were similar and identified within man-made rock structures enclosed on three sides and above. Both sites displayed historic sprainting. No evidence of a holt site was recorded during the survey.

8.6.42 Additional sprainting sites and feeding remains were found scattered around the edges of the island, indicating that the otters were foraging on fish, crabs and birds. No other definitive evidence of otter was identified during the survey. However, a local fisherman known to the surveyor confirmed that otters are seen on a regular basis, using the sea around the island for foraging.

Seals

8.6.43 As documented in Appendix 8.3 and shown on Figure 8.4, seals were recorded all around the coastline, with animals apparently present on any suitable haul-out surface. Out of the 1,461 animals recorded, only one harbour seal was noted (in June 2019), with all other animals being grey seals. While harbour seals are present in the wider area, the survey results indicate that Faray is unlikely to be of any particular importance to this species, possibly due to the presence of the larger grey seal species.

8.6.44 The survey results indicate grey seals use of much of the island's shoreline year-round. However, observations indicate both a locational preference and a seasonal influx to these preferred areas ahead of the breeding season, before an apparent dispersal to their favoured birthing locations. Recorded numbers suggest an overall preference for the more sheltered east coast. There is also a difference in the use of the northern and southern extents of Faray, which appear to be particularly favoured by this species in the run-up to the breeding season (July-September), with the highest numbers congregating on the shorelines between Faray and the Holm of Faray in August and similarly for the southern part of Faray from late July to August (both Muckle and Little Skerry and the wider Scammalin Bay area). For both areas, the overall numbers dropped in September, with the inference that many of the seals then moved on elsewhere to give birth. Without the survey programme extending across late September to November/December (i.e. avoiding the grey seal breeding season), it is not possible to determine how many use Faray for pupping and precisely which areas are used; however, approximately 50% the animals recorded in August 2019 appeared to stay in the area for September. Notably, seal numbers appear significantly lower in late winter and into early spring, as seals move to low-lying islands such as Rusk Holm and also Muckle Green Holm and Little Green Holm (both south of Eday) to moult.

Bats

8.6.45 As documented in Appendix 8.1, only four structures on the island have competent roofing, but this is all in the form of corrugated sheeting, which is generally unsuitable for roosting bats. While the stone slabs used to roof some of the older ruined cottages are still partially in place in a number of locations, the interior of these structures is open to the elements, and conditions in the roof spaces are therefore not suitable for roosting bats. However, all structures on the island have apertures within their walls that could potentially be used by roosting bats. In the case of the majority of these buildings, the walls are dry-coursed and double-skinned. It was not possible to establish if these

walls have a rubble-filled core; however, the apertures do give some access further into the walls. Those buildings with evidence of pointing also have multiple apertures, where pointing has fallen out (with particular reference to the old school and the other fully-roofed buildings).

8.6.46 However, as described in Appendix 8.4, no bat activity was recorded in the survey programme, which demonstrates that the structures are not used by roosting bats and that bats may be absent or rare on Faray.

8.6.47 Though potential roosting habitat is available on Faray, due to the lack of evidence of bat presence, lack of suitable foraging habitat, high level of exposure and limited connectivity, bat species have been scoped out of the impact assessment and are not discussed further.

8.7 Do Nothing Scenario

8.7.1 In the absence of development, baseline conditions are unlikely to change significantly in the foreseeable future, because the existing land use and marine activities are anticipated to continue. Slipway maintenance and/or upgrade would be expected, but would be limited to the farmer's requirements and the temporary disturbance to otters and non-breeding seals limited.

8.8 Evaluation of Recorded Features

8.8.1 The evaluation of recorded ecological features is presented in Table 8.7, below.

Table 8.7 – Evaluation of Ecological Features

Feature	Evaluation Reasoning	Level of Importance
Faray and Holm of Faray SAC & SSSI	Grey seal colonies. The level of value follows the level of designation.	International
Sanday SAC	Harbour seal colonies. The level of value follows the level of designation.	International
East Sanday Coast SSSI	Harbour seal colonies. The level of value follows the level of designation.	National
Wyre and Rousay Sounds MPA	Kelp and seaweed communities on sublittoral sediment and maerl beds. The level of value follows the level of designation.	National
Muckle and Little Green Holm SSSI	Grey seal colonies. The level of value follows the level of designation.	National
Rousay SSSI	Blanket bog, maritime cliff, mesotrophic loch and subalpine wet heath. Vascular plant assemblage. The level of value follows the level of designation.	National

Feature	Evaluation Reasoning	Level of Importance
Braehead LNCS	Nationally important habitats: upland heath; blanket bog; and oligotrophic and dystrophic lakes. (For avian interests please see Chapter 7: Ornithology). The level of value follows the level of designation.	Council
Resting Hill LNCS	Nationally important habitats: upland heath and blanket bog. (For avian interests please see Chapter 7: Ornithology). The level of value follows the level of designation.	Council
Semi-improved acid grassland (B1.2)	The vegetation locally resembles MC10 *Festuca rubra-Plantago spp*. maritime grassland, but some typical species of MC10 are absent, whereas some species present are not associated with MC10 grassland. Assessed as having relatively limited biodiversity value, due to grazing pressure and past land management practices and does not align with either SBL or LBAP priorities.	Less than local
Improved grassland (B4)	The vegetation shows some affinity to MG11 *Festuca rubra-Agrostis stolonifera-Potentilla anserina* grassland, the *Lolium perenne* sub-community. This community is relatively common as pasture near the coast and has been subject to agricultural improvement. Assessed as having relatively limited biodiversity value, due to grazing pressure and past land management practices and does not align with either SBL or LBAP priorities.	Less than local
Marshy grassland (B5) with springs; western side of the island	Vegetation comprises a range of grass species, but is dominated by tufted hair-grass and Yorkshire fog, with yellow iris being the dominant forb species. A variety of other forbs are also present. The vegetation is a best fit with the oceanic M28 *Iris pseudacorus-Filipendula ulmaria* mire community. A generally low value and common habitat in the wider area, with no clear alignment with either the SBL or LBAP priorities; however, the springs indicate GWDTE presence. GWDTEs are specifically protected under the Water Framework Directive and are sensitive receptors to the pressures that are potentially caused by development (SEPA, 2017).	Local
Marshy grassland (B5); southern area, west of Ness	The vegetation is a best fit with M28 Iris *pseudacorus-Filipendula ulmaria* mire, a widespread oceanic community, but areas dominated by reed canary-grass	Less than local

Feature	Evaluation Reasoning	Level of Importance
	align withS28 *Phalaris arundinacea* tall-herb fen. Not a GWDTE; no clear alignment with either the SBL or LBAP priorities.	
Standing water (G1)	Small and generally either associated with drainage ditches or ephemeral rainwater pools. Standing water is a priority on the SBL and the LBAP and is a limited resource on the island.	Local
Running water (G2)	Small modified burns are present, with two running across the island and a few channels are linked to pool drainage. Not priorities on the SBL or the LBAP.	Less than local
	Two small springs are located within the marshy grassland area within the SAC and SSSI-designated area. Springs are priorities on the SBL and the LBAP and protected as GWDTEs.	Local
Intertidal sand (H1.1)	Intertidal sands, though a relatively limited resource on Faray, are common in the wider area. Typically supporting a relatively limited range of marine fauna.	Less than local
Intertidal boulders/rocks (H1.3)	A very common resource around the island and wider area. Typically supporting a wide range of macrocalgae and fauna, and used by the local seal population. Intertidal boulder communities are priorities on the SBL and the LBAP.	Local
Maritime cliffs (H8.1)	A very common resource around the island and wider area and not conservation priorities on the SBL or the LBAP.	Less than local
Exposed rock (J1.4.1)	Rock exposures are a common feature of the wider area, and are not conservation priorities on the SBL or the LBAP.	Less than local
Post and wire fencing (J2.4)	The island's fences are a common feature of the wider area and are not conservation priorities on the SBL or the LBAP.	Less than local
Drystone wall (J2.5)	The wall features, though providing shelter to grey seals when on land, are not conservation priorities on the SBL or the LBAP.	Less than local
Dry ditch (J2.6)	Dry ditches are not conservation priorities on the SBL or the LBAP.	Less than local

Feature	Evaluation Reasoning	Level of Importance
Buildings (J3.6)	The buildings are not supporting roosting bats and are not conservation priorities on the SBL or the LBAP.	Less than local
Track (J5)	The gravel track does not align with conservation priorities on the SBL or the LBAP.	Less than local
Graveyard (J5)	The graveyard is of limited ecological value, although the walls and markers provide some shelter and the habitat is grazed by sheep. Not a conservation priority on the SBL or the LBAP.	Less than local
Cetacean species	All recorded cetaceans are EPS and priorities on the SBL and LBAP. Present in the wider area, but with very limited presence within the Study Area.	Council
Non-breeding harbour seals	Protected as EPS and priorities on the SBL and LBAP. Declining in the wider area, non-breeding harbour seals have very limited presence within the study (see Sanday SAC and East Sanday Coast SSSI for breeding colony assessment).	Council
Non-breeding grey seals	Protected under the Marine (Scotland) Act 2010. LBAP priority species. Non-breeding grey seals are generally common in the wider area (see Faray and Holm of Faray SAC & SSSI for breeding colony assessment).	Council
Otter	Protected as EPS and a priority on the SBL and LBAP. However, common and widespread and in favourable status across the wider area.	Local

8.9 Receptors Brought Forward for Assessment

8.9.1 As noted in Section 8.5, above, ecological features of local and higher value are considered IEFs. However, due to a range of factors, including some standard embedded mitigation measures, certain IEFs can be scoped-out of further consideration.

8.9.2 It should be noted that construction works below Mean High Water Springs (MHWS) associated with the new extended slipway and landing jetty are subject to separate consents, marine licences under the Marine (Scotland) Act 2010. However, the onshore effects of this work are assessed as the site is considered to extend to the MLWS line. Use of the landing facilities during construction and operation of the Proposed Development is also included in the following assessment.

8.9.3 The below assessments apply only to the terrestrial habitats and species of the island, extending to the MWLS line (i.e. including marine species); effects beyond this are assessed in Chapter 16: Underwater Noise; disturbance of the seabed as a result of slipway and landing jetty construction is covered in Chapter 18: Other Issues.

Scoped Out IEFs

Designated Sites

Sanday SAC and East Sanday Coast SSSI

8.9.4 The habitats of the Sanday SAC and East Sanday Coast of SSSI designations have no or very limited connectivity to the Proposed Development and, given the high separation distance (>10 km), are very unlikely to experience any significant direct or indirect effects. The breeding harbour seal qualifying interests are also very unlikely to be significantly impacted by the Proposed Development because construction of the Proposed Development will be timed to occur outwith the seals' breeding season, though foraging harbour seals may be present in the waters around Faray (see *Species*, below). As such the Sanday SAC and East Sanday Coast designations are not considered any further below.

Wyre and Rousay Sounds MPA, Muckle and Little Green Holm SSSI and Rousay SSSI

8.9.5 The Wyre and Rousay Sounds MPA, Muckle and Little Green Holm SSSI and Rousay SSSI are over 6 km distant from the site and the nearest proposed infrastructure. The physical separation from the island by large tracts of sea means that, while there is aquatic connectivity between the designated habitat features and the site, these designations are sufficiently buffered from any activity on the island of Faray.

Local Nature Conservation Sites

8.9.6 The Braehead LNCS and Resting Hill LNCS, as land-based designations on Eday, are also buffered from works on Faray by the Sound of Faray and have no direct habitat connectivity. As such these designations are not considered any further below.

Designated Seal Haul-outs

8.9.7 Designated seal haul-outs over 5 km distant from the island are also considered sufficiently far from the works area to be undisturbed by the Proposed Development and are therefore also not considered further. However, transportation of plant and materials will be by sea and likely to pass a number of haul-out sites; this is included for consideration in the scoped-in section, below.

Habitats

8.9.8 Adverse direct impacts on terrestrial habitats will include permanent land-take for the footprint of the Proposed Development, including borrow pits, turbine foundations, tracks and other infrastructure, such as the new extended slipway and landing jetty.

8.9.9 Adverse temporary impacts include the land-take for the construction site compounds as well as construction-phase disturbance of habitats within a 10 m buffer around works areas. However, because these areas comprise grazing land, they are expected to recover quickly after construction works are complete.

8.9.10 In addition, there is potential for site drainage to affect wetland habitats. This is assumed to occur within a worst-case 10 m zone, where the wetlands abut works areas (i.e. with no dry habitat in between). See Chapter 11: Geology, Hydrology and Hydrogeology for further details.

8.9.11 For clarity, Table 8.8 presents the predicted losses for all the habitat types on site, including non-IEFs (excluding field boundaries and track; no buildings will be affected), for both permanent loss to the Proposed Development footprint and temporary loss to works compounds, etc., plus associated disturbance.

