



AI Appendix 8G

Habitats Regulations Appraisal





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1. Introduction

1.1 Background

The process of identifying, screening and assessing the effects of development on Natura 2000 sites is referred to in Scotland as Habitats Regulations Appraisal (HRA).

If a project has the potential to affect a European site¹, the applicant must provide a HRA report detailing the European site(s) that may be impacted together with sufficient information to enable the competent authority to screen the project for Likely Significant Effects (LSE), and make an Appropriate Assessment (AA) if likely significant effects cannot be ruled out.

The Habitats Directive² protects habitats and species of European nature conservation importance. Together with the Birds Directive³, it establishes a network of internationally important sites designated for their ecological status. Special Areas of Conservation (SACs) and Sites of Community Importance (SCIs) are designated under the Habitats Directive and promote the protection of flora, fauna and habitats. Special Protection Areas (SPAs) are designated under the Birds Directive in order to protect rare, vulnerable and migratory birds. These designated sites together create a Europe-wide 'Natura 2000' network of designated sites, which are hereafter referred to as 'European sites'.

In addition, internationally important wetlands designated under the Ramsar Convention 1971 (Ramsar sites) are afforded the same protection as SPAs and SACs for the purpose of considering development proposals that may affect them.

The Habitats Regulations provide, *inter alia*, a framework for the protection of European sites on land and within 12 nautical miles of mean high water springs.

Amongst other things, the Habitats Regulations define the process for the assessment of the implications of plans or projects on European sites. This process is termed the HRA and in exercising the duty as competent authority, the Scottish Ministers must comply with Regulation 63 of the Habitat Regulations, as set out below:

"63 (1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which:

a) Is likely to have a significant effect on a European Site or a European offshore marine site (either alone or in combination with other plans or projects), and

b) Is not directly connected with or necessary to the management of that site,

Must make an appropriate assessment of the implications for that site in view of that site's conservation objectives."

In undertaking an AA, the competent authority must consult the appropriate nature conservation body (Scottish Natural Heritage) and have regard to any representations that it makes within the timeframe

¹ Under The Conservation of Habitats and Species Regulations 2017 (SI 2017 No. 1012), European sites (also known as Natura 2000 sites) are defined as Special Areas of Conservation (SACs), candidate SACs (cSACs), Sites of Community Importance (SCI), Special Protection Areas (SPA) and European Marine Sites (EMS), which are marine areas designated as SACs and SPAs. UK policy extends the requirements pertaining to European sites to include listed or proposed Ramsar sites, potential SPAs (pSPAs; and this would include proposed extensions or alterations to existing SPAs), possible SACs, and sites identified, or required, as compensatory measures for adverse effects on Natura 2000 sites, pSPAs, possible SACs, and listed or proposed Ramsar sites.

² Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

³ DIRECTIVE 2009/147/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 November 2009 on the conservation of wild birds (codified version).

specified by the competent authority. SNH is also commonly consulted in the process of screening projects to establish whether and to what extent an AA is required.

HRA can involve up to four stages, as detailed in Box 1.

Box 1 Stages of Habitats Regulations Appraisal

Stage 1 – Screening:

This stage identifies the likely impacts upon a European Site of a project or Plan, either alone or 'in combination' with other projects or plans and considers whether these impacts are likely to be significant.

Stage 2 – Appropriate Assessment:

Where there are likely significant impacts, this stage considers the impacts of the Plan or project on the integrity of the relevant European Sites, either alone or 'in combination' with other projects or plans, with respect to the sites' structure and function and their conservation objectives. Where there are adverse impacts, it also includes an assessment of the potential mitigation for those impacts.

Stage 3 – Assessment of Alternative Solutions:

Where adverse impacts [on the integrity of the site] are predicted, this stage examines [whether or not there are] alternative ways of achieving the objectives of the project or Plan that avoid adverse impacts on the integrity of European Sites.

Stage 4 – Assessment Where No Alternative Solutions Exist and Where Adverse Impacts Remain:

This stage assesses compensatory measures where it is deemed that the project or Plan should proceed for imperative reasons of overriding public interest (IROPI).

Stages 1 and 2 are covered by Regulation 63 and Stages 3 and 4 are covered by Regulation 64 and 68.

With respect to Stage 2, the integrity of a European Site relates to the site's conservation objectives and has been defined in guidance as "*the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated*"⁴. An adverse effect on integrity, therefore, is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of designation. The HRA screening process uses the threshold of LSE to determine whether effects on European sites should be the subject of further assessment. The Habitats Regulations do not define the term LSE. However, in the Waddenzee case (Case C-127/02)⁵ the European Court of Justice found that an LSE should be presumed and an AA carried out if "*it cannot be excluded on the basis of objective information that the plan or project will not have significant effects on the conservation objectives of the site concerned, whether alone or in-combination with any other project*". The Advocate General's opinion of the Sweetman case (Case C-258/11)⁶ further clarifies the position by noting that for a conclusion of an LSE to be made "*there is no need to **establish** such an effect...it is merely necessary to determine that there **may** be such an effect*" (original emphasis).

⁴ Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, at section 4.6.3 (Updated Version, November 2018).

⁵ Judgment of the Court (Grand Chamber) of 7 September 2004. Landelijke Vereniging tot Behoud van de Waddenzee and Nederlandse Vereniging tot Bescherming van Vogels v Staatssecretaris van Landbouw, Natuurbeheer en Visserij. Reference for a preliminary ruling: Raad van State - Netherlands. Case C-127/02.

⁶ Judgment of the Court (Third Chamber), 11 April 2013 Peter Sweetman and Others v An Bord Pleanála. Request for a preliminary ruling from the Supreme Court (Ireland) Case C-258/11.

For the reasons highlighted above the assessment process follows precautionary principle throughout and the word 'likely' is regarded as a description of a risk (or possibility) rather than in a legal sense an expression of probability.

Screening can be used to screen-out European sites and elements of works from further assessment, if it is possible to determine that significant effects are unlikely (e.g. if sites or interest features are clearly not vulnerable (exposed and / or sensitive) to the outcomes of the proposal due to the absence of any reasonable impact pathways).

The screening process has three potential conclusions, namely that the proposed development, alone or in combination with other developments, could result in:

- No adverse effects on any of the designated features of the site;
- An adverse effect on the site that is not likely to be significant; or
- A significant adverse effect on one or more of the qualifying features of the site and hence a potential significant effect on site integrity.

Only the last of these three outcomes will trigger an Appropriate Assessment. If one or more LSE are identified, or cannot be ruled out, it is then necessary to proceed to Stage 2 and produce an AA.

On 12 April 2018, the Court of Justice of the European Union (CJEU) issued a judgment on Case C323/17 (People over Wind, Peter Sweetman v Coillte Teoranta) which stated (at paragraph 41):

"Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects [mitigation] of the plan or project on that site."

This means that any mitigation relating to protected sites under the Habitat Regulations 2017 Regulation 63 (1) will no longer be considered at the screening stage but taken forward and considered at the appropriate assessment stage to inform a decision on whether no adverse effects on site integrity can be demonstrated.

The screening assessment provided within this HRA takes into account the CJEU ruling on 'People over Wind'. It has also adopted a strong precautionary principle; if a pathway of effect is established between the Proposed Development and a European Site, then that site is taken through to appropriate assessment. This ensures all effects are captured, including *de minimis* effects.

A precautionary approach has been taken to the screening process for the Proposed Development. Only those designated features and European sites where it can be demonstrated that there is no likelihood of a significant effect occurring have been screened out.

Within this assessment, each potential effect is considered using information from surveys undertaken to inform the HRA process, published literature (where available), other available baseline data, modelling outputs, and professional judgement (informed by Chartered Institute of Ecology and Environmental Management (CIEEM)⁷).

Technical guidance used to define the survey methods or analytical approaches used to inform this appraisal are referenced in **EIA Appendix 8B: Bird surveys October 2017-March 2018; EIA Appendix 8C: Bird surveys April – September 2018; AI Appendix 8A: Bird Surveys October 2018-March 2019; AI Appendix 8B: Bird Surveys April-September 2019; AI Appendix 8C: Confidential Bird Report October 2018-**

⁷ CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.



September 2019; AI Appendix 8E: Collision Risk Modelling; AI Appendix 8F: Population Viability Analysis.



2. HRA Stage 1: Screening

2.1 HRA Screening Introduction

This section HRA Stage 1 Screening follows the procedures for screening described in the guidance document by the European Commission⁸. These steps are:

- Step 1: Determining whether the project or plan is directly connected with or necessary for the management of the site;
- Step 2: Describing the project (or plan);
- Step 3: Identifying the potential effects on European sites; and
- Step 4: Assessing the significance of any effects on European sites.

2.2 HRA Screening Step 1: Identification of the Project's Relevance to the Conservation Management of European Sites

Regulation 63 of the Habitats Regulations applies to plans or projects that are not directly related to the conservation management of a Natura 2000 site. This first step of the screening process was therefore to identify whether the plan or project in question is related to the conservation management of any European sites.

The European Commission guidance makes it clear that, for a project or plan to be 'directly' connected with or necessary to the management of a European site, the management must refer to measures that are for conservation purposes, with the 'directly' element referring to measures that are solely conceived for the conservation management of a site and not direct or indirect consequences of other activities.

The Proposed Development is a 'plan or project', for the purpose of the Habitat Regulations, but is not directly connected with or necessary for the management of any European site. An Appropriate Assessment (AA) may, therefore, still be required and so it is necessary to proceed to Step 2 of the Screening Process.

2.3 HRA Screening Step 2: Description of the Scheme

This step requires an understanding of the location and description of the elements of the Proposed Development that could result in effects on a European Site. The description must identify the elements of the Proposed Development that may directly affect a European Site (e.g. land-take), those that may indirectly affect a European Site (e.g. emissions to air) and those that may act in-combination with other plans or projects.

The Development Site

The HRA should be read in conjunction with the development description provided in **AI Chapter 4: Description of the Proposed Development** and with respect to relevant parts of other Chapters, including **EIA Chapter 8: Ornithology** and **EIA Chapter 9: Ecology**, together with **AI Chapter 8: Ornithology** and **AI Chapter 9: Ecology**, where common receptors have been considered and where there is an overlap or relationship between the assessment of effects.

⁸European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.

The Development Site is defined in **AI Chapter 4** (at **Section 4.2 - 4.6**) and illustrated on **EIA Figures 1.1** and **1.2**.

The temporal scope of this assessment is consistent with the period over which the Proposed Development would be carried out and therefore covers a.) construction; b.) operation; and c.) decommissioning periods (as outlined in **AI Chapter 4**).

- Construction of the Proposed Development would be completed over a period of up to 30 months. Working hours are likely to vary through the year, depending on day length, but would typically be 7am-7pm Monday to Friday and 7am-1pm on Saturday with no working on Sundays or public holidays;
- Operation of the Proposed Development is anticipated to be 25 years; and
- Decommissioning is anticipated to take less than 6 months - wind turbines (towers, nacelle, hub, blades and electrical kiosk) and substations can be dismantled using a crane and removed from site, whilst access tracks and below ground infrastructure (<1m) would remain in situ.

2.4 HRA Screening Step 3: Identification of Potential Effects on European Sites

European Designated Sites Included for Assessment

In order to undertake a robust assessment, it is essential to determine the linkages between receptors, the Proposed Development's Zone of Influence (Zol), and relevant European sites. These linkages are determined in accordance with the approaches agreed through scoping with SNH below:

- All European sites featuring qualifying ornithological interests within 20km of the Proposed Development;
- With respect to European sites featuring qualifying habitats that could be affected by the Proposed Development, sites were included if they fell within 2km of the Proposal.

Each European site is designated as an SAC, classified as an SPA, or listed as a Ramsar site in respect of specific 'qualifying features'. These 'qualifying features' (habitats, mosaics of habitats, species or assemblage of species, and combinations of these) are the reasons for which the site is to be protected and managed for conservation purposes.

For SPAs, the qualifying features are the birds for which the SPA is classified, under either:

- Article 4(1) rare and vulnerable species, species in danger of extinction or requiring particular attention because of their habitat needs, listed in Annex I of the Birds Directive; or
- Article 4(2) regularly occurring migratory species (e.g. on passage or over-wintering or an internationally important assemblage of birds) not listed in Annex I.

The qualifying features of SACs are the habitats listed in Annex I of the Habitats Directive and the species listed in Annex II of the Directive. The 'qualifying features' of Ramsar sites are the list of Criteria as set out in the Convention on Wetlands of International Importance (Ramsar Convention). All receptors that are qualifying features of European sites (Natura 2000/Ramsar sites) (or support such features⁹), and which may potentially be affected by the Proposed Development have been considered within this screening process.

⁹ In 2018 the CJEU delivered a judgment in Case C-461/17 *Holohan v An Bord Pleanála* which confirms that habitats and species associated with a European site which are not themselves qualifying features must be considered if impacts on non-qualifying habitats and species are liable to affect the conservation objectives of the site or if the development will impact on features that are necessary to the conservation of the site's qualifying features.

Details of the sites considered for assessment and their qualifying features are listed in **Table 2.2**.