Table 8.8 – Summary of Habitat Losses to Development Footprint

Phase 1 habitat	NVC community or habitat types	Permanent loss (ha)	Temporary loss (ha)	Drainage effects (ha)
B1.2	Semi-improved acid grassland	1.08	1.80	n/a
B4	Improved grassland	3.39	2.97	n/a
B5	Marshy grassland with springs (potential GWDTE)	n/a	n/a	<0.01
	Marshy grassland (southern area)	n/a	n/a	n/a
G1	Standing water	n/a	n/a	n/a
G2	Running water	n/a	n/a	n/a
H1.1	Intertidal sand	0.05	n/a	n/a
H1.3	Intertidal boulders/rocks	0.05	n/a	n/a
H8.1	Maritime cliffs	n/a	n/a	n/a
J1.4.1	Exposed rock	n/a	n/a	n/a
J5	Graveyard	n/a	n/a	n/a
Total		**4.58**	**4.77**	**<0.01**

8.9.12 Of the site habitats recorded, only standing water, marshy grassland with springs and intertidal boulders have been identified as IEFs; the other habitats are therefore scoped-out of the assessment.

Species

Cetacean species

8.9.13 Cetacean species have been identified to be present within the waters surrounding Faray. However, these species use the wider area of the archipelago and North Sea/Atlantic for foraging and therefore only pass the area on an occasional basis. Though presence at time of development works is possible, the construction works will be principally limited to the land (i.e. with the exception of a brief period of landing facility works; see Chapter 16). Standard mitigation measures will reduce likely impacts. Borrow pit rock-breaking will be by use of a hydraulic attachment to an excavator, rather than by use of explosives (see Chapter 3: Proposed Development); this will reduce the disturbance levels of the operation. There will be no blast shockwave with the potential to propagate through the marine habitat and cause an immediate avoidance reaction. While shipping movements will be temporarily increased, direct impacts are considered insignificant and possible to control through method statements and the application of standard mitigation of using low noise/vibration plant and techniques to ensure propagation of acoustic disturbance through the adjacent waters is minimised (see *Standard Mitigation*, below). This species group has therefore been scoped out of the impact assessment.

Harbour Seal

8.9.14 Harbour seal presence around Faray has been demonstrated to be limited, with only one individual recorded during the seal survey programme (see Section 8.6, above, and Appendix 8.3). Grey seal predation on harbour seal (particularly during the pupping/mating season) and also competition between the two species over the same foraging resources has been reported (ICES, 2017; Wilson and Hammond, 2019) and are likely key factors in the general absence of harbour seal from an area with a sitting grey seal population. Harbour seals are therefore scoped out of the impact assessment.

Scoped In IEFs

8.9.15 The following IEFs are brought forward for detailed assessment:

- Designated sites
  - Faray and Holm of Faray SAC and SSSI;
  - Designated seal haul-outs within 5 km of the site; and
  - Designated seal haul-outs on the potential shipping route for delivery of plant and materials.
- Habitats
  - Standing water;
  - Marshy grassland with springs; and
  - Intertidal boulders/rocks.
- Species
  - Otter; and
  - Non-breeding grey seal.

8.10 Standard Mitigation

8.10.1 In line with the current CIEEM (2018) guidelines, the assessment process assumes the application of standard mitigation measures. These measures are intended to prevent, reduce or offset any likely significant effects of the Proposed Development on identified IEFs. This approach is in accordance with best practice guidance and UK, Scottish and Local Government environmental, planning and sustainability policies.

8.10.2 The principles and objectives for mitigation associated with the Proposed Development have been developed through an iterative process with the Applicant's design team and through discussion with NatureScot and other stakeholders.

8.10.3 During the iterative design process, the following decisions have been implemented to reduce the potential for impacts on IEFs:

- Existing tracks have been used, where possible, in order to reduce the footprint of the Proposed Development. Some localised upgrading will be required to ensure a minimum 4.5 m running width.
- Electrical infrastructure cabling will be installed alongside tracks, wherever possible, to further minimise habitat loss.
- Turbines have been sited at least 50 m from the shoreline and drainage channels, where practical.

- No site works will be undertaken during the seal breeding season (15th September to 31st December inclusive).

8.10.4 Mitigation includes best practice methods and principles applied to the Proposed Development as a whole (generic measures) as well as site-specific mitigation measures applied to individual locations (specific measures).

8.10.5 All ecological mitigation will be incorporated into a Construction Environmental Management Plan (CEMP); see Chapter 3: Proposed Development and Appendix 3.2: Outline CEMP for details. The final CEMP is to be agreed with OIC, in consultation with NatureScot and SEPA, post-consent, but prior to development commencing. It will outline all required mitigation and provide details on timelines for undertaking mitigation for each identified ecological receptor. The CEMP will also outline a timetable of actions and form part of the contract documents to ensure delivery of mitigation specified in this chapter. In addition, the CEMP will incorporate the provision of an Ecological Clerk of Works (ECoW) to oversee the implementation of recommended mitigation and include Method Statements and Species Protection Plans to ensure delivery of the mitigation commitments contained in this planning application submission.

8.10.6 Standard mitigation also includes the following:

- Adherence to current environmental protection policies and guidance, including but not limited to:
  - Good Practice During Wind Farm Construction (SNH, 2019);
  - WAT-SG-75 (SEPA, 2018);
  - The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended; i.e. the CAR regulations) A Practical Guide (SEPA, 2019); and
  - LUPS-GU31 (SEPA, 2014).
- Development of Method Statements for use during construction (i.e. part of the CEMP), to include current good practice and prescribed use of low noise and vibration plant and construction techniques to reduce potential for acoustic disturbance to the surrounding marine habitats, including “soft-start” procedures (i.e. gradually increasing a disturbance activity up to full operation over a c.10-20 minute period) to limit wildlife avoidance behaviours when working near the shore.
- Development of Method statements to control dust-generating activities, such as aggregate extraction and vehicle movements. Standard mitigation includes damping-down surfaces.
- A suitably qualified ECoW will be present and oversee construction activities, as well as providing toolbox talks to all site personnel with regards to priority species and habitats, as well as undertaking monitoring works and briefings to relevant staff and contractors, as appropriate.
- A preconstruction otter survey programme of habitats and field drain crossing points, to identify any changes to otter use of the island, to feed into the final micro-siting process.
- Development of a Species Protection Plan for otter, inclusive of:
  - capping of any exposed pipe systems when not being worked and providing exit ramps for any exposed trenches or excavations (to prevent otters entering and becoming trapped);
  - driver awareness and 10 mph speed controls within the site to limit the risk of vehicle movement accident mortality; and
  - implementation of an exclusion zone of at least 30 m (NatureScot, 2020a) to be implemented around any new otter holt or resting place. An exclusion zone of a minimum

100 m to be applied to any holts identified (200 m for a breeding holt), to ensure protection from borrow pit operations;

- Development of a Species Protection Plan for seals.
- In order to prevent pollution of watercourses/field drains and waterbodies within the site (particulate matter or other pollutants, such as fuels), best practice techniques will be employed; for example:
  - Establishment of drainage measures (e.g. cut-off ditches, bunds, silt fencing) around the tracks and hard-standings prior to formation;
  - Application of best practice methodologies for water channel crossings, in order to prevent pollution during construction and operation (design capacity of culverts; use of silt fencing and sediment mats, etc.), in accordance with the CAR regulations;
  - Designated fuel and chemical stores, using appropriately bunded and maintained facilities;
  - Application of best practice methods for concrete batching, to prevent potential for pollution and contamination of ground waters and soils (with particular regard to storage of materials and wash-out facilities);
  - Use of appropriate alternative products where possible, to reduce the number of environmentally hazardous products on site (with particular reference to hydraulic fluid and lubrication oils/grease required for heavy plant such as excavators and dump trucks);
  - Designated fuelling areas and method statement-controlled fuelling procedures;
  - Spill kits to be carried on all site vehicles;
  - Storage of spill kits at each works location; and
  - Controlled storage and disposal of all COSHH (i.e. materials listed under the Control of Substances Hazardous to Health Regulations) and environmentally hazardous waste materials (including method statements).
- Regular monitoring of watercourses/field drains will be required during construction. The monitoring will include a responsive element, with an on-site ECoW checking areas where active works are taking place and areas where sediment run-off may be a concern during periods of high rainfall.

8.10.7 As part of the Proposed Development proposals it will be necessary to develop and implement a Site Restoration Plan (SRP) as part of the CEMP to ensure the regeneration of those areas of habitat that have been temporarily lost through development (i.e. materials lay-down, works compound areas, etc.).

8.10.8 In order to facilitate restoration, including of the borrow pits, disturbed ground will be restored as soon as practicably possible using materials removed during the construction of access tracks, excavation of cable trenches and turbine foundations. To achieve this, any excavated soil will need to be stored in such a manner that is suitable to facilitate retention of the seed bank.

8.10.9 Additionally, as part of this process, there will be development of an Operational Site Management Plan (OSMP) and maintenance task Method Statements.

8.11 Likely Effects

The Proposed Development

8.11.1 As described in Chapter 3, the Proposed Development will consist of six turbines with a maximum blade tip height of up to 149.9 m. The British National Grid coordinates denoting where each of the turbines are proposed to be located are listed in Chapter 3 and shown on Figure 1.2.

8.11.2 The main elements of the Proposed Development which have the potential to impact on IEFs, both during construction and operation are:

- landing facility works (new extended slipway and landing jetty construction; see below);
- temporary borrow pit operations (to extract material for track, laydown and compound surfacing), including potential for dust generation;
- track construction, including excavation to a competent surface, lay-down of material from the island's borrow pits to form an appropriate running surface, bridging/culverting of two drainage ditches, mobile plant traffic movements and potential for dust generation;
- met mast installation;
- turbine foundation creation (including excavation, pile-driving (if required), etc.);
- crane pad and permanent hardstanding construction;
- cable-laying and grid connection infrastructure (including substation);
- temporary lay-down and site compound areas;
- temporary materials storage (soils and turves);
- site water management; and
- site restoration (track batters, compounds, etc.).

8.11.3 As noted in Chapter 3 Proposed Development, the turbine foundations are anticipated[1] to be a gravity base design of 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. Materials for the majority of the works associated with the construction of the access track and crane hardstands will be won from on-site borrow pits. Material for the initial works will, however, need to be imported from quarries on the Mainland of Orkney. Concrete will be batched on-site. For the purposes of this EIA Report, the following approximate dimensions have been used:

- Reinforced concrete slab c.12 m - 15 m in diameter; and
- Depth of the foundations approximately 3 m - 3.5 m.

8.11.4 The above activities have the potential to cause the following construction impacts to the IEFs identified for the site:

- Direct loss of habitat;
- Disturbance to GWDTE habitat;

[1] 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.

- Direct loss of foraging habitat and/or breeding habitat for protected species; and
- Indirect loss of foraging and/or breeding habitats for species, through disturbance of habitats and displacement of species due to construction works, including noise, vibration and pollution. Disturbance of ground vegetation may affect a 5 m zone around all infrastructure. Noise levels (in decibels, dB) as a result of borrow pit extraction works have been predicted[2] to be:
    - 66 dB at 70 m;
    - 61 dB at 100 m; and
    - 49 dB at 300 m.

8.11.5 The potential adverse operational impacts have been identified as:

- Direct and indirect loss of species foraging or breeding habitat, due to displacement or avoidance; and
- Cumulative adverse impacts of the Proposed Development in the context of other developments (operational and consented).

Landing Facilities

8.11.6 The extant slipway is c.20 m long by 3.5 m wide, though this was originally longer. This is to be upgraded to a maximum 36 m long and 8 m wide (a total of 288 m^2). The new landing jetty will comprise a causeway up to 55 m long by 10 m wide (550 m^2), terminating in square structure for docking measuring up to 20 m by 20 m (400 m^2). The indicative works programme has been defined as a two-phase approach. See Chapter 3: Proposed Development, Chapter 9: Noise and Chapter 12: Traffic and Transport, for more details; marine works impacts to the IEFs of the area are assessed in Chapter 16: Underwater Noise; seabed disturbance, as a result of slipway and landing jetty construction, is covered in Chapter 18: Other Issues.

Mobile Plant

8.11.7 A range of mobile plant will be required for the construction programme. It is assumed the following plant will be used: hydraulic breaker, rock crusher, 35 t and 7.5 t excavator, wheeled loader, roller compactor, mobile batching plant, concrete pump and cement truck. A variety of small generators and plate compactors are also likely to be required.

Disturbance of Seals

8.11.8 The grey seal breeding season extends from 15th September to 31st December, inclusive, with presence of mothers and pups present on favoured parts of the shore at this time (Duck, 2010). Due to an embedded design commitment to avoiding the breeding season, the key focus of the seal disturbance assessment of this chapter is on the non-breeding seal population associated with the island of Faray. It should be noted that, while in-water effects are discussed below, this aspect is fully assessed in Chapter 16: Underwater Noise and seabed disturbance is discussed in Chapter 18: Other Issues.

8.11.9 A review of the literature suggests that, due to general global distribution, more studies have been conducted into harbour seal behaviour than for grey seals. Most of the research relating to renewable energy production is focused on offshore wind turbine developments, with a lesser focus on tidal power infrastructure. However, this research provides insights into seal behaviour that is also relevant to an installation of turbines on a small island.