Table 2.1 European Sites Included for Assessment

	Distance from the Development Site	Site Description	Qualifying Features
The Lewis Peatlands SPA	Immediately adjacent to western and northern site boundary, 100m from closest proposed infrastructure.	The site comprises an extensive area of deep blanket bog, interspersed with bog pool complexes and freshwater lochs. Within Britain, the Lewis peatlands are second in extent only to the Caithness and Sutherland peatlands and represent the extreme north-west part of the range of variation. Features of qualifying interest also include birds of international importance.	<p>Lewis Peatlands SPA qualifies under Article 4.1 by regularly supporting populations of European importance of the Annex 1 species (1994 to 1996):</p> <ul style="list-style-type: none"> red-throated diver (80 pairs, 9% of the GB population); black-throated diver (13 pairs, 8% of the GB population); golden eagle (5 pairs, 1% of the GB population); merlin (20 pairs, 2% of the GB population); golden plover (1,800 pairs, 8% of the GB population), and dunlin (3,400 pairs, 37% of the GB population). <p>Lewis Peatlands SPA further qualifies under Article 4.2, by regularly supporting a population of the migratory species:</p> <ul style="list-style-type: none"> greenshank (1994 to 1996, 140 pairs, <0.1% of the Europe/Western Africa biogeographic population and 10.4% of the GB population).
The Lewis Peatlands Ramsar	Immediately adjacent to western and northern site boundary, 100m from closest proposed infrastructure.	The site comprises an extensive area of deep blanket bog, interspersed with bog pool complexes and freshwater lochs. Within Britain, the Lewis peatlands are second in extent only to the Caithness and Sutherland peatlands and represent the extreme north-west part of the range of variation.	<p>Supports a number of rare species of wetland birds. There is a diverse population of breeding waterfowl including nationally important populations of red-throated diver, black-throated diver, golden plover and greenshank;</p> <p>Supports a population of international importance of breeding dunlin (Baltic/UK/Ireland 4,386 pairs, representing an average of 39.9% of the breeding population (2004).</p>
Lewis Peatlands SAC	Approximately 850m west of site boundary at closest point.	The site comprises an extensive area of deep blanket bog, interspersed with bog pool complexes and freshwater lochs.	Designated for the following qualifying features: acid peat-stained lakes and ponds; blanket bog; clear water lochs with aquatic vegetation and poor to moderate nutrient levels; wet heath; and otters.



	Distance from the Development Site	Site Description	Qualifying Features
Ness and Barvas SPA	Approximately 13.5km north of from closest proposed infrastructure.	Ness and Barvas SPA is composed of two separate areas in the extreme north (Ness) and west (Barvas) of the island of Lewis, the most northerly of the Scottish Outer Hebrides. Both areas consist mainly of traditionally managed semi-intensified grassland and marshy areas within crofting land. The Ness part of the site also includes an area of machair common grazing, as well as Loch Stiapavat, a freshwater loch with marshy and botanically rich margins.	Qualifies under Article 4.1 of the Birds Directive: Regularly supporting a nationally important breeding population of the Annex 1 species corncrake. Between 1993 and 1997, the site supported an average of 18 calling males, representing about 3% of the British breeding population.

* Priority natural habitats or species: Some of the natural habitats and species listed in the Habitats Directive and for which SACs have been selected are considered to be particular priorities for conservation at a European scale and are subject to special provisions in the Directive and the Habitats Regulations. These priority natural habitats and species are denoted by an asterisk (*) in Annex I and II of the Directive. The term 'priority' is also used in other contexts, for example with reference to particular habitats or species that are prioritised in UK Biodiversity Action Plans. It is important to note however that these are not necessarily the priority natural habitats or species within the meaning of the Habitats Directive or the Habitats Regulations.

Potential Impact Pathways

This step identifies whether the proposed works described in Step 2 and (Section 2.3) have the potential to cause effects on the qualifying features of these European sites.

The main mechanisms by which the Proposed Development could affect European sites are through either direct or indirect impact pathways. The main impact pathways by which the Proposed Development could affect European sites, their potential for effect and the potential receptors requiring consideration under HRA are:

- Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and vibration, and movement of construction vehicles resulting in temporary disturbance or displacement of species;
- Potential disturbance to birds due to the operation of turbines and associated human activities for maintenance purposes;
- Operational displacement leading to barrier effects;
- Potential collision of species with operational turbines;
- Changes to surface hydrology leading to detrimental changes to species and habitats;
- Increased pollution risk associated with accidental spillage of fuels, oils, run-off and dust emission i.e. via direct contact, air or water, leading to harm or degradation to species and habitats;
- Permanent loss of and temporary damage to terrestrial habitats;
- Indirect disturbance and changes to composition of plant communities resulting from hydrological change;
- Direct damage to otter resting sites and disturbance to individuals using resting sites due to elevated levels of disturbance (such as increased noise, lighting, and human presence) during construction/operation and decommissioning related works;
- Disturbance/displacement effects to otter;



- Temporary severance of otter habitat and commuting routes;
- Direct otter mortality due to construction related activities.

2.5 HRA Screening Step 4: Assessing Significance of Effects on European Sites

This step identifies whether the proposed works described in Step 2 (**Section 2.3**) and potential effects described in Step 3 (**Section 2.4**) have the potential to cause LSE on the qualifying features of those European Sites identified in Step 3. Each site, qualifying features and screening rational are detailed in **Table 2.2** which also identifies potential pathways for LSE to occur.

Table 2.2 European Sites, Qualifying Features and Potential for LSE

Site and Qualifying Feature	Environmental Change and Potential Effect	Zone of Influence	Potential for LSE (Y/N)	Justification
Lewis Peatlands SPA / Ramsar: black throated Diver	Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and vibration, and movement of construction vehicles resulting in temporary disturbance or displacement.	Within 750m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	N	One breeding attempt had the potential to be associated with the SPA, lying adjacent to the SPA/Ramsar boundary but was c1km from the Development Site boundary and outwith the 750m ZoI.
	Potential disturbance to birds due to the operation of turbines and associated human activities for maintenance purposes.	Within 750m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	N	Disturbance effects during the operational phase will be negligible compared to those during the construction phase, and therefore it is considered that there would be no detectable effects on the SPA or Ramsar population.
	Operational displacement leading to barrier effects.	Within 750m of the Proposed Development footprint (based on guidance in SNH 2017).	Y	Breeding black-throated diver normally forage within large fresh-water lochs, and do not make regular commuting flights to and from the sea. However, flight activity recorded during surveys (EIA Appendix 8D, AI Appendix 8C and 8E) indicates that the Proposed Development may potentially cause a barrier effect between breeding locations and feeding lochs, and it is considered that this will may result in a potential LSE on the SPA or Ramsar population.
	Potential collision with operational turbines.	Within 500m of the Proposed Development footprint (based on guidance in SNH 2017).	Y	Flight activity (EIA Appendix 8D, AI Appendix 8C and 8E) indicates that there is potential for LSE.

Site and Qualifying Feature	Environmental Change and Potential Effect	Zone of Influence	Potential for LSE (Y/N)	Justification
	Changes to surface hydrology leading to detrimental changes to species and habitats.	Within 250m (SEPA GUPS-LU31 250m) of the Development Site, and River catchments (River Laxdale, Glen River, River Creed) that intersect the Development Site.	Y	The 250m buffer extended on to the margins of the SPA/Ramsar however although there were no significant effects identified off-site (EIA Chapter 11) there is potential for LSE.
	Increased pollution risk associated with accidental spillage of fuels, oils, run-off and dust emission i.e. via direct contact, air or water, leading to harm or degradation to species and habitats.	EIA Chapter 15 (Section 15.4) of the Scoping Report detailed that air quality impacts associated with dust and particulate matter, and exhaust emissions from construction, operation and decommissioning activities have been scoped out of the EIA. For pollution incidents a Zol of 250m was applied (see EIA Chapter 11).	Y	SPA/Ramsar falls within Zol therefore potential for LSE.
Lewis Peatlands SPA / Ramsar: dunlin	Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and vibration, and movement of construction vehicles resulting in temporary disturbance or displacement.	Within 500m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	Y	An estimated seven territories fell within the MBS survey area in the 2018 breeding season (March – July 2018 as specified by SNH (2017)), with five of these falling within the Development Site (EIA Appendix 8C). In 2019, three territories fell within the MBS survey area, with two falling within the development site (AI Appendix 8B). Territories were distributed around the edges of the Development Site boundary, with a concentration to the north and west, where some territories partly fell within the Lewis Peatlands SPA. Therefore potential for LSE exists.

Site and Qualifying Feature	Environmental Change and Potential Effect	Zone of Influence	Potential for LSE (Y/N)	Justification
	Potential disturbance to birds due to the operation of turbines and associated human activities for maintenance purposes.	Within 500m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	N	Disturbance effects during the operational phase will be negligible, and therefore it is considered that there would be no detectable effects on the SPA or Ramsar population.
	Potential collision with operational turbines.	Within 500m of the Proposed Development footprint (based on guidance in SNH 2017).	N	An estimated seven territories fell within the MBS survey area in the 2018 breeding season (March – July 2018 as specified by SNH (2017)), with five of these falling within the Development Site (EIA Appendix 8C). In 2019, three territories fell within the MBS survey area, with two falling within the development site (AI Appendix 8B). Territories were distributed around the edges of the Development Site boundary, with a concentration to the north and west, where some territories partly fell within the Lewis Peatlands SPA. Flight activity recorded from VP surveys was low, with just three flights being observed over the period March – July 2018 and five in the corresponding period in 2019 within the CRZ (AI Appendix 8E). Due to the placement of territories and negligible flight activity recorded LSE are not considered for potential collision with operational turbines for dunlin.
	Operational displacement leading to barrier effects.	Within the Proposed Development footprint.	N	An estimated seven territories fell within the MBS survey area in the 2018 breeding season (March – July 2018 as specified by SNH (2017)), with five of these falling within the Development Site (EIA Appendix 8C). In 2019, three territories fell within the MBS survey area, with two falling within the development site (AI Appendix 8B). Territories were distributed around the edges of the Development Site boundary, with a concentration to the north and west, where some territories partly fell within the Lewis Peatlands SPA. Flight activity recorded from VP surveys was low, with just three flights being observed over the period March – July 2018 and five in the corresponding period in 2019 within the CRZ (AI Appendix 8E). Due to the placement of territories and negligible flight activity recorded LSE are not considered for operational displacement leading to barrier effects for dunlin.



Site and Qualifying Feature	Environmental Change and Potential Effect	Zone of Influence	Potential for LSE (Y/N)	Justification
	Changes to surface hydrology leading to detrimental changes to species and habitats.	Within 250m (SEPA GUPS-LU31 250m) of the Development Site, and River catchments (River Laxdale, Glen River, River Creed) that intersect the Development Site.	Y	The 250m buffer extended on to the margins of the SPA/Ramsar however although there were no significant effects identified off-site (EIA Chapter 11) there is potential for LSE.
	Increased pollution risk associated with accidental spillage of fuels, oils, run-off and dust emission i.e. via direct contact, air or water, leading to harm or degradation to species and habitats.	EIA Chapter 15 (Section 15.4) of the Scoping Report detailed that air quality impacts associated with dust and particulate matter, and exhaust emissions from construction, operation and decommissioning activities have been scoped out of the EIA. For pollution incidents a Zol of 250m was applied (see EIA Chapter 11).	Y	SPA falls within Zol for pollution incidents therefore potential for LSE.
Lewis Peatlands SPA: golden eagle	Potential disturbance to birds due to the operation of turbines and associated human activities for maintenance purposes.	Within 1000m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007; Whitfield et al. 2008b).	N	No SPA golden eagle territories were found within 1km of the Proposed Development site, and no known historic nest sites are located within this range. Therefore it is predicted that there will be no detectable effect on the SPA golden eagle population.
	Operational displacement leading to barrier effects.	Within 1000m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007; Whitfield et al. 2008b).	N	Disturbance effects during the operational phase will be negligible compared to those during the construction phase, and therefore it is considered that there would be no LSE on the SPA population.
	Potential collision with operational turbines.	Within 500m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007; Whitfield et al. 2008b).	Y	Flight activity (AI Appendix 8E) indicates that there is potential for LSE to occur on the SPA population.

Site and Qualifying Feature	Environmental Change and Potential Effect	Zone of Influence	Potential for LSE (Y/N)	Justification
	Changes to surface hydrology leading to detrimental changes to species and habitats.	Within 250m (SEPA GUPS-LU31 250m) of the Development Site, and River catchments (River Laxdale, Glen River, River Creed) that intersect the Development Site.	Y	The 250m buffer extended on to the margins of the SPA/Ramsar however although there were no significant effects identified off-site (EIA Chapter 11) there is potential for LSE.
	Increased pollution risk associated with accidental spillage of fuels, oils, run-off and dust emission i.e. via direct contact, air or water, leading to harm or degradation to species and habitats.	EIA Chapter 15 (Section 15.4) of the Scoping Report detailed that air quality impacts associated with dust and particulate matter, and exhaust emissions from construction, operation and decommissioning activities have been scoped out of the EIA. For pollution incidents a Zol of 250m was applied (see EIA Chapter 11).	Y	SPA falls within Zol for pollution incidents therefore potential for LSE.
Lewis Peatlands SPA / Ramsar: golden plover	Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and vibration, and movement of construction vehicles resulting in temporary disturbance or displacement.	Within 500m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	Y	An estimated ten pairs were present within the MBS survey area during the 2018 breeding season (March – July 2018 as specified by SNH (2017)) and nine in 2019 (EIA Appendix 8C and AI Appendix 8B). Territories were distributed around the edges of the Proposed Development Site boundary, with a concentration on the western and southern edges of the Site, overlapping with the Lewis Peatlands SPA site boundary. Therefore there is potential for LSE.
	Potential disturbance to birds due to the operation of turbines and associated human activities for maintenance purposes.	Within 500m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	N	Disturbance effects during the operational phase will negligible, and therefore it is considered that there would be no detectable effects on the SPA or Ramsar population.

Site and Qualifying Feature	Environmental Change and Potential Effect	Zone of Influence	Potential for LSE (Y/N)	Justification
	Operational displacement leading to barrier effects.	Within 500m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	N	The low level of flight activity recorded during surveys (EIA Appendix 8C and AI Appendix 8B) and distribution of territories around the edges of the Proposed Development Site boundary, with a concentration on the western and southern edges of the Site, indicates that there would not be LSE on the SPA or Ramsar population.
	Potential collision with operational turbines.	Within 500m of the Proposed Development boundary (based on guidance in SNH 2017).	N	The low level of flight activity recorded during surveys (AI Appendix 8E) and distribution of territories around the edges of the Proposed Development Site boundary, with a concentration on the western and southern edges of the Site, indicates that there would not be LSE on the SPA or Ramsar population.
	Changes to surface hydrology leading to detrimental changes to species and habitats.	Within 250m (SEPA GUPS-LU31 250m) of the Development Site, and River catchments (River Laxdale, Glen River, River Creed) that intersect the Development Site.	Y	The 250m buffer extended on to the margins of the SPA/Ramsar however although there were no significant effects identified off-site (EIA Chapter 11) there is potential for LSE.
	Increased pollution risk associated with accidental spillage of fuels, oils, run-off and dust emission i.e. via direct contact, air or water, leading to harm or degradation to species and habitats.	EIA Chapter 15 (Section 15.4) of the Scoping Report detailed that air quality impacts associated with dust and particulate matter, and exhaust emissions from construction, operation and decommissioning activities have been scoped out of the EIA. For pollution incidents a Zol of 250m was applied (see EIA Chapter 11).	Y	SPA falls within Zol for pollution incidents therefore potential for LSE.