[2] Based on the following assumptions: 1 x concrete batching plant; 1 x shovel; 1 x hydraulic breaker; 1 x 35T excavator; 1 x 7.5T excavator; 1 x concrete pump; and 1 x cement truck.

8.11.10 Assessment of potential effects experienced by the Faray area non-breeding seal population relate to both direct and indirect effects. Direct effects include habitat loss and physical injury (e.g. from collision with marine traffic), while indirect effects include visual, noise and vibration disturbance as a result of anthropogenic actions. Wilson (2011) states "*Disturbance is considered to occur if the human activity disrupts or alters the animals' normal behaviour. This includes increased alertness or movement on haul-out sites and flushing to the water…*" It is important to note that, in general, both seal species are sensitive to anthropogenic disturbance and hence their choice of remote locations to haul out, moult and breed (Duck, 2010).

8.11.11 UK grey seals tend to spend long periods hauled out during their annual moult (December to April) and so are more susceptible to human disturbance at haul-out sites at this time of the year (Scottish Government, 2011b; SCOS, 2017). Use may be made of the land beyond the high shore during this annual occurrence, and this is true for the grassland to either side of the Lavey Sound shoreline of Faray and the Holm of Faray.

8.11.12 Various studies (as cited in Thompson *et al*., 2013) for the Scroby offshore wind farm construction works suggested that harbour seals are more sensitive to disturbance than grey seals, with a decline in the presence of the former on the nearby shoreline, while grey seal numbers increased during the construction phase. Of note is that the presence of both species increased in the observed areas during the operational phase.

8.11.13 The distance at which seals show such signs of disturbance is highly variable, depending on their location, how they are approached, whether the animals are habituated to the presence of humans and the time of year; in particular, whether or not they are accompanied by pups (Marine Scotland, 2014). The sensitivity of seals on haul-outs can also be site-specific: a relatively close approach may be tolerated at one site while animals on an adjacent site might not cope with a similar disturbance. TfL (2016) indicates only mild and localised behavioural effects in response to small vessel movements inshore. Research conducted into harbour seal response to both pedestrian and boat disturbance (Andersen *et al*., 2012) indicates a higher sensitivity to boat traffic; boat traffic caused a flight response at 560-850 m and pedestrians prompted seals to flee at 200-425 m. Wilson (2011) indicates a similar distance of 200 m for both grey and harbours seals, when approached by a boat. With particular reference to the impact of anthropogenic activity associated with marine renewable developments on harbour seals, Paterson *et al*. (2019) used controlled disturbance trials: hauled-out seals were approached by boat until all seals had entered the water and then their return timed. Results indicated 52% of disturbed seals returning to a haul-out within 30 minutes, with up to 94% returned by four hours post-disturbance. Tagging animals with GPS trackers also indicated site fidelity, despite repeated disturbance at a given location (also supported by the work of Lewis, 2006). The findings of this study have implications for the monitoring of the Faray seals. The authors concluded that, as there was no large-scale redistribution after disturbance, when a project requires monitoring effort to determine the effects of short-term increases in levels of disturbance caused by boat activity, this can be spatially localized. However, they recommend that, where longer term disturbance is likely, or the impact is on important haul-out sites for breeding and/or moulting, monitoring may be required over a larger geographical area.

8.11.14 Assessment of the efficacy of non-lethal deterrents (MMO, 2018 and 2020) indicates that seals can become habituated to repeated disturbances: it is therefore possible that, once the shore works have been completed, the seals will become accustomed to higher levels of human activity in the area, as long as this is tightly controlled, i.e. disturbance activities are carefully timed and restricted in location to reduce the effects. The potential for habituation to sensitive human activity is supported by Duck (2010), Wilson (2011) and Marine Scotland (2014); though a flight response may still be initiated by an approaching vessel, it may mean that distance of flight is reduced and a return to shore made sooner, if the approach is conducted quietly and sensitively.

8.11.15 Review of the available literature suggests that research into the impacts of wind farm construction is focused on offshore projects. These studies indicate that pile-driven base construction is the single most disruptive element for seals during construction and operation, with such activities causing avoidance of an area, though there is likely to be no significant displacement during construction overall (Edren *et al*., 2010; Russell *et al*., 2016). Russell *et al*. (2016) note that displacement during piling was identified as extending up to 25 km from the operation; however, seal use of the area

returned to normal within two hours. An underwater noise impact assessment has been undertaken and is detailed in Chapter 16. This assesses the impacts of underwater noise from piling on marine mammals, including seals. It takes the specifics of the area into consideration, including water depth and sediment type.

8.11.16 The key aspect of the impact driven piling process is the release of a large amount of energy in the form of high sound pressure waves and these across a broad range of frequencies (TfL, 2016). During piling, the noise disturbance is not limited to the water column; however, in-air propagation will attenuate more quickly by comparison to in-water propagation. Southall *et al*. (2007) highlight that behavioural disturbance is difficult to quantify, due to highly variable reactions and specific context making the reactions less predictable. For Faray, this has implications for any seals hauled-out on the shoreline in relatively close proximity to the new landing jetty piling works, as disturbance will likely cause animals to take to the water where the noise levels will be higher and therefore more potentially damaging (see Chapter 16: Underwater Noise). A soft-start, to initiate a dispersal of any nearby hauled-out and in-water animals, is therefore necessary.

8.11.17 As sheet piling is required for the construction of the landing jetty, the JNCC piling protocol (2010) will be followed. This includes, a 500 m mitigation zone where a Marine Mammal Observer (MMO) will undertake a pre-piling search of the area. The MMO will monitor the area for a period of at least 30 minutes and piling will not commence if a marine mammal has been detected within the mitigation zone or until 20 minutes after the last detection. Once the pre-piling search is completed, soft start will also be implemented, where the piling power is gradually increased over a period of a minimum of 20 minutes, to allow marine mammals to move away from the noise source, which will reduce the likelihood of exposure to sound levels that could cause injury. Further details of the in-water works are provided in Chapter 16.

8.11.18 The use of artificial lighting on a shore can often impact the marine environment, disrupting the behaviour of animals in the adjacent area, including the commuting behaviour of nocturnal mammals and disruption of predator–prey relationships for species that forage in low light levels. For example, harbour seals will often remain in the sea longer during periods of full moon, apparently using the increased ambient light for extended periods of foraging (Greer *et al*., 2010), but will also congregate to feed in artificially illuminated areas (Depledge *et al*., 2010) outwith the natural lunar cycle. It is therefore important that task lighting is directed to where it is needed and light spillage (whether direct and/or in-direct) onto the shoreline and beyond is avoided, particularly within the vicinity of the seal haul-outs.

8.11.19 Russel (2016) also indicates that operational wind farms and other man-made structures are not overtly avoided by grey seals, with GPS-tagged animals shown apparently foraging within these areas. With the Proposed Development being land-based, the only additional man-made structures within the water will be the extended slipway and new landing jetty and these are therefore unlikely to be avoided by seals. It should also be noted that responsible use of the landing facilities would not be judged harassment of hauled-out seals under Section 117 of the Marine (Scotland) Act 2010 as described in Marine Scotland's (2014) guidance.

8.11.20 Operational noise and vibration will be buffered by the island, leaving the maintenance visits the only directly comparable elements of wind farm operation. The Proposed Development would, therefore, be expected to have a significantly reduced overall effect on the seal population, by comparison to a similarly-sized off-shore wind farm installation.

Construction

Faray and Holm of Faray SAC and SSSI

8.11.21 The Faray and Holm of Faray SAC and SSSI are both designated for grey seals, with the SSSI citation description noting that the site is "*one of the most important breeding and haul out sites for grey seals in Orkney*" (SNH, 2010) and the two islands are noted to "*support the second-largest breeding colony of grey seals in the UK, contributing around 9% of annual UK pup numbers*" (MCS, 2020).

8.11.22 The permanent footprint of the Proposed Development does not overlap with the SAC and SSSI designated areas, although access is necessarily gained across the designated coastline. The main

borrow pit is outwith the SAC and SSSI boundaries on the west of the island; the secondary borrow pit location is also outwith the designated areas, at the top of what is essentially a cliff, close to Ness.

Main borrow pit

8.11.23 The Proposed Development is to be programmed outwith the breeding season of 15th September to 31st December and will therefore avoid causing disturbance via noise and vibration to the SAC and SSSI qualifying feature (see *Grey seal*, below for non-breeding seal assessment). In addition, the borrow pit would not result in loss of supporting habitats for grey seals as they tend to stay near the shore. Working of the borrow pit is therefore considered to have **no impact** to the designated features.

Secondary borrow pit

8.11.24 The chosen location is above the shoreline, within an area previously worked as a quarry and behind the coastal cliffs of this part of the eastern shore. As with the main borrow pit, this will not be worked during the seal breeding season. Extraction of material from this borrow pit on the qualifying feature of the SAC and SSSI is therefore considered to have **no impact**.

Landing jetty and extended slipway

8.11.25 Construction impacts out to MLWS are assessed here, impacts beyond this are assessed in Chapter: 16: Underwater Noise and Chapter 18: Other Issues (for seabed disturbance).

8.11.26 Construction will be across the designated area of the intertidal zone. Construction of the landing jetty out to MLWS will involve the permanent loss of intertidal rock habitat, for the full length of the causeway, plus a small part of the docking structure (which commences close to the limit of the MLWS and extends out into the bay; see Chapter 16 Underwater Noise, Figure 16.1). The land-take of the intertidal rocky shore habitat is detailed under "Intertidal rocks/boulders", below. The overall magnitude of the impact to the SSSI shoreline is limited to the immediate location and is permanent in nature; however, this new structure is not expected to change the dynamics of the SSSI habitats, assessed as a permanent **negligible** adverse impact to the shoreline. With regards to breeding seals above MLWS (i.e. the qualifying interests of the designations), **no impact** is anticipated as a result of the timing of the works.

8.11.27 The slipway works will be to replace and extend the extant slipway structure on the shore, which has been shortened by the erosive forces of wave action over the years since it was first installed. Operational requirements for wind farm construction necessitate an increased footprint and, therefore, an additional land-take of the rocky shore to MLWS (detailed under "Intertidal rocks/boulders", below). The new extended slipway is not expected to change the dynamics of the SSSI habitats, assessed as a permanent **negligible** adverse impact to the shoreline; however, as with the landing jetty construction, there will be **no impact** to breeding seals above MLWS (i.e. the qualifying interests of the designations) as a result of the timing of the works.

8.11.28 With regard to the potential for disturbance to breeding seals, embedded design mitigation means that this works will be timed outwith the seal breeding season, so will not impact the designation qualifying interests. Works above the MLWS will, therefore, not have any effect on the designated feature of the SAC and SSSI resulting in an assessment of **no impact**. See below for consideration of the habitat loss and species impacts.

Extended slipway and landing jetty use during construction

8.11.29 Delivery of staff, plant and materials will be via the new extended slipway and landing jetty. As identified for the borrow pit operations, above, no work will occur during the seal breeding/pupping season. The deliveries of staff and material to the site will, therefore, not have any effect on the designated feature of the SAC and SSSI resulting in an assessment of **no impact**.

General construction works

8.11.30 Works will involve a range of operations/processes, including vehicle movements and track and base construction, etc. While each will have a potential for disturbance, all will be conducted outwith the breeding season and, therefore, not have any effect on the designated features of the SAC and SSSI, resulting in an assessment of **no impact**. Should works over-run, then no further works will be undertaken until after the next breeding period has completed.

Designated haul-out sites

8.11.31 A number of designated seal haul-outs are located within 5 km of the island. The haul-out of the Calf of Eday is buffered by Eday, the Weather Ness site on Westray is buffered by the presence of the Holm of Faray in between it and the Proposed Development and Seal Skerry, off the coast of Eday is buffered by the western expanse of the island. The closest designated haul-out area of Rusk Holm is c.1 km from the west coast of Faray, with the distance considered sufficient for any noise, including burrow pit blasting, to have attenuated sufficiently to be drowned-out by wave noise.

Borrow pit operations

8.11.32 Material extraction is considered the single most disturbing terrestrial operation that will be carried out; as noted above, the attenuation of noise will mean that the level, as a result of rock extraction, are predicted to be c.61 dB at 100 m and attenuated down to 49 dB at 300 m (for comparison, the level for normal human speech is 60 dB). All other land-based operations will be lower impact in terms of noise generation and therefore will have no effect on the haul-outs beyond Faray's shores. As such there will be **no impact** on designated haul-out sites during borrow pit operations.

General construction works

8.11.33 There is a potential for noise disturbance from works on the island. However, applying the noise levels estimated for borrow pit extraction (as a worst-case scenario) to the turbine hardstandings and access tracks, due to the distances involved, noise levels will be sufficiently attenuated that they will be drowned-out by the baseline of wave noise. With the exception of the landing area, very little of the Proposed Development infrastructure is within 100 m of the shore and therefore beyond a likely visual disturbance zone and beyond the edge of where noise will have any discernible effect. General construction disturbance to MLWS is therefore assessed as **no impact** for the haul-out locations within 5 km of the Proposed Development.