Site and Qualifying Feature	Environmental Change and Potential Effect	Zone of Influence	Potential for LSE (Y/N)	Justification
Lewis Peatlands SPA / Ramsar: greenshank	Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and vibration, and movement of construction vehicles resulting in temporary disturbance or displacement.	Within 500m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	Y	Locations of breeding birds potentially associated with the SPA qualifying population fall within disturbance distance of proposed works and may result in LSE on the SPA or Ramsar population.
	Potential disturbance to birds due to the operation of turbines and associated human activities for maintenance purposes.	Within 500m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	N	Disturbance effects during the operational phase will negligible, and therefore it is considered that there would be no detectable effects on the SPA or Ramsar population.
	Operational displacement leading to barrier effects.	Within 500m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	N	The low level of flight activity recorded during surveys (EIA Appendix 8D and AI Appendix 8C) and distribution of territories around the edges of the Proposed Development Site boundary, with a concentration on the western and southern edges of the Site, indicates that there would not be LSE on the SPA or Ramsar population.
	Potential collision with operational turbines.	Within 500m of the Proposed Development boundary (based on guidance in SNH 2017).	N	Flight activity recorded during surveys (AI Appendix 8E) indicates that the Proposed Development would not cause a barrier effect and it is considered that there would be no LSE on the SPA or Ramsar population.
	Changes to surface hydrology leading to detrimental changes to species and habitats.	Within 250m (SEPA GUPS-LU31 250m) of the Development Site, and River catchments (River Laxdale, Glen River, River Creed) that intersect the Development Site.	Y	The 250m buffer extended on to the margins of the SPA/Ramsar however although there were no significant effects identified off-site (EIA Chapter 11) there is potential for LSE.

Site and Qualifying Feature	Environmental Change and Potential Effect	Zone of Influence	Potential for LSE (Y/N)	Justification
	Increased pollution risk associated with accidental spillage of fuels, oils, run-off and dust emission i.e. via direct contact, air or water, leading to harm or degradation to species and habitats.	EIA Chapter 15 (Section 15.4) of the Scoping Report detailed that air quality impacts associated with dust and particulate matter, and exhaust emissions from construction, operation and decommissioning activities have been scoped out of the EIA. For pollution incidents a Zol of 250m was applied (see EIA Chapter 11).	Y	SPA falls within Zol for pollution incidents therefore potential for LSE.
Lewis Peatlands SPA: merlin	Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and vibration, and movement of construction vehicles resulting in temporary disturbance or displacement.	Within 500m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	N	A single breeding location was recorded, falling within the search area and SPA boundary. However, this did not fall within the Zol, and therefore no LSE are predicted.
	Potential disturbance to birds due to the operation of turbines and associated human activities for maintenance purposes.	Within 500m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	N	A single breeding location was recorded, falling within the search area and SPA boundary. However, this did not fall within the Zol, and therefore no LSE are predicted.
	Operational displacement leading to barrier effects.	Within 500m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	N	The low level of flight activity recorded during surveys (EIA Appendix 8C and AI Appendix 8B) and distribution of territories around the edges of the Proposed Development Site boundary, with a concentration on the western and southern edges of the Site, indicates that there would not be LSE on the SPA or Ramsar population.

Site and Qualifying Feature	Environmental Change and Potential Effect	Zone of Influence	Potential for LSE (Y/N)	Justification
	Potential collision with operational turbines.	Within 500m of the Proposed Development boundary (based on guidance in SNH 2017).	N	Flight activity, whilst low still indices potential for LSE.
	Changes to surface hydrology leading to detrimental changes to species and habitats.	Within 250m (SEPA GUPS-LU31 250m) of the Development Site, and River catchments (River Laxdale, Glen River, River Creed) that intersect the Development Site.	Y	The 250m buffer extended on to the margins of the SPA/Ramsar however although there were no significant effects identified off-site (EIA Chapter 11) there is potential for LSE.
	Increased pollution risk associated with accidental spillage of fuels, oils, run-off and dust emission i.e. via direct contact, air or water, leading to harm or degradation to species and habitats.	EIA Chapter 15 (Section 15.4) of the Scoping Report detailed that air quality impacts associated with dust and particulate matter, and exhaust emissions from construction, operation and decommissioning activities have been scoped out of the EIA. For pollution incidents a Zol of 250m was applied (see EIA Chapter 11).	Y	SPA/Ramsar falls within Zol for pollution incidents therefore potential for LSE.
Lewis Peatlands SPA / Ramsar: red-throated Diver	Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and vibration, and movement of construction vehicles resulting in temporary disturbance or displacement.	Within 750m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	Y	Locations of breeding birds potentially associated with the SPA qualifying population fall within disturbance distance of proposed works and may result in a potentially significant effect to the SPA population.

Site and Qualifying Feature	Environmental Change and Potential Effect	Zone of Influence	Potential for LSE (Y/N)	Justification
	Potential disturbance to birds due to the operation of turbines and associated human activities for maintenance purposes.	Within 750m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	N	Disturbance effects during the operational phase will negligible, and therefore it is considered that there would be no detectable effects on the SPA or Ramsar population.
	Operational displacement leading to barrier effects.	Within 500m of the Proposed Development boundary (based on guidance in SNH 2017).	Y	Breeding red-throated diver normally forage at sea, making regular commuting flights to and from breeding lochs inland. Flight activity recorded during surveys indicates that the Proposed Development may potentially cause a barrier effect to breeding red-throated diver, and this may result in LSE.
	Potential collision with operational turbines.	Within 500m of the Proposed Development boundary (based on guidance in SNH 2017).	Y	Collision Risk Modelling (CRM) and flight activity (AI Appendix 8E) indicates that there is potential for LSE.
	Changes to surface hydrology leading to detrimental changes to species and habitats.	Within 250m (SEPA GUPS-LU31 250m) of the Development Site, and River catchments (River Laxdale, Glen River, River Creed) that intersect the Development Site.	Y	The 250m buffer extended on to the margins of the SPA/Ramsar however although there were no significant effects identified off-site (EIA Chapter 11) there is potential for LSE.
	Increased pollution risk associated with accidental spillage of fuels, oils, run-off and dust emission i.e. via direct contact, air or water, leading to harm or degradation to species and habitats.	EIA Chapter 15 (Section 15.4) of the Scoping Report detailed that air quality impacts associated with dust and particulate matter, and exhaust emissions from construction, operation and decommissioning activities have been scoped out of the EIA. For pollution incidents a Zol of 250m was applied (see EIA Chapter 11).	Y	SPA/Ramsar falls within Zol for pollution incidents therefore there is potential for LSE.