Extended slipway and jetty use during construction

8.11.34 Potential disturbance impacts will be sheltered from Rusk Holm by the body of the island and the c.1.8 km distance. This is assessed as **no impact**.

Transportation of staff, plant and materials

8.11.35 Marine traffic movements through the sounds north of Kirkwall are generally a mix of fishing (both inshore and offshore vessels) and ferry traffic, with occasional cargo vessels, forming a baseline of disturbance to the seal populations of the area.

8.11.36 Deliveries to Faray will, of necessity, be by sea and likely to pass a number of haul-out sites *en route* to the island, potentially including Seal Skerry. How many haul-outs are passed will depend upon the port involved; assuming Kirkwall (Hatston Quay) as the port of origin (see Chapter 12: Transport), then potentially up to seven haul-out sites will be passed, though the distance between vessel and haul-out will be variable, e.g. the Gairsay haul-outs are c.1.28 km from those of Taing Skerry & Green Holm; while the ferry route passes through the sound between Green Holm and Shapinsay, which is c.855 m at its narrowest point. The entrance to Fersness Bay is c.720 m wide, with the navigation channel (also used by the North Ronaldsay ferry service) likely to come within 500 m of the island's shoreline; and the Seal Skerry haul-out is likely to be passed at a minimum of 1 km distance.

8.11.37 During the initial site establishment period, there may be numerous shipping movements per day: due to the vessel size restrictions of the extant slipway, 2-3 movements will be needed at both the commencement and end of day for staff transport until the new extended slipway is complete, after which a larger vessel will be possible to be employed, thus reducing staff transport to one

navigational movement each way for the majority of the earthworks and turbine erection programme. Delivery of plant and construction materials will also require more movements per day, possibly up to a potential May 2025 peak of 32 movements (i.e. 16 round-trips, for vessels carrying both staff and construction materials), with this being possible to reduce with the completion of the extended slipway and an increased capacity achieved (see Chapter 12: Transport, *Construction Phase*).

8.11.38 With reference to the apparent baseline of ferry movements, fishing and cargo vessels, etc., such disturbances caused by landing staff and equipment will be an immediate temporary and short-term adverse effect on any hauled-out seals on areas passed closely (i.e. within 200 m) by the transport vessels, with the effect magnitude considered low, as this is a daily occurrence and therefore part of the established baseline for the resident seal population to which they will have habituated (see *Disturbance of Seals*, above). With particular regard to staff movements, such a disturbance will be daily for the duration of the programme. Deliveries of supplies and material will be less frequent, made as required by the construction programme, once the site has been established.

8.11.39 Daily shipping movements for the Proposed Development will be against a pre-existing baseline of maritime traffic in the northern sounds, including ferries, fishing and cargo vessels. As noted above, the ferry route passes to the east of Grass Holm, within a channel c.855 m wide at its narrowest point between Grass Holm and the Shapinsay coast. There are c.12 ship movements/day through the sound, Monday-Friday, with fewer movements Saturday-Sunday (Orkney Ferries, 2020). Construction phase shipping movements will increase this disturbance by up to c.32 movements per day at the peak of the construction phase (as noted above and taken as a "worst-case", given the potential to use higher capacity vessels once the landing jetty has been completed), though the navigational route is likely to be the same as used by the ferry services and therefore the disturbance distances will be similar. Disturbed seals would be expected to return to their haul-outs shortly after passage of the craft, similar to what they currently do. Assessed as a daily immediate short-term (reversible) adverse effect, shipping movements are considered to have a potential **negligible** adverse and therefore **not significant** impact on the designated haul-out sites of the navigation route for the duration of the construction project.

Standing water

8.11.40 The iterative design and use of the existing track have ensured that the main (i.e. those that are either permanent or semi-permanent) ponds have been avoided by a minimum of at least 15 m and application of standard measures, such as designated fuel stores and fuelling areas, carrying of spill kits on each vehicle, storage of spill kits at each works location, etc., will reduce the risk of pollution reaching these waterbodies (see Section 8.10 Standard Mitigation, above). As such there will be **no impact** on these features of local importance.

Marshy grassland with springs

8.11.41 The two springs and their associated short burn are in excess of c.70 m south-west of the southern extent of the proposed main borrow pit and therefore outwith a zone of influence regarding pit operation. However, part of the marshy grassland cover extends upslope to within 10 m of the main borrow pit search area; only 34.60 m^2 (0.00346 ha) of this area is potentially within the worst-case hydrological disturbance zone of the main borrow pit. This tract appears associated with a ditch at its upper end and is separated from the spring area by further drainage ditches across the lower slope, which prevent surface flows from reaching the area around them.

8.11.42 SEPA (2017) guidance indicates there should not be deep excavations within 250m, or shallow excavations within 100m, of GWDTE without further detailed risk assessment. This guidance is in response to the Groundwater Directive which is focused on the protection of groundwater, rather than the habitats found at seeps/springs (the habitat is useful as an indicator of groundwater being at or near the surface and therefore susceptible to impact from construction-related drawdown, pollution, etc.). This marshy grassland, in the context of the island habitats, has not been identified to be of any particular intrinsic value.

8.11.43 Chapter 11 notes the groundwater resource to have been assessed as being of medium sensitivity, due to the moderately productive aquifer status, but absence of active private water supplies (PWS). Deep excavations within or close to the identified GWDTE area could result in localised water table drawdown, potentially affecting the groundwater flow that sustains the marshy grassland. However, given the interpretation of likely fracture flow, this potential is limited; even with excavation of the shallow bedrock within the borrow pit area, fractures providing flow pathways would be expected to extend to significant depth and would therefore continue to provide a flow pathway to the surface. Therefore, there is low potential for the groundwater flow regime to be substantially affected. Employment of suitable construction good practice pollution controls would minimise potential for impacts to groundwater quality via leaks and spills, etc.

8.11.44 In the presence of standard mitigation (see Chapter 11: Geology, Hydrology and Hydrogeology), impacts to the springs, and therefore the GWDTE, are unlikely. As such, it is considered that at most, there will be potential locally significant **negligible impact** on these features of local importance.

Intertidal boulders/rocks

8.11.45 The construction of the jetty will involve the loss of 550 m^2 of this habitat to the causeway footprint (55 m long by 10 m wide). A small section of the of the 20 x 20 m docking structure will also be within the tidal range (i.e. above MLWS), this is estimated at a maximum of 74 m^2 in area. A total loss of 624 m^2 or 0.06 ha above MLWS, while permanent, is considered a minor change within an area of predominantly rocky shore habitat; this change is therefore assessed to be a **negligible** adverse and **not significant** effect.

8.11.46 A proposed upgrade (an increase to both width and length) to the extant slipway used for landing will see the loss of a small amount of rock to the side of the current structure. 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. This will involve a permanent loss of a small additional area of the shoreline rock habitat to either side of the extant structure, to a maximum of c.90 m^2, plus an additional 128 m^2 for the 16 m extension (a total of c.218 m^2 or 0.02 ha). Such a change, while permanent, is a minor change to the baseline, given the extant structure already in place and the resource available. A low magnitude affect, limited to an already hard habitat, is therefore assessed to be a **negligible** adverse and **not significant** effect.

8.11.47 Total footprint of the structures (including impacts below MLWS) is assessed in Chapter:18.

Otter

8.11.48 Otters rely on the aquatic environment, although they will also track across watercourse catchments within their territories. The potential indirect noise and vibration impacts of construction activities could potentially change behaviours and cause avoidance of areas within their ranges for the duration of the disturbance event. Once the disturbance is complete, or the animals concerned have habituated to the disturbance, use of the habitat will likely resume at the same level.

8.11.49 Otters have been demonstrated to use the island's shoreline, with feeding remains and two shelters recorded. Spraints were also identified a short distance inland (within c.80m m of the shore): survey findings (see Appendix 8.2) indicate a low number of individuals (potentially only one animal) using the island's shoreline habitat and this only on an occasional basis, indicating that the island is a small part of a larger territory. Use appears to be primarily of the western shore, though one territorial spraint was identified close to Muller Geo, inland from the north-eastern shore; this suggests that the eastern shoreline is generally avoided.

<u>Borrow pit operations</u>

8.11.50 There is a lack of otter presence recorded near either proposed borrow pit location or within the maximum exclusion zone of 100 m, as generally considered appropriate between an extraction site works area and a sensitive ecological feature (NatureScot, 2020b; Gardner Pllu, 2017).

8.11.51 As already noted above, at 100 m from the main borrow pit, extraction noise (from rock breaking) will have attenuated to c.61 dB and to c.49 dB by 300 m; there will be a sufficient attenuation of noise to minimise the potential for disturbance to animals on the western shore, c.200 m distant.

An assessment of **no impact** is ascribed to the potential effects of main borrow pit operation on otter using the island shorelines.

8.11.52 For the secondary borrow pit location, there are no records of otter presence in the vicinity. However, foraging otter presence is possible within Scammalin Bay; should an otter be within the EZoI, these low magnitude effects would be an immediate and **negligible** adverse impact and likely only **locally significant** on an immediate, very temporary (i.e. reversible) timescale across the 24-month construction phase.

General construction works

8.11.53 While a NatureScot-endorsed exclusion zone of 30 m (NatureScot, 2020a) would normally be applied to any resting sites near construction works, none of the otter records indicate use of the island within 100 m of any of the Proposed Development infrastructure (which is generally set back a minimum of c.70-100 m from the shoreline), including the borrow pit locations; this may be as a result of the presence of sheep, dissuading otter from tracking across the island.

8.11.54 An assessment of **no impact** is predicted for the overall construction programme.

Extended slipway and landing jetty construction

8.11.55 Construction works will create a potential for disturbance; however, there is no evidence of otter use of this part of the island. If preconstruction surveys suggest otters are present during the works, it is likely that they would be temporarily displaced from the area. No habitat in close proximity to the landing site was identified as suitable for otter resting site use during the survey programme, though the bay could be used for foraging. As such, the effect magnitude would be anticipated to be no more than low, with at most a temporary (reversible) and **negligible** adverse impact which would be only **locally significant**.

Extended slipway and landing jetty use

8.11.56 Use of the landing facilities during construction will also create a potential for disturbance; however, there is no evidence of otter use of this part of the island. Should otters be present during the arrival of a vessel, it is likely that they would be displaced from the area and subsequently be unlikely to return owing to the daily presence of construction staff there. As such, the effect magnitude would be anticipated to be no more than low, with at most an immediate, temporary (reversible) and **negligible** adverse impact which would be only **locally significant**.

Construction traffic interactions

8.11.57 Otters are also potentially vulnerable to mortality or injury due to collision with construction traffic or construction methods (i.e. large mobile plant stripping the surface and deep excavations). However, with the presence of otter inland or within 100 m of the works areas generally unlikely and implementation of a 10 mph speed limit, the probability of collisions occurring is considered to be very low; a low magnitude, immediate, **negligible** adverse impact is therefore possible, which would constitute a **not significant** effect at the local scale.

Non-breeding grey seals

8.11.58 As described in Appendix 8.3, grey seals use of much of the island coastline outwith the breeding season. Numbers are variable, but show a bias for use of both the northern and southern ends of Faray and also a preference for the more sheltered east coast.

8.11.59 Though there is potentially access from the shore immediately adjacent to the walled burial ground, no seals have been recorded in the middle of the island close to the main borrow pit site (>230 m east). At its closest, the main borrow pit is located c.290 m from the east coast and c.230 m from the western shore; the small borrow pit is c.7 m from the top of the cliffs, at its closest point. With regards to the proposed small borrow pit on the eastern side of the island, close to Ness, none of the seal survey records indicate use of the adjacent rocks as haul-outs (the closest identified location from the survey is c.70 m to the south-east).

8.11.60 Due to the iterative design process, there will be no direct loss of terrestrial habitat beyond the shoreline which is used by seals during the moulting period; survey results indicate preferential use of the low-lying land to either side of Lavey Sound during this period (see Figure 8.4). The Proposed Development infrastructure is located south of the Lavey sound haul-out area and, additionally, turbine installations 1, 2, 3 and 5, located at the closest points to the shoreline, are backed by sea cliffs and therefore their hardstandings are not accessible from the shore; turbines 4 and 6 also have limited accessibility from the shore.

Borrow pit operation

8.11.61 Where blasting techniques are used to extract rock material, application of a disturbance buffer of at least 100 m is generally considered appropriate between the works area and a sensitive ecological feature (NatureScot, 2020b; Gardner Pllu, 2017); however, the Proposed Development borrow pits are likely to be worked by use of a hydraulic rock-breaker mounted on an excavator[3]. This technique will cause short bursts of disturbance of longer duration, but of significantly less magnitude than when using a blasting methodology. As previously stated, noise levels as a result of borrow pit extraction works have been predicted to be 66 dB at 70 m from the point source, 61 dB at 100 m and 49 dB at 300 m.

8.11.62 Applying a precautionary approach, a 100 m buffer is considered an appropriate EZoI for hydraulic rock-breaking, as the disturbance will attenuate with distance.