Site and Qualifying Feature	Environmental Change and Potential Effect	Zone of Influence	Potential for LSE (Y/N)	Justification
<p>Lewis peatlands SAC:</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea</p>	<p>Changes to surface hydrology leading to detrimental changes to species and habitats.</p>	<p>Within 250m (SEPA GUPS-LU31 250m) of the Development Site, and River catchments (River Laxdale, Glen River, River Creed) that intersect the Development Site.</p>	N	<p>Lewis Peatlands SAC is upstream from the development site, approximately 900m from the site boundary and approximately 1,065m to the nearest site infrastructure. On this basis, there are considered to be no hydrological effect pathways and has been scoped out of further assessment.</p>
<p>Natural dystrophic lakes and ponds</p> <p>Blanket Bogs</p> <p>Northern Atlantic wet heaths with Erica tetralix</p> <p>Depressions on peat substrates of the Rhynchosporion</p>	<p>Increased pollution risk associated with accidental spillage of fuels, oils, run-off and dust emission i.e. via direct contact, air or water, leading to harm or degradation to species and habitats.</p>	<p>EIA Chapter 15 (Section 15.4) of the Scoping Report detailed that air quality impacts associated with dust and particulate matter, and exhaust emissions from construction, operation and decommissioning activities have been scoped out of the EIA. For pollution incidents a Zol of 250m was applied (see EIA Chapter 11).</p>	N	<p>The SAC qualifying features falls out with the Zol therefore no LSE are predicted.</p>
<p>Lewis Peatlands SAC; otter</p>	<p>Disturbance/displacement effects to SAC otter population.</p>	<p>32km from the proposed construction/ maintenance/ decommissioning area.</p>	Y	<p>The Proposed Development footprint is outwith all areas specifically designated for otter populations; however, the Proposed Development is within the home range (generally acknowledged to be up to 32km) of otters from this designated site and therefore construction activity may give rise to the disturbance of otters that are part of the SAC population and there may be impacts to their prey species – either from the placement of infrastructure or due to noise disturbance. Therefore LSE are present.</p>

Site and Qualifying Feature	Environmental Change and Potential Effect	Zone of Influence	Potential for LSE (Y/N)	Justification
	Direct damage to resting sites and disturbance to individuals using resting sites due to elevated levels of disturbance (such as increased noise, lighting, and human presence) during construction/operation and decommissioning related works.	Non-breeding resting sites: 30m from the proposed construction/ maintenance/ decommissioning area (based on SNH protected species advice). Breeding resting sites: 200m from the proposed construction/ maintenance/ decommissioning area (based on SNH protected species advice).	Y	<p>Otter resting sites and signs were recorded within the Study Area, along the majority of watercourses in all four catchments.</p> <p>Thirty two resting sites were recorded within the Study Area. Of these, 25 were identified as 'low' status and seven were identified as 'moderate' status. All recorded non-breeding holts were recorded at least 30m from proposed activities; however, one 'low status' resting place and another moderate status resting place were identified within a potential disturbance threshold (within 30m of proposed works areas).</p> <p>No 'high status' resting sites were recorded within the Study Area and no evidence of breeding was recorded; nonetheless, pre-construction surveys have the potential to identify a breeding site.</p> <p>Therefore there is potential for LSE to occur.</p>
	Temporary severance of otter habitat and commuting routes.	Within the construction/ maintenance/ decommissioning area.	Y	<p>Evidence of otter activity was recorded along a number of watercourses and waterbodies within the Study Area, in the form of spraints, paths, prints, feeding remains, and resting sites. The Proposed Development could therefore lead to temporary habitat severance and fragmentation of territories during construction or decommissioning phases, particularly during the construction of water crossings.</p> <p>Therefore there is potential for LSE to occur.</p>
	Direct mortality due to construction related activities.	Within the construction/ maintenance/ decommissioning area.	Y	<p>Evidence of otter activity was recorded along a number of watercourses and waterbodies within the Study Area, in the form of spraints, paths, prints, feeding remains, and resting sites. The Proposed Development could lead to an increase in mortality as a result of vehicle collision during construction or decommissioning phases in particular.</p> <p>Therefore there is potential for LSE to occur.</p>
	Changes to surface hydrology leading to detrimental changes to species and habitats.	Within 250m (SEPA GUPS-LU31 250m) of the Development Site, and River catchments (River Laxdale, Glen River, River Creed) that intersect the Development Site.	Y	<p>Inputs of silt and other fine material including peat can cause damage to fish habitats and direct mortality to fish and fish eggs. During surveys undertaken in 2010, it was observed that spawning habitat for salmonids in most burns appeared to be limited in extent and therefore any loss or damage to such habitat would likely be detrimental to trout and salmon populations and hence to otters.</p> <p>Therefore there is potential for LSE to occur.</p>

Site and Qualifying Feature	Environmental Change and Potential Effect	Zone of Influence	Potential for LSE (Y/N)	Justification
	Increased pollution risk associated with accidental spillage of fuels, oils, run-off and dust emission i.e. via direct contact, air or water, leading to harm or degradation to species and habitats.	EIA Chapter 15 (Section 15.4) of the Scoping Report detailed that air quality impacts associated with dust and particulate matter, and exhaust emissions from construction, operation and decommissioning activities have been scoped out of the EIA. For pollution incidents a Zol of 250m was applied (see EIA Chapter 11.)	Y	Inputs of silt and other fine material including peat can cause damage to fish habitats and direct mortality to fish and fish eggs. During surveys undertaken in 2010, it was observed that spawning habitat for salmonids in most burns appeared to be limited in extent and therefore any loss or damage to such habitat would likely be detrimental to trout and salmon populations and hence to otters. Therefore there is potential for LSE to occur.
Ness and Barvas SPA: corncrake	Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and vibration, and movement of construction vehicles resulting in temporary disturbance or displacement.	Within 500m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	N	The SPA falls out with the Zol therefore no LSE are predicted.
	Potential disturbance to birds due to the operation of turbines and associated human activities for maintenance purposes.	Within 500m of Proposed Development footprint (based on disturbance distances as described by Ruddock & Whitfield 2007).	N	The SPA falls out with the Zol therefore no LSE are predicted.
	Operational displacement leading to barrier effects.	Within 500m of the Proposed Development boundary (based on guidance in SNH 2017).	N	The SPA falls out with the Zol therefore no LSE are predicted.

Site and Qualifying Feature	Environmental Change and Potential Effect	Zone of Influence	Potential for LSE (Y/N)	Justification
	Potential collision with operational turbines.	Within 500m of the Proposed Development boundary (based on guidance in SNH 2017).	N	The SPA falls out with the ZoI therefore no LSE are predicted.
	Changes to surface hydrology leading to detrimental changes to species and habitats.	Within 250m (SEPA GUPS-LU31 250m) of the Development Site, and River catchments (River Laxdale, Glen River, River Creed) that intersect the Development Site.	N	The SPA falls out with the ZoI therefore no LSE are predicted.
	Increased pollution risk associated with accidental spillage of fuels, oils, run-off and dust emission i.e. via direct contact, air or water, leading to harm or degradation to species and habitats.	EIA Chapter 15 (Section 15.4) of the Scoping Report detailed that air quality impacts associated with dust and particulate matter, and exhaust emissions from construction, operation and decommissioning activities have been scoped out of the EIA. For pollution incidents a ZoI of 250m was applied (see EIA Chapter 11).	N	The SPA falls out with the ZoI therefore no LSE are predicted.