8.11.63 The main borrow pit search area for the Proposed Development is c.200 m from the west coast and over 250 m from the eastern shore. As noted above, the noise will attenuate, with c.61 dB experienced at 100 m from the point source (normal conversational speech is c.60 dB). This level of noise would be insignificant against the background of waves against the shore, but by the time extraction noises propagate to the nearest haul out area at >200 m from the main borrow pit, a decibel level range in the mid-fifties would be unlikely to be discernible for any seals present.

8.11.64 The effects of main borrow pit works are likely to be of a medium magnitude in terms of noise and vibration immediately adjacent to the works area, but, with a separation of at least 200 m, will not propagate out into the littoral and marine environments. The works are therefore unlikely to result in any avoidance/displacement reaction for any seals on either the west or eastern shores; an at most **negligible** adverse impact is anticipated for non-breeding grey seals as a result of main borrow pit operation

With regards to the location of the secondary borrow pit, near Ness, the seal survey records show use of Scammalin Bay and, in particular, use of the rocks to either side of the current slipway by low numbers of seals: c.2-6 animals were recorded close to the extant slipway on five occasions (i.e. representing 0.14%-0.41% of the total seals recorded at any given time). Numbers noted in the wider bay area were 6-69 animals across the same period (representing 0.41%-4.66% of the total seals recorded). The secondary borrow pit is within c.7 m at its closest point to the shore and over 200 m from the landing facility. This borrow pit will only provide a relatively small amount of material, so the working of this pit will be limited to track works in the landing area and therefore of short duration. The location, at the back of a sea cliff will provide some limited buffering for the shoreline immediately below the cliff, but any animals within 100 m would be disturbed. Survey records noted only two animals hauled-out at approximately 100 m from the borrow pit location (March survey). This suggests that, under normal operational conditions, there are unlikely to be more than a few individual animals within a potential EZoI of pit operations. An immediate avoidance/displacement reaction would be expected as a result of a medium magnitude effect in terms of noise and vibration immediately adjacent to the works area. As a temporary and short-

[3] If detailed ground investigations suggest that blasting is required for rock extraction, then a blasting assessment will be undertaken and submitted to OIC prior to construction commencing.

The blasting assessment (should it be required) would require detailed calculations to be undertaken to determine the permissible maximum charge.

term effect at the start of the construction programme, a **minor** adverse and therefore **not significant** effect is predicted for individual seals at this location.

Extended slipway and landing jetty construction

8.11.65 Displacement behaviours are to be expected during the new extended slipway and landing jetty construction works, due to the mix of noise, vibration and human presence.

8.11.66 As described under *Disturbance of Seals* (see paragraphs 8.11.8 to 8.11.20, above), disturbance distances have been noted as variable, with harbour seals being generally more sensitive than grey seals, especially when approached by a boat. A quiet approach, either by pedestrians or boat traffic has been shown to reduce the distance. With regards to the grey seals of Faray and the Scammalin Bay area, there is already a baseline of passing ferry traffic and regular landing on the island by the farmer, ensuring a degree of habituation to human activity in this area. The 200 m disturbance distance taken as the EZoI and used for the following assessment is based on Wilson (2011) and return behaviour noted by Lewis (2006) and Paterson *et al*. (2019).

8.11.67 Numbers present vary, from zero to six animals observed at any given time in the vicinity of the landing area and more animals in proximity to the south (noted as zero-21); and from zero up to 69 animals near the Point of Scaraber (a maximum of 71 animals were recorded in the bay area for the August count). Based on survey results (see Appendix 8.3) from zero to 27 animals (i.e. 0%-38 % of all animals likely to be in the bay) may be within 200 m of the landing sites at any given time and therefore within the landing facilities EZoI; the navigation channel passing the Point of Scaraber is likely to be well in excess of the 200 m flight behaviour stimulating distance for any animals hauled out in this area.

8.11.68 With the extant slipway to be upgraded, physical damage to the shoreline will be limited to loss of a small additional area under the slipway and to the footprint of the new landing jetty. While seals appear to use parts of the Scammalin Bay, these animals have generally been recorded to either side of the current landing area/slipway: no loss to a haul-out area is likely. Additionally, no loss to the foraging habitat of the bay is anticipated, as the jetty will only extend a short distance beyond the MLWS tide line. Limited in magnitude to seals in the Scammalin Bay area, the impact is assessed to have a short-term temporary (reversible) and **negligible** adverse and **not significant** impact on this feature of local importance.

8.11.69 Displacement behaviours are to be expected during construction and then use of the landing jetty, i.e. of the up to 69 seals normally using the Scammalin Bay area. The present baseline of disturbance includes visits by the farmer to check on his sheep; however, construction deliveries will increase this disturbance to a daily occurrence. This will potentially result in avoidance for the duration of any activity, with return shortly after cessation, i.e. c.52 % of animals returned within 30 minutes and up to c.94 % by four hours as determined by Paterson *et al*. (2019) for the more sensitive harbour seal; see *Disturbance of Seals* (see paragraphs 8.11.8 to 20, above). There is, however, a potential for habituation to vessel movements. The impact of the construction programme is therefore considered to be of a low magnitude, with an intermittent temporary (i.e. reversible) **minor** adverse impact at a local level and therefore **not significant**.

Operation

Faray and Holm of Faray SAC and SSSI

Habitat

8.11.70 Operation will cause no further changes to the habitats of the designated area, other than the likely groyne-effect of the jetty stabilising the sand in this part of the bay, as already assessed under Construction. No further effects are anticipated: effects on the habitats during the operation phase are assessed as having **no impact**.

Breeding seals: maintenance

8.11.71 Once the construction process has transitioned into the operational phase, a potential for disturbance to the seal population exists during the breeding season.

8.11.72 As noted under *Disturbance of Seals*, above, the change in the noise baseline, caused by turbine operation, is not considered to be an issue, as this will become a new background against which the seals will use the island. As already noted in paragraph 8.11.23, above, attenuation of sound over distance will cause operational noise to be lost into the background of wave action against the shore. The turbines will be 70 m - 100 m from the intertidal zone, meaning that this addition to the soundscape will likely only be discernible on the calmest of days. Disturbance impacts as a result of ground borne vibration or the introduction of large moving structures is not considered likely based on evidence of the effects on seal behaviour gathered at offshore wind farm developments. Operational disturbance effects are therefore more likely to be as a result of maintenance visits, which are anticipated to be up to once a week (see Chapter 3: Proposed Development). Such visits would be anticipated to typically comprise a small boat landing one or two personnel, with appropriate equipment not otherwise stored on the island. With regular maintenance required for all turbines, it would be expected that a quad bike, or similar, would be maintained on the island to facilitate transport around the facility. While the sheep remain on the island all year, farmer presence is irregular over the winter months prior to lambing, due to weather conditions preventing access.

8.11.73 While breeding use of Scammalin Bay is not fully understood, due to careful avoidance of surveying during breeding season to minimise disturbance to grey seals (as per consultation with NatureScot on survey scope), the majority of haul-out use of the island is to the north, away from the landing area, which is already subject to regular use by the farmer. Scammalin Bay is apparently only used by low numbers of seals throughout the rest of the year, by comparison the Lavey Sound shorelines. While there is a potential for low numbers of animals to be affected (0-71 animals use the bay area outside the breeding season; see Non-breeding seals, below), this would not be expected to cause any overall damage to the wider colony's breeding success, due to the habituation to human presence in this part of the island. Impacts occur if the parent is forced to flee the haul-out repeatedly and this can cause disruption of suckling, energetic costs and energetic deficit to individual pups (Wilson, 2011; Duck, 2010). It should be noted that a flight response is generally more unwilling at this time than outwith the breeding season and the seals are therefore more tolerant to disturbance due to the mother's reluctance to abandon her pup. Such abandonment action is taken only in extreme cases of persistent/repeated disturbance (Westcott, 2008; Andersen *et al*., 2012).

8.11.74 Maintenance visits scheduled during the breeding season would not cause the repeated disturbance within a short time-frame associated with pup abandonment, because the turbines are not within the likely 200 m disturbance distance. There is the potential for disturbance via vessels arrival, as discussed below. In a worst-case scenario, a significant disturbance impact resulting in flight could be experienced by any breeding individual in close proximity to the landing facilities; however, given the likely habituation to anthropogenic activities in this area (including the daily ferry operations), it is considered more likely to be a lower level of response to landings on the island, resulting in a temporary **minor** adverse and **not significant** effect of medium magnitude. Based on the use patterns observed during the rest of the year, this would only affect a very small number of the c.3,578 strong population, as estimated in 2010. This would therefore be a **negligible** adverse and therefore **not significant** effect on the SAC breeding population, as a whole.

8.11.75 Minor maintenance work (such as routine inspections) would involve one vessel and, as such, would not be dissimilar to the current, regular visits the farmer makes to Faray. In addition, there is a ferry route through Scammalin Bay. Thus, seals are expected to have a level of habituation to human disturbance. As such minor maintenance is considered to have a temporary, **minor** and localised **not significant** effect on breeding animals present within the vicinity.

8.11.76 Maintenance work during the breeding season will be avoided wherever possible. Repair works to the turbines, including large operations such as replacing a blade, required within the breeding season would be considered as a major, unplanned procedure.

8.11.77 Most maintenance works would be located at the turbine sites and, therefore, out with the SAC/SSSI boundary. As such, the main risk to seals would be vessels arriving to site and transporting materials to the turbine locations. If major unplanned works were required during the breeding season, the landing jetty would be used as opposed to the slipway, as it is less likely to support breeding seals.

8.11.78 While not affecting the seal population as a whole (i.e. a not significant effect on the SAC breeding population), a major landing operation would likely have a medium magnitude, temporary **moderate** and localised **significant** effect on breeding animals present within the vicinity of the landing facilities (i.e. a minimum of 200 m, but with a likely greater reluctance to take to the water). The Operation Environmental Management Plan (OEMP) will include method statements for such unplanned major maintenance events and the required mitigations. These method statements will be discussed and agreed with NatureScot prior to works commencing. Regular, detailed inspections will be undertaken during the non-breeding season, this will reduce the likelihood of major maintenance works occurring during the breeding season. In the very unlikely event that major unplanned maintenance work is required during the breeding season, NatureScot will be notified in accordance with the method statement.

8.11.79 In terms of turbine operational impacts, this is discussed in paragraphs 8.11.8 to 8.11.20, above and for non-breeding seals in paragraph 8.11.85 and maintenance in paragraphs 8.11.86 to 8.11.90, below.

Standing water

8.11.80 Once the construction process has transitioned into the operational phase, the land will experience no further disturbance outwith the previous baseline. An assessment of **no impact** therefore applies during the operational phase.

Marshy grassland with springs

8.11.81 Due to the likely route of the ground water feed, i.e. via fractures (as noted in Chapter 11: Geology, Hydrology and Hydrogeology), no changes to the preconstruction baseline are anticipated. An assessment of **no impact** therefore applies during the operational phase.

Intertidal boulders/rocks

8.11.82 No further effects are anticipated once construction of the slipway has been completed. As such there will be **no impact** on this feature of local importance during the wind farm operation.

Otter

8.11.83 Otter avoidance behaviour is not expected, because evidence suggests that otters will habituate to disturbance (Chanin, 2003b). Otters using the island will likely become accustomed to the new baseline of low background levels of vibration, noise and movement caused by turbine operation.

8.11.84 Use of the island shores for foraging and shelter is expected to continue unchanged from the pre-construction baseline. Should maintenance works require use of a vehicle on site, then this would include a potential risk of collision. However, given that otters primarily use the shoreline outwith 100m of any of the Proposed Development infrastructure, such an occurrence is considered unlikely. This low potential for interaction between staff and otters is assessed as a **negligible** adverse impact, which would constitute a **not significant** effect on this feature of local importance.

Non-breeding grey seals

Wind farm operation

8.11.85 As noted in *Disturbance of Seals* (see paragraphs 8.11.8 to 8.11.20, above), evidence indicates that operational off-shore wind farm installations have no significant effect on the seal populations in the surrounding areas (Edren *et al*., 2010; Russell *et al*., 2016). The Proposed Development will be inland-based, therefore the operation is not expected to have any effect on the seal population using the island's shores. The areas particularly favoured during the moulting season are to the north of the turbine area and the turbines themselves are not be readily accessible for animals which

use the land beyond the shore, so use of the turbine hard standings is considered highly unlikely. An assessment of **no impact** therefore applies for the general operation of the turbines.

Maintenance

8.11.86 As previously noted, the island is used for grazing sheep. The sheep are present year-round, with access to parts of the island rotated to permit the grass to recover. Farmer presence is variable, with regular visits across the summer and these becoming infrequent in the winter, due to reliance on good weather conditions to permit landing. During the lambing season, the farmer resides for up to two months. Two quad bikes are retained on the island for use by the farmer and farm hand(s). This pattern of presence means that a low-level, regular to occasional disturbance is part of the baseline conditions experienced by the local seal population.

8.11.87 As described under Faray and Holm of Faray SAC and SSSI, above, the operational wind farm will require relatively frequent, i.e. up to once a week (see Chapter 3: Proposed Development) maintenance visits. Typically, such visits will just require engineers to be landed, with their appropriate equipment. It is anticipated that transportation will be maintained on the island, i.e. quadbike(s) or similar, as used by the farmer.