3. HRA Stage 2: Section to Inform an Appropriate Assessment

The Screening (Stage 1) has indicated that, in the absence of mitigation, the following European sites and their qualifying features have potential for LSE arising from effects associated with the Proposed Development and therefore they are taken through into this section to provide background data and assessment to inform an AA:

- Lewis Peatlands SPA: black throated Diver;
- Lewis Peatlands SPA: dunlin;
- Lewis Peatlands SPA: golden eagle;
- Lewis Peatlands SPA: golden plover;
- Lewis Peatlands SPA: greenshank;
- Lewis Peatlands SPA: red-throated Diver;
- Lewis Peatlands Ramsar: black throated Diver;
- Lewis Peatlands Ramsar: dunlin;
- Lewis Peatlands Ramsar: golden plover;
- Lewis Peatlands Ramsar: greenshank;
- Lewis Peatlands Ramsar: red-throated Diver;
- Lewis Peatlands SAC: otter.

For each of the designated sites, LSEs will be assessed in relation to the conservation objectives that apply to the specific attribute of the designated feature under consideration.

3.1 Assessment of Potential Effects

The following potential effects are taken further for assessment for each site/qualifying feature where relevant:

- Lewis Peatlands SPA
 - ▶ Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and vibration, and movement of construction vehicles resulting in temporary disturbance or displacement;
 - ▶ Operational displacement leading to barrier effects;
 - ▶ Potential collision with operational turbines.
- Lewis Peatlands Ramsar
 - ▶ Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and vibration, and movement of construction vehicles resulting in temporary disturbance or displacement;
 - ▶ Operational displacement leading to barrier effects;

- ▶ Potential collision with operational turbines.
- Lewis Peatlands SAC
 - ▶ Disturbance/displacement effects to SAC otter population;
 - ▶ Direct damage to resting sites and disturbance to individuals using resting sites due to elevated levels of disturbance (such as increased noise, lighting, and human presence) during construction/operation and decommissioning related works;
 - ▶ Temporary severance of otter habitat and commuting routes;
 - ▶ Direct mortality due to construction related activities.

For all sites, potential LSEs associated with *"Changes to surface hydrology leading to detrimental changes to species and habitats"* and *"increased pollution risk associated with accidental spillage of fuels, oils, run-off and dust emission i.e. via direct contact, air or water, leading to harm or degradation to species and habitats"* are determined to have no adverse effects on any sites or qualifying features due to the adoption of a series of mitigation measures outlined in **EIA Chapter 8 Table 8.10** and **AI Chapter 9 Table 9.9**.

For changes to surface hydrology the ZoI 250m buffer extended on to the margins of the Lewis Peatlands SPA/Ramsar however there were no significant effects identified away from the Proposed Development off-site (**EIA Chapter 11**). A construction area stand-off of at least 50m has been applied to all watercourses and water bodies (except for watercourse crossings). All watercourse crossings would be designed in accordance with the SEPA Good Practice Guide for the Construction of River Crossings (2010) and, where culverts are required, have been designed in accordance with the CIRIA Culvert Design and Operation Guide (2010).

A Construction and Environmental Management Plan (CEMP) would include or be accompanied by a Water Management Plan (WMP), a Pollution Prevention Plan (PPP) and a Pollution Incident Response Plan (PIRP) for construction activities at the Development Site. The WMP would set out the specific details of surface water drainage, management of dewatered groundwater from excavations and watercourse crossings. The PPP would set out specific measures to protect water environment receptors from pollution arising from construction activities and a programme for inspection and monitoring to ensure the effectiveness of these measures. The PIRP would describe the response plan for pollution incidents, should accidental spillages occur despite the control measures in place.

Therefore with the adoption of the mitigation measures there will be no detectable effects on the SPA, Ramsar or SAC populations for any potential effects associated with changes to surface hydrology and increased pollution risk, and therefore no adverse effect on the integrity of Lewis Peatlands/SPA/Ramsar/SAC.

3.2 Lewis Peatlands Special Protection Area – Black-throated Diver

Baseline Conditions

Desk Study

The Lewis Peatlands SPA citation notes that it supports 12 pairs, c. 7% of the Scottish breeding population, and the population was considered as favourable maintained in the most recent site condition assessment (2004). During surveys carried out in 2009 to inform the 2012 Stornoway Wind Farm application, two black-throated diver nests were located within the survey area, one of which was within the SPA. No nests were located during breeding surveys in 2016, with just a single record of an adult within the survey area obtained.

Flight activity of black-throated diver in 2009 recorded during VP watches and focal watches overlooking active breeding sites showed that the greatest level of flight activity was focussed on the central and southern areas of the Development Site, with further areas of high activity to the north east. These areas have

a high density of lochs and lochans, with birds showing signs of prospecting for nesting locations, socialising and undertaking foraging trips. No flights were recorded during surveys in 2016.

Field Surveys

Field surveys were carried out from April – September 2018 (see **EIA Appendix 8D**) and April – September 2019 (**AI Appendix 8B** and **8C**).

Breeding Diver Surveys

Table 3.1 summarises the results of the breeding diver surveys undertaken in 2018 and 2019 (**EIA Appendix 8D** and **AI Appendix 8B** and **8C**). A total of six territories were recorded over the two years, fledging at least three chicks. One territory, BV1 was located within the Zol. Two territories were adjacent to the Lewis Peatlands SPA boundary, with both being more than 1km from the nearest proposed track or turbine.

Table 3.1 Black-throated Diver: Breeding Records

Territory*	Distance to Lewis Peatlands SPA (m)	Distance to Proposed Track (m)	Distance to Nearest Proposed Turbine (m)	Season	Outcome
BV1	2,539	112	527	2018	Failed
				2019	Failed
BV2	Adjacent	1,017	1,004	2018	Failed
BV3	2,555	2,462	2,733	2018	Fledged two chicks
				2019	Outcome unknown
BV4	Adjacent	1,831	1,831	2019	Fledged one chick
BV5	3,819	2,722	3,573	2019	Outcome unknown
BV6	2,973	1,426	2,150	2019	Failed

* SEI Appendix 8C provides locations for these territory codes

Flight Activity Surveys 2018

Black-throated diver flight activity from VP and focal watch surveys shows that the majority of flights occurred around and between breeding and non-breeding lochs that were being used as feeding lochs.

Table 3.2 presents a summary of all flight activity recorded during VP and focal watch surveys between April – September 2018 and 2019, including the amount of time at and above/below potential collision height (PCH)¹⁰.