8.11.88 During the up to two months of the lambing season (April-May), human presence is continual, so while navigational movements to/from the slipway are reduced, human presence on the island is increased during the latter stages of the seal moulting season.

8.11.89 Standard maintenance visits are considered as more disturbing than the visits undertaken to check on the island's sheep. Arrival of a vessel at the landing facilities may cause individual seals to take to the water from adjacent haul-outs, with a low level of avoidance behaviour displayed. With some habituation possible as a result of frequent visits (see *Disturbance of Seals*, paragraphs 8.11.8 to 8.11.20, above), disturbance, while likely, is not expected to be of any significance, due to the low numbers using the bay, i.e. up to c.69 animals, with only up to c.21 likely to be close to the landing area. Standard maintenance works are therefore assessed as having a low magnitude, immediate and temporary **minor** adverse and therefore **not significant** effect.

8.11.90 More major maintenance operations, such as replacement of turbine parts, which require delivery of materials and use of plant would, of necessity, be planned outwith the seal breeding season. While likely to prolong the disturbance period of landing facility use, this would also be anticipated to be of a similar effect to the normal maintenance visit and so assessed as having a low magnitude, immediate and temporary **minor** adverse and therefore **not significant** impact.

Decommissioning

8.11.91 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 effects would be similar in nature, but of a lower 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.

8.12 Additional Mitigation and Enhancement

8.12.1 A habitat protection plan will be developed that will include demarcation of no-go areas in sensitive habitats, e.g. the marshy grassland within the Faray and Holm of Faray SAC and SSSI boundary.

8.12.2 Specific habitat and species mitigation measures for the construction and operational phases of this Proposed Development will be defined within the CEMP documentation. Additional mitigation measures include:

Construction Phase

- Designated seal haul-outs:

- Delivery of staff, plant and materials to the island will be controlled though development of method statements to provide the least-disturbing route to site; this could potentially include varying the route from the port of origin.

- Habitats:
  - Identification of appropriate exclusion zones around sensitive features (e.g. waterbodies), to prevent construction vehicles tracking through these areas;
  - Operative awareness education, in the form of toolbox talks, to ensure the value of the island and its coastal environment is understood;
  - Careful wash-down of plant and other equipment will be mandatory prior to access to (i.e. before embarking on the vessel for transport to the island) or egress from the Proposed Development site, to prevent potential biosecurity risks associated with plant movements; potentially contaminated materials will be identified and the handling of such strictly controlled. A biosecurity Plan is detailed in Chapter 7, Section 7.10.
- Otter:
  - Avoidance of creating any obstructions to established otter pathways, or access to open water as instructed by the ECoW;
  - Avoidance working in the vicinity of identified otter habitat (i.e. the drainage channels and pools) during the hours of darkness and within two hours after sunrise and two hours before sunset. This can be reduced to one hour between January and February, due to limited daylight, should construction be required at this point in the year (N.B. no works will occur during the seal breeding season 15th September to 31st December inclusive);
- Seals:
  - Landing facilities construction Method Statement.
  - The potential for collision with marine traffic will require consideration when planning navigation routes from port to site and procedures. Navigational Method Statements will be developed to cover port to Faray transport and use of the island landing facilities. In the case of seals using the extended slipway and landing jetty area, the approach of a vessel is likely to cause an unavoidable dispersal. Given the use of the area, visual, olfactory and acoustic deterrents, such as those described in MMO (2018 & 2020) for use with fishing gear are considered unsuitable. Consultation will be undertaken with NatureScot with regards to the possibility of disturbance licence requirements;
  - Control of borrow pit works to limit duration of disturbance events caused by material extraction. This will be covered through development of a borrow pit operations Method statement;
  - Use of sound barriers along the coastal edge of the secondary borrow pit to reduce noise propagation from extraction operations;
  - Construction plant will be selected for the lowest noise output possible, with sound barriers also to be available for deployment around stationary plant, such as generators;
  - Restrict extraction of material from the secondary borrow pit to periods when no seals are present within the landing facility and Scammalin Bay area. Where this is not possible, use of a standard “soft-start” procedure (i.e. slowly increasing the level of noise in the works area, prior to commencing full operations), to avoid causing a potentially stressful

"scare" reaction to a sudden noise, may reduce the intensity of any such disturbance events;

- With the Proposed Development to be constructed onshore, the impact of any piling activity on the surrounding marine habitat is likely to be reduced (i.e. insulated by the surface geology), but low impact methodologies will be selected for base construction and use of these methodologies will be programmed such that there are no sustained periods of disturbance. Formation of any piled foundations will also be programmed, as far as possible, for the earliest part of the construction "season" as possible, in order to avoid the times of highest seal presence;
- Though of a lower potential for disturbance impact, use of vibromatic compaction will also be limited to short periods of time, with a minimum of two hours between any compaction operations, if displacement behaviour is observed in any nearby seals; and
- Strict control of potential for human presence near hauled-out seals. In general, no personnel should approach within 50 m of a seal resting on the shore. However, Method Statements and site staff protocols/toolbox talks will be in place prior to all construction activities commencing, with the sensitivities of the adjacent habitats and their wildlife (and how to reduce/avoid impacts) explained to site personnel prior to commencement.

Operation Phase

- Faray and Holm of Faray SAC/SSSI and designated haul-outs:
  - Maintenance checks, including normal repair works/replacement of parts timed to avoid the seal breeding season (15th September to 31st December inclusive), where possible; if visits are still required, then these will be limited to the minimum, in order to reduce the potential for adverse impacts to any breeding seals close to the landing facility;
  - Any major planned maintenance will be programmed to avoid the seal breeding season. In the unlikely event that unplanned major maintenance is required (e.g. turbine failure), the OEMP, which will include emergency plans and appropriate mitigations, will be followed. This will include method statements for such unplanned major maintenance events and the required mitigations. These method statements will be discussed and agreed with NatureScot prior to works commencing. Regular, detailed inspections will be undertaken during the non-breeding season, this will reduce the likelihood of major maintenance works occurring during the breeding season. In the very unlikely event that major unplanned maintenance work is required during the breeding season, NatureScot will be notified in accordance with the method statement; and
  - Maintenance check vessel routing to follow the same method statement as applied to the construction phase, in order to minimise disturbance to the seal populations on the haul-outs passed *en route* to the island.
- Habitats:
  - Exclusion of sheep from the restored borrow pit areas to permit habitat recovery free from grazing pressure (which otherwise has the potential to degrade the surface).
- Species
  - Maintenance check vessel routing and final approach to the island landing facility to follow the same method statement as applied to the construction phase, in order to minimise

disturbance and collision risk, with particular reference to the seals present within Scammalin Bay; and

- Application of a site driving Method Statement for maintenance works, should vehicles be required to facilitate completion of tasks, including application of speed limits.

8.13 Residual Effects

8.13.1 With implementation of the specific mitigation measures described in Sections 8.10 and 8.12, all impacts would reduce to at most **barely perceptible** and no significant residual effects are predicted during construction or operation on all IEFs (see Table 8.9).

8.14 Cumulative Assessment

8.14.1 The main reason for assessing cumulative impacts is to identify whether effects, which may not be significant from individual developments, are likely to be significant when combined with nearby existing or proposed schemes. The main projects likely to cause similar impacts to those associated with the Proposed Development are other developments, operational wind farms, those under construction or those consented. Several other wind farms are present within the wider area, in planning, under construction and operational.

8.14.2 It should be noted that there is no published NatureScot guidance for cumulative impact assessment on terrestrial ecological receptors. NatureScot *Guidance: Assessing the Cumulative Impact of Onshore Wind Energy Developments* (SNH, 2012) is confined to landscape and visual impacts and to those affecting birds. The key principle of NatureScot's cumulative impact assessment guidance for birds is to focus on any significant effects and, in particular, those that are likely to influence the outcome of the consenting process. Application of the outlined principles to terrestrial ecological features leads to a focus on the potential cumulative impacts to the Proposed Development's IEFs, i.e. the designated areas (i.e. the Faray and Holm of Faray SAC and SSSI and seal haul-outs) standing and running water, otter and non-breeding seals.

8.14.3 Wind farm projects at the scoping stage have been scoped out of the cumulative assessment, because they generally do not have sufficient information on likely impacts to be included, as the baseline survey period is ongoing, or results have not been published. Projects that have been refused or withdrawn have also been scoped out. For the purpose of this assessment it is considered that all other developments included in cumulative calculations remain as they were at installation and remain so for the assessment (25 year) period.

8.14.4 There are approximately 500 single turbine wind energy developments on Orkney, which are primarily domestic scale developments and these therefore generally have limited data and, given the large number those outside of the immediate vicinity to the site, these are not considered within this assessment. Thirteen wind farms, at application through to operational status, are located within 50 km of the Proposed Development. However, due to the limits of connectivity between the terrestrial and marine ecological features, this assessment has considered a conservative 10 km radius (see Figure 8.5); this is the distance typically used when assessing the terrestrial interests of a land-based wind farm development; the cumulative effects on marine species are considered in Chapter 16 Underwater Noise. A single wind farm is located within this distance: The operational five-turbine Spurness Wind Farm, located 7 km east south-east of the Proposed Development, on Sanday. All the installed turbines are a minimum of c.150 m from the shoreline to either side of the Spurness peninsula.

8.14.5 Similar to Faray, otter use of the coastline of the Spurness peninsula, adjacent to the Spurness Wind Farm site, was recorded during site survey, though the absence of suitable habitat inland ensured that no evidence of presence was identified within the wind farm area. However, while identified around the Spurness peninsula, no effects were predicted and therefore seal presence was not considered a constraint to development. Construction plant and materials were to arrive via the island's ferry port and construction disturbance would be temporary and limited in duration. No additional species-specific mitigation was considered to be required for otter and no cumulative

impacts were identified for the ecological interests of the site. No operational impacts were identified for either otter or seal species (Dulas, 2002).

8.14.6 Due to the physical separation and similarly small scale, the Spurness installation is not considered to have any direct impact on, or in-combination impacts with, the IEFs of the Proposed Development.

8.14.7 No other developments of any type were identified within the 10 km search radius.

8.15 Summary

8.15.1 The Proposed Development is located on the uninhabited island of Faray off the western shore of Eday. The site is currently used for sheep grazing. The Faray and Holm of Faray SAC and SSSI, designated for grey seals, wraps around the coastline of Faray. Two LNCS, Braehead and Resting Hill, are located due east of the Proposed Development, but on Eday, across the Sound of Faray and therefore out of the potential EZoI.

8.15.2 An assessment of terrestrial ecology effects arising from the construction and operation of the Proposed Development was undertaken, based on the current Proposed Development layout and turbine dimensions. A range of ecological studies were undertaken, to identify the terrestrial ecological interests of the Proposed Development and to establish the ecological baseline for the EcIA. This included identification of existing wildlife records, nearby sites designated for nature conservation and survey of the habitats and faunal interests of the site. Field surveys undertaken were an Extended Phase 1 habitat and NVC survey, otter and seal survey.

8.15.3 The primary habitats identified above the shoreline (listed in order of size) are: improved grassland, semi-improved acid grassland and marshy grassland. A number of small waterbodies and two springs with a short burn are present within the Study Area, plus both flowing and dry field drains.

8.15.4 Of the features carried forwards to be assessed in terms of impacts, all likely direct and indirect effects on the Faray and Holm of Faray SAC and SSSI were considered. With the application of all mitigation identified for the construction phase, an assessment of **no impact** is applied to the qualifying features of these sites (i.e. grey seals) or the habitats present. For the operational phase, a potential **moderate** adverse and **significant** effect may, however, be experienced by individual seals close to the landing facilities, if maintenance is required during the breeding season. However, for the wider breeding population of the SAC, this would be a **negligible** adverse and **not significant** effect. A major repair event in-season would be likely to have a similarly **negligible** adverse and **not significant** effect, though for any breeding individuals, this would be a potential **minor** adverse and **not significant** effect.

8.15.5 No impacts are anticipated for the designated sea haul-out sites within 5 km of the Proposed Development.

8.15.6 With the application of Method Statements covering responsible operational procedures, impacts to designated seal haul-outs as a result of shipping movements are anticipated to be **negligible** adverse at most, with the effects being short-term, temporary and reversible and therefore **not significant**.

8.15.7 Direct and indirect habitat losses, due to land take and as a result of drying land are anticipated during the construction phase and then considered likely to continue during the operation phase. No further adverse impacts are predicted during the operational phase. Overall, the permanent habitat loss to the Proposed Development is 8.02 ha, which comprises 7.93 ha of improved and semi-improved grazing and 0.09 ha of grazed marshy grassland. An additional 3.28 ha of improved and semi-improved grassland will be temporarily lost or disturbed during the construction process, but this will be subsequently restored. None of this loss is to habitats of nature conservation value.

8.15.8 Habitats identified as IEFs were standing water intertidal boulders rock and marshy grassland with springs.

8.15.9 No impacts to standing water are anticipated, with the application of industry standard mitigation and pollution controls, in addition to design mitigation.

8.15.10 The new extended slipway works involve loss of intertidal rock habitat (N.B. sand lost to the landing jetty causeway footprint is not assessed as an IEF). A worst-case loss of up to 0.05 ha of intertidal rock habitat has been identified for the slipway, a permanent impact which is assessed as **negligible** adverse and **not significant**.

8.15.11 Though the island is primarily surface water or rain-fed, groundwater dependence was determined for one area of marshy grassland on the western side of the island, associated with two springs. These springs and their associated marshy grassland are considered to be outwith the construction disturbance zone. An assessment of **negligible** adverse and **no impact** are identified for the construction and operational phases of the Proposed Development, respectively.

8.15.12 Otter use of the island has been confirmed, though it appears likely to be by very low numbers and no permanent shelter (i.e. a holt) is present. With application of all defined mitigation measures, construction impacts to otter and non-breeding seals have been identified as short-term, temporary **negligible** adverse (and **not significant**) at most, for all construction activities. Operational maintenance visits are expected to have **no impact** on otter use of the island and its waters.

8.15.13 Non-breeding grey seals are likely to be present around the shoreline of the island at any given time, though use of the Scammalin Bay area appears generally low and sporadic. While there is potential for seals to be within a 200 m EZoI of the works, a **negligible** adverse and **not significant** residual impact is anticipated for operation of the secondary borrow pit in the presence of suitable mitigation. Extended slipway and landing jetty construction works followed by construction phase use are also anticipated to have a **negligible** adverse and **not significant** residual impact on non-breeding seals within a 200 m EZoI. Operational maintenance visits are anticipated to have a **negligible** adverse and **not significant** residual impact in the presence of all mitigation.

8.15.14 During the operational phase, maintenance visits within the breeding season have been identified with a potential for a **minor** effect on individual animals within the vicinity of the landing facilities, though for the overall population this would be a **negligible** effect.

8.15.15 No cumulative (in-combination) effects with nearby developments (to a radius of 10 km) were identified; no significant cumulative effects are anticipated (Table 8.10).

8.15.16 The assessment concludes that there will be no significant residual effects on any of the terrestrial ecological interests of the site, resulting from the construction and operation of the Proposed Development.

Table 8.9 – Summary of Effects

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Construction					
Designated sites: Faray and Holm of Faray SAC and SSSI. Main borrow pit operation	No impact	n/a	No further mitigation required beyond the embedded mitigation described	No impact	n/a
Designated sites: Faray and Holm of Faray SAC and SSSI. Secondary borrow pit operation	No impact	n/a	No further mitigation required beyond the embedded mitigation described	No impact	n/a
Designated sites: Faray and Holm of Faray SAC and SSSI. Landing jetty and Extended slipway construction – habitat changes	Negligible	Adverse	No further mitigation required beyond the embedded mitigation described	No impact	n/a
Designated sites: Faray and Holm of Faray SAC and SSSI. Landing jetty and Extended slipway – breeding grey seals	No impact	n/a	No further mitigation required beyond the embedded mitigation described	No impact	n/a

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Designated sites: Faray and Holm of Faray SAC and SSSI. Extended slipway and landing jetty operation	No impact	n/a	No further mitigation required beyond the embedded mitigation described	No impact	n/a
Designated sites: Faray and Holm of Faray SAC and SSSI. General construction	No impact	n/a	No further mitigation required beyond the embedded mitigation described	No impact	n/a
Designated haul-outs, Calf of Eday, Weather Ness, Seal Skerry and Rusk Holm: Borrow pit operations	No impact	n/a	Borrow pit operations Method statement to control works to limit duration of disturbance events caused by material extraction; use of sound barriers along the coastal edge of the secondary borrow pit to reduce extraction noise propagation; selection of plant for the lowest noise and vibration output possible, with sound barriers also to be available for deployment around stationary plant, such as generators	No impact	n/a

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Designated haul-outs, Calf of Eday, Weather Ness Seal Skerry and Rusk Holm: General site operations	No impact	n/a	No further mitigation required beyond the embedded mitigation described	No impact	n/a
Designated haul-outs, Calf of Eday, Weather Ness Seal Skerry and Rusk Holm: General site operations	No impact	n/a	No further mitigation required beyond the embedded mitigation described	No impact	n/a
Designated haul-outs: shipping route/s from Hatston Quay/other ports used for transportation of staff, plant and materials	Negligible and not significant	Adverse	Method Statement to ensure the least-disturbing route to site	Negligible and not significant	Adverse
Disturbance to standing water	No impact	n/a	Establishment of exclusion zones around waterbodies; operative awareness education to ensure the value of the island and its coastal environment is understood; development and application of a biosecurity plan	No impact	n/a

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Intertidal boulders/rocks: habitat loss	Negligible and not significant	Adverse	Loss not possible to reverse. No further mitigation required beyond the embedded mitigation described	Negligible and not significant	Adverse
Disturbance to GWDTE marshy grassland with springs	Negligible and not significant	Adverse	No further mitigation required beyond the embedded mitigation described	No impact	n/a
Intertidal boulders/rocks	Negligible and not significant	Adverse	Loss not possible to reverse. No further mitigation required beyond the embedded mitigation described	Negligible and not significant	Adverse
Otter: main borrow pit operation	No impact	n/a	No further mitigation required beyond the embedded mitigation described	No impact	n/a
Otter: secondary borrow pit operation	Negligible and not significant	Adverse	In addition to the embedded mitigation described, use of sound barriers around the shoreward side of the secondary borrow pit; soft start procedures	No impact	n/a
Otter: general construction activities	No impact	n/a	Species Protection Plan	No impact	n/a
Otter: Extended slipway and landing jetty construction disturbance to habitats	Negligible, local level and only locally significant	Adverse	Avoidance of creating any obstructions to established otter pathways, or access to open water as instructed by the ECoW; avoidance of working in the vicinity of identified otter habitat during the hours of darkness and within two hours after sunrise and two hours before	Negligible, local level and not significant	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
			sunset. This can be reduced to one hour between January and February, due to limited daylight, should construction be required at this point in the year (N.B. no works will occur during the seal breeding season (15th September to 31st December inclusive)		
Otter: Extended slipway and landing jetty operations	Negligible, local level and locally significant	Adverse	Method Statements for vessel movements and Extended slipway and landing jetty operations	Negligible, local level and not significant	Adverse
Otter: site traffic mortality	Negligible and not significant	Adverse	Avoidance of creating any obstructions to established otter pathways, or access to open water as instructed by the ECoW; avoidance of working in the vicinity of identified otter habitat during the hours of darkness and within two hours after sunrise and two hours before sunset (reduced to one hour between January and February); application of site driving controls/Method Statement	No impact	n/a
Non-breeding grey seal: main borrow pit operation	Negligible and not significant	Adverse	Restrict extraction of material from the secondary borrow pit to periods when no seals are present within the landing facility and Scammalin Bay area. Where this is not possible,	No impact	n/a

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
			use of a standard “soft-start” procedure and Species Protection plan		
Non-breeding grey seal: secondary borrow pit operation	Minor and not significant	Adverse	Restrict extraction of material from the secondary borrow pit to periods when no seals are present within the landing facility and Scammalin Bay area.; where this is not possible, use of a standard “soft-start” procedure and sound barriers around the shoreward side of the secondary borrow pit	Negligible	Adverse
Non-breeding grey seal: Extended slipway and landing jetty construction – habitat loss (haul-out and foraging resource)	Negligible and not significant	Adverse	Method Statement for responsible construction; Strict control of potential for human presence near hauled-out seals.	Negligible and not significant	Adverse
Non-breeding grey seal: Extended slipway and landing jetty construction and use during the construction phase – disturbance/ displacement	Minor and not significant	Adverse	Method Statement for responsible construction and landing facility operation; Strict control of potential for human presence near hauled-out seals.	Negligible and not significant	Adverse
Operation					
Designated sites: Faray and Holm of Faray SAC and SSSI. Disturbance of breeding grey seals during maintenance visits	Negligible and not significant in terms of the overall SAC population;	Adverse	Maintenance checks, including normal repair works/replacement of parts timed to avoid the seal breeding season (15th September to 31st December inclusive), where possible; if visits are still required, then these will be limited to	Negligible effect to SAC population and individual	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
	moderate and significant to individual animals within the EZoI		the minimum, in order to reduce the potential for adverse impacts to any breeding seals close to the landing facility	animals; not significant	
Designated sites: Faray and Holm of Faray SAC and SSSI. Disturbance of breeding seals during unplanned major maintenance	Negligible and not significant in terms of the overall SAC population; minor and not significant to individual animals within the EZoI	Adverse	Method Statements and timing controls to reduce potential disturbance if in-season repair works are required: emergency plans and appropriate mitigations to be Method Statement controlled, with these agreed with NatureScot prior to works commencing. Maintenance check vessel routing to follow the same method statement as applied to the construction phase, in order to minimise disturbance to the seal haul-out populations	Negligible and not significant in terms of the overall SAC population; minor and not significant to individual animals within the EZoI	Adverse
Disturbance to standing water	No impact	n/a	None required	No impact	n/a
Disturbance to GWDTE marshy grassland with springs	No impact	n/a	None required	No impact	n/a
Intertidal boulders/rocks	No impact	n/a	None required	No impact	n/a
Otter: maintenance traffic	Negligible and not significant	Adverse	Application of maintenance and driving Method Statements	No impact	n/a

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Non-breeding grey seals: general wind farm operation	No impact	n/a	None required	No impact	n/a
Non-breeding grey seals: maintenance disturbance	Minor and not significant	Adverse	Application of maintenance Method Statement; Maintenance check vessel routing to follow the same method statement as applied to the construction phase, in order to minimise disturbance to the seal haul-out populations	Negligible and not significant	Adverse
Non-breeding grey seals: major maintenance works disturbance	Minor and not significant	Adverse	Application of maintenance Method Statement; maintenance check vessel routing to follow the same method statement as applied to the construction phase, in order to minimise disturbance to the seal haul-out populations	Negligible and not significant	Adverse
Decommissioning					
To be assessed in the future					

Table 8.10 – Summary of Cumulative Effects

Receptor	Effect	Cumulative Developments	Significance of Cumulative Effect	
			Significance	Beneficial/ Adverse
Terrestrial ecology	None	None	**No impact**	-

8.16 References

Andersen SM, Teilmann J, Dietz R, Schmidt NM and Miller LA (2012). *Behavioural responses of harbour seals to human-induced disturbances.* In *Aquatic Conserv: Mar. Freshw. Ecosyst. 22*: 113-121

BCT (2015). *Developing Scottish bat population trends through the National Bat Monitoring Programme. Scottish Natural Heritage Commissioned Report No. 796. Commissioned Report No. 796 Developing Scottish bat population trends through the National Bat Monitoring Programme*. Bat Conservation Trust. Available online at: https://www.nature.scot/sites/default/files/2017-07/Publication%202015%20-%20SNH%20Commissioned%20Report%20796%20-%20Developing%20Scottish%20bat%20population%20trends%20through%20the%20National%20Bat%20Monitoring%20Programme.pdf

BCT (2019). *Bats in Scotland*. Bat Conservation Trust. Available online at: https://cdn.bats.org.uk/pdf/Scottish-bats-2019.pdf

Chanin P (2003a). *Monitoring the Otter Lutra Lutra.* Conserving Natura 2000 Rivers Monitoring Series No. 10. English Nature, Peterborough

Chanin P (2003b). *Ecology of the European Otter*. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough

CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland*. Chartered Institute of Ecology and Environmental Management. Available online at: https://www.cieem.net/data/files/ECIA%20Guidelines.pdf

Collins J (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 3rd Edn, Bat Conservation Trust, London. Available online at: https://www.gov.uk/guidance/bats-surveys-and-mitigation-for-developmentprojects#mitigation-and-compensation-methods

Depledge MH, Godard-Codding CAJ and Bowen RE (2010). *Editorial. Light pollution in the sea*. Marine Pollution Bulletin V60 (2010) 1383-1385

Duck C (2010). Charting Progress 2 Healthy and Biological Diverse Seas Feeder Report: Section 3.5: Seals. Published by Department for Environment Food and Rural Affairs on behalf of UKMMAS. p506-539. In: UKMMAS (2010) Charting Progress 2 Healthy and Biological Diverse Seas Feeder Report (Eds. Frost, M & Hawkridge, J). Available online at: https://www2.gov.scot/resource/doc/295194/0119667.pdf

Duck CD and Morris CD (2019). *Aerial survey of harbour (Phoca vitulina) and grey seals (Halichoerus grypus) in Scotland in August 2017: the Western Isles, part of West Scotland and part of East Scotland. Scottish Natural Heritage Research Report No. 1143.* Available online at: https://www.nature.scot/sites/default/files/2019-09/Publication%202019%20-%20SNH%20Research%20Report%201143%20-%20Aerial%20survey%20of%20harbour%20and%20grey%20seals%20in%20Scotland%20in%20August%202017.pdf

Dulas (2002). *Spurness Wind Farm Sanday. Environmental Statement, Volume 2 Written Statement*, September 2002.

Edren, SMC, Andersen, SM, Teilmann, J and Cartensen, J. (2010). *The effect of a large Danish offshore wind farm on harbor and gray seal haul-out behavior*. In Marine Mammal Science 26(3): 614–634. February 2010.

EEC (1992). Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna. Available online at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31992L0043

Gardner Pllu A (2017). *Species protection Plan. HSEN-PL-3002*. Aberdeen Western Peripheral Route. May 2017

Greer RD, Day RH, Bergman RS, Dirks T, Anderson B, Attanas L, Lamar R, Heintz J and Holt L (2010). *Literature review, synthesis and design of monitoring of ambient light intensity on the OCS regarding potential effects on resident marine fauna*. Golder Associates, ABR & Rolf Bergman Consulting; report prepared for U.S. Department of Interior, Minerals Management Service (MMS), July 2010. Available online at: https://www.boem.gov/sites/default/files/uploadedFiles/BOEM/BOEM_Newsroom/Library/Publications/BOEM-2007-055.pdf

ICES. 2017. Report of the Workshop on Predator-prey Interactions between Grey Seals and other marine mammals (WKPIGS), 30 April 2017, Middelfart, Denmark. ICES CM 2017/SSGEPD:18. 24 pp. Available online at: https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/SSGEPD/2017/01%20WKPIGS%20-%20Report%20of%20the%20Workshop%20on%20Predator-prey%20Interactions%20between%20Grey%20Seals%20and%20other%20marine%20mammals.pdf

JNCC (2010). *Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise August 2010*. Joint Nature Conservation Committee. Available online at: https://data.jncc.gov.uk/data/31662b6a-19ed-4918-9fab-8fbcff752046/JNCC-CNCB-Piling-protocol-August2010-Web.pdf

JNCC (2020). *Marine mammals and offshore industries.* Joint Nature Conservation Committee. Available online at: https://jncc.gov.uk/our-work/marine-mammals-and-offshore-industries/#underwater-noise-sources-of-noise

Lewis KM (2006). *Habitat Use, Haul-Out Behaviour & Site Fidelity of Grey Seals (Halichoerus grypus) along the Ceredigion Marine Heritage Coast, Wales*. A dissertation presented in partial fulfilment of the requirements for the degree of Master of Science in Marine Mammal Science of the University of Wales. Available online at: https://www.seawatchfoundation.org.uk/wp-content/uploads/2012/08/Kate-Lewis-thesis.pdf

Marine Scotland (2014). *Guidance on the Offence of Harassment at Seal Haul-out Sites*. June 2014. Available online at: https://consult.gov.scot/marine-environment/possible-designation-of-a-seal-haul-out-site/user_uploads/guidance-on-the-offence-of-harassment-at-seal-haul-out-sites.pdf-1

MCS (2020). *Faray and Holm of Faray SAC*. Marine Conservation Society. Available online at: https://mcsuk.org/mpa/show-UK0017096

MMO (2018). *Assessing Non-Lethal Seal Deterrent Options: Literature and Data Review*. A report produced for the Marine Management Organisation. MMO Project No: 1131, October 2018, 45 pages. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/753773/Report_-_Assessing_non-lethal_seal_deterrent_options_literature_and_data_review.pdf

MMO (2020). *Assessing Non-Lethal Seal Deterrent Options: Summary Report. A report produced for the Marine Management Organisation*. MMO Project No: 1131, February 2020, 28 pages. Marine Management Organisation. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/873273/MMO1131_Summary_Report_Pub_200203.pdf

Nature Scot (2020a). Standing Advice for Planning Consultations. Protected Species: Otter. Available online at: https://www.nature.scot/sites/default/files/2020-06/Species%20Planning%20Advice%20-%20otter.pdf

Nature Scot (2020b). Standing Advice for Planning Consultations. Protected Species: Badger. Available online at: https://www.nature.scot/sites/default/files/2020-06/Species%20Planning%20Advice%20-%20badger.pdf

Orkney's Biodiversity Steering Group (2018). The Orkney Local Biodiversity Action Plan. Available online at: http://www.orkney.gov.uk/Files/Planning/Biodiversity/Orkney_LBAP_2018_2022_FINAL_Oct_2018.pdf

OIC (2017a). Orkney Local Development Plan. Orkney Islands Council. Available online at: http://www.orkney.gov.uk/Files/Planning/Development-and-Marine-Planning/Local-Plan/OLDP_2017/Orkney_Local_Development_Plan_2017_2022.pdf

OIC (2017b). *Supplementary Guidance: Natural Environment Annex 1 Local Nature Conservation Sites, Local Nature Reserves and un-notified Geological Conservation Review Sites.* March 2017, Orkney Islands Council. Available at: http://www.orkney.gov.uk/Files/Committees-and-Agendas/Development%20and%20Infrastructure/DI2017/01-03-2017/I06_App2_Ann1A_Local_Nature_Conservation_Sites.pdf

Orkney Ferries (2020). *Published Timetables. Winter/Spring 20/21. Northern Isles Integrated*. Available online at: http://www.orkneyferries.co.uk/pdfs/timetables/winterspring/ni_integrated_winterspring.pdf

Paterson W, Russell D, Wu G-M, McConnell B, Currie J, McCafferty D and Thompson D (2019). *Post-disturbance haulout behaviour of harbour seals*. In *Aquatic Conservation: Marine and Freshwater Ecosystems.* 29. 144-156. 10.1002/aqc.3092

Russell, DJF (2016). *Movements of grey seal that haul out on the UK coast of the southern North Sea*. Report for the Department of Energy and Climate Change (OESEA-14-47)

Russell DJF, Hastie GD, Thompson D, Janik VM, Hammond PS, Scott-Hayward LAS, Matthiopoulos J, Jones EL and McConnell BJ (2016). *Avoidance of wind farms by harbour seals is limited to pile driving activities*. In *Journal of Applied Ecology* 2016, 53, 1642-1652

Russel DJF, Morris CD, Duck CD, Thompson D and Hiby H (2019). *Monitoring long-term changes in UK grey seal pup production.* In *Aquatic Conservation: Marine and Freshwater Ecosystems. 2019;29(S1):24–39*

SCOS (2017). *Scientific Advice on Matters Related to the Management of Seal Populations: 2017.* Special Committee on Seals. Available online at: http://www.smru.st-andrews.ac.uk

SCOS (2019). *Scientific Advice on Matters Related to the Management of Seal Populations: 2019*. Special Committee on Seals. Available at: http://www.smru.st-andrews.ac.uk/files/2020/08/SCOS-2019.pdf

Scottish Bats (2014). *Scottish BATS Volume 6 – October 2014*. Available online at: https://cdn.bats.org.uk/pdf/Our%20Work/In-Scotland/print-version-scottish-bats-volume-6.pdf?mtime=20190708102118

Scottish Government (2004). *Nature Conservation (Scotland) Act 2004.* Available online at: https://www.legislation.gov.uk/asp/2004/6/contents

Scottish Government (2008). *Planning for Natural Heritage: Planning Advice Note 60***.** Available online at: https://www2.gov.scot/Publications/2000/08/pan60-root/pan60

Scottish Government (2010). *Marine (Scotland) Act 2010.* Available online at: https://www.gov.scot/publications/marine-scotland-act/

Scottish Government (2011a). *Wildlife and Natural Environment (Scotland) Act 2011.* Available at: http://www.legislation.gov.uk/asp/2011/6/enacted

Scottish Government (2011b). *Habitats Regulations Appraisal of Draft Plan for Offshore Wind Energy in Scottish Territorial Waters: Appropriate Assessment Information Review. Section 6. Potential for Adverse Effects on Marine Mammal Features*. March 2011. Available online at: https://www2.gov.scot/Publications/2011/03/04165857/17

Scottish Government (2013). *Scottish Biodiversity List. Version 1.5.* Available online at: http://www.gov.scot/Topics/Environment/Wildlife-Habitats/16118/Biodiversitylist/SBL

Scottish Government (2014a). *The Protection of Seals (Designation of Haul-Out Sites) (Scotland) Order 2014.* Available online at: https://www.legislation.gov.uk/ssi/2014/185/contents/made

Scottish Government (2014b). *National Planning Framework*. Available at: https://www.gov.scot/publications/national-planning-framework-3/

Scottish Government (2014c). *Scottish Planning Policy*. June 2014. Available at: https://beta.gov.scot/publications/scottish-planning-policy/pages/2/

Scottish Natural Heritage, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust (2019). *Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation.* Version: January 2019. Available online at: https://www.nature.scot/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation

SEPA (2014). LUPS-GU31. Land Use Planning System SEPA Guidance Note 31: Guidance on Assessing the Impacts of Windfarm Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Version 2, 27 October 2014. Scottish Environment Protection agency. Available at: https://www.sepa.org.uk/media/143868/lupsgu31_planning_guidance_on_groundwater_abstractions.pdf

SEPA (2017). Land Use Planning System SEPA Guidance Note 31: Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Scottish Environment protection Agency, September 2017. Available at: https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions-and-groundwater-dependent-terrestrial-ecosystems.pdf

SEPA (2018). *Supporting Guidance (WAT- SG-75) Sector Specific Guidance: Construction Sites. Version 1, February 2018*. Scottish Environment Protection Agency. Available online at: https://www.sepa.org.uk/media/340359/wat-sg-75.pdf

SEPA (2019). *The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) A Practical Guide. Version 9.3, February 2019*. Scottish Environment Protection Agency. Available online at: https://www.sepa.org.uk/media/34761/car_a_practical_guide.pdf

SNH (2010). *Citation: Faray and Holm of Faray Site of Special Scientific Interest. Orkney Islands Site code: 1683. Notification reviewed under the 2004 Act: 27 August 2010.* Scottish Natural Heritage. Available online at: https://sitelink.nature.scot/site/1683

SNH (2011). *Guidance on Survey and Monitoring in Relation to Marine Renewables Deployments in Scotland Volume 3: Seals*. Scottish Natural Heritage. Available online at: https://www.nature.scot/sites/default/files/2017-07/A585082%20-%20Guidance%20on%20survey%20and%20monitoring%20in%20relation%20to%20marine%20renewables%20deployments%20in%20Scotland%20-%20Vol%203%20Seals.pdf

SNH (2012). Assessing the Cumulative Impact of Onshore Wind Energy Developments. Scottish Natural Heritage. Available online at. https://www.nature.scot/sites/default/files/2017-09/Guidance%20note%20%20-%20Assessing%20the%20cumulative%20impact%20of%20onshore%20wind%20energy%20developments.pdf

SNH (2015). *Scottish Natural Heritage TREND NOTE Trends of Bats in Scotland*. SNH and Bat Conservation Trust. Available online at: https://www.nature.scot/sites/default/files/A1759538%20-%20Trend%20Note%20024%20-%20Bats%20in%20Scotland%202015.pdf

SNH (2019). *Good Practice During Wind Farm Construction. Version 4, 2019*. Scottish Natural Heritage. Available online at: https://www.nature.scot/sites/default/files/2019-05/Guidance%20-%20Good%20Practice%20during%20wind%20farm%20construction.pdf

Southall BL, Bowles AE, Ellison WT, Finneran JJ, Gentry RL, Greene Jr CR, Kastak D, Miller JH, Nachigall PE, Richardson WJ, Thomas JA and Tyack PL (2007). *Marine mammal noise exposure criteria: initial scientific recommendations.* Aquatic Mammals 33:411–521. Available online at: https://tethys.pnnl.gov/publications/marine-mammal-noise-exposure-criteria-initial-scientific-recommendations

TfL (2016). *Silvertown Tunnel Appendix 10.C Underwater Noise Assessment*. April 2016, Mayor of London/Transport for London. Available online at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010021/TR010021-000202-6.3%20ES%20Appendix%2010.C.pdf

Thompson D, Hall AJ, Lonergan M, McConnell B and Northridge S. (2013). *Current status of knowledge of effects of offshore renewable energy generation devices on marine mammals and research requirements*. Edinburgh: Scottish Government.

UK Government (1981). *The Wildlife and Countryside Act 1981*. Available online at: https://www.legislation.gov.uk/ukpga/1981/69

UK Government (1994). *The Conservation (Natural Habitats &c.) Regulations 1994*. Available online at: https://www.legislation.gov.uk/uksi/1994/2716/contents/made

UK Government (2010). *The Conservation of Habitats and Species Regulations 2010*. Available online at: https://www.legislation.gov.uk/uksi/2010/490/contents/made

Wilson SC (2011). *The impact of human disturbance at seal haul-outs. A literature review for the Seal Conservation Society*. Tara Seal Research. Available online at: https://www.pinnipeds.org/seal-information/human-interaction

Westcott SM (2008). *Natural England Research Report NERR017 Procedural guidelines for studying grey seals in southwest England, 2006.* Published on 24 September 2008. Available online at: http://publications.naturalengland.org.uk/file/59045

Wilson LJ and Hammond PS (2019). *The diet of harbour and grey seals around Britain: Examining the role of prey as a potential cause of harbour seal declines*. In *Aquatic Conserv: Mar Freshw Ecosyst*. 2019; 29(S1):71–85. Available online at: https://onlinelibrary.wiley.com/doi/full/10.1002/aqc.3131

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