Table 3.2 Black-throated Diver: VP and Focal Watch Flight Activity Data April-September

	Season	Total Number Flights	Total Seconds Below PCH	Total Seconds at PCH	Total Seconds Above PCH
VP	2018	24	915	1,560	495
	2019	26	1,035	2,490	30
Focal watch	2018	15	495	315	0
	2019	36	1,020	2,625	120

Predicted Effects and their Significance

With the exception of barrier related effects during operation leading to displacement and collision risk, no other effects, whether construction/decommissioning or operation related, were scoped in for assessment as no breeding attempts associated with the SPA population were found within the 750m Zol.

Operation: Barrier to Flights Leading to Displacement

In terms of operational displacement associated with the Proposed Development acting as a barrier to flights, the low levels of flight activity shown in **Table 3.2**, indicates that there is little potential for barrier effects to occur in relation to flight activity from SPA birds. Even if the Proposed Development does act as a barrier and birds fly around or over it, the additional energy expenditure required to do so for the relatively few flights recorded would not be expected to have a discernible effect given the relatively small additional flight distances involved. On this basis, the Proposed Development would not result in any adverse effect on black-throated diver arising from barrier effects.

Operation: Potential Collision with Operational Turbines

Collision Risk Modelling (CRM) predicted a potential 0.059 fatalities per year (**AI Appendix 8E**). This equates to the potential loss of 0.246% of the SPA breeding population per year which is a low magnitude of change and therefore and it is considered that this will not result in any adverse effect on black-throated diver within the Lewis Peatlands SPA.

Assessment against Conservation Objectives

European Site Conservation Objectives for Lewis Peatlands SPA are:

To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

¹⁰ PCH was taken as a precautionary 20-200m, covering height bands B and C.



To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site;
- Distribution of the species within site;
- Distribution and extent of habitats supporting the species;
- Structure, function and supporting processes of habitats supporting the species;
- No significant disturbance of the species.

Only potential LSEs associated with barrier to flights leading to displacement and collision risk during the operational phase were scoped in for assessment, these effects had potential to relate to two conservation objectives of the SPA: "population of the species as a viable component of the site" and "distribution of the species within site". Any potential effects associated with flight barrier/displacement and collision risk were assessed as having a low potential for change and no significant adverse effects on those relevant conservation objectives for black-throated diver.

Conclusion on Integrity

No adverse effects predicted on Lewis Peatlands SPA black-throated diver and the Proposed Development will therefore not adversely affect the integrity of the Lewis Peatlands SPA.

3.3 Lewis Peatlands Special Protection Area – Dunlin

Baseline Conditions

The Lewis Peatlands SPA citation (in December 2000) was for 3,400 pairs, c. 25% of the estimated Scottish breeding population (Wilson et al 2015).

Based on the data provided seven territories fell within the MBS survey area in 2018 with five of these falling within the Development Site (**EIA Appendix 8C**). An estimated three territories fell within the MBS survey area in the 2019 breeding season with two of these falling within the Development Site (**AI Appendix 8B**). Territories were distributed around the edges of the Development Site boundary, with a concentration to the north and west. Flight activity recorded from VP surveys was very low, with just three flights being observed over the period March – July 2018 within the CRZ, and five in 2019 (**AI Appendix 8E**).

Predicted Effects and their Significance

Construction and Decommissioning Disturbance

Although the Proposed Development will result in disturbance during construction, given the small number of territories involved (0.08 % of the SPA population assuming all territories are associated with the SPA population), the survey area is considered to be of negligible importance for the SPA population during the breeding season.

Furthermore construction and de-commissioning related disturbance/displacement effects to dunlin that may be connected to the SPA would be minimised via the mitigation measures outlined in **EIA Chapter 8 Table 8.10** (and summarised below):

- As part of an overarching CEMP, a Bird Protection Plan (BPP) would be developed in consultation with the relevant consultees in advance of construction works commencing. Method Statements (MSs) would be developed to detail the mitigation approach for all bird

receptors. These would cover the site and receptor specific requirements of the embedded mitigation as outlined in the remainder of this table;

- Site supervision would be provided by a suitably experienced Environmental Clerk of Works (ECoW), who would be responsible for ensuring the successful implementation of embedded measures, including pollution prevention, monitoring of buffers around construction areas and reference to areas of high ecological sensitivity, and adherence to current construction best practice;
- Pre-construction verification check surveys would be undertaken for all protected bird species where potential significant effects or legal breaches could occur otherwise. Mitigation measures would be regularly reviewed throughout the phase to ensure that they continue to be applicable and fit for purpose, and MSs updated as required;
- Maintain species specific buffers detailed in the BPP from nests during the breeding or roosting season until young fledge or method statements would be developed outlining the methods to allow works to continue within buffer areas where appropriate. For example, in some cases, there may be a requirement to install suitable screening around working areas to allow it to continue within a buffer area. An ornithologist may be required to monitor the nesting birds during the working phase in certain areas and halt any significantly disturbing activities;
- An emergency procedure would be implemented by site workers if a nest of a breeding bird is encountered. All works within 100m would cease as soon as it is safe to do so, and the ECoW would inspect the site and define appropriate measures (if required);
- When construction activities are taking place at more than one location at any one time, this would be subject to ECoW approval, to avoid any cumulative impact on breeding bird activity.

Due to the extent of available habitat within the SPA that would remain undisturbed during construction and decommissioning, availability of foraging and breeding habitat is not considered to be a limiting factor. Given the temporary nature of the construction/decommissioning works, the magnitude of change to the Lewis Peatlands SPA dunlin population is considered to be very low, and there would be no adverse effect on the SPA dunlin population.

Assessment against Conservation Objectives

European Site Conservation Objectives for Lewis Peatlands SPA are:

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

To ensure for the qualifying species that the following are maintained in the long term:

- *Population of the species as a viable component of the site;*
- *Distribution of the species within site;*
- *Distribution and extent of habitats supporting the species;*
- *Structure, function and supporting processes of habitats supporting the species;*
- *No significant disturbance of the species.*

For dunlin, the only potential LSEs were associated with disturbance in relation to construction and decommissioning. These effects had potential to relate to three conservation objectives of the SPA: "population of the species as a viable component of the site", "no significant disturbance of the species" and "distribution of the species within site". The assessment concluded that any potential effects would have a very low potential magnitude for change and with the adoption of the mitigation measures outlined in **EIA**

Chapter 8 Table 8.10 and the negligible value of the development site for dunlin there would be no significant adverse effects on these conservation objectives in relation to dunlin.

Conclusion on Integrity

No adverse effects predicted on Lewis Peatlands SPA dunlin and the Proposed Development will therefore not adversely affect the integrity of the Lewis Peatlands SPA.

3.4 Lewis Peatlands Special Protection Area – Golden Eagle

Baseline Conditions

Desk Study

There are two pairs within the SPA that hold breeding territories within 6km of the Development Site. These are known as Pair EA1 and Pair EA2 (see **AI Appendix 8C** for further information). Pair A is known to have made breeding attempts in three distinct locations; two of these locations have been used historically, whilst the third was the site of a new nest built in 2015, approximately 1.2km from the nearest turbine. A single chick was fledged successfully from this new nest location in 2016, whilst in 2017 the pair reverted to one of the original areas. There was no evidence of breeding from this pair in 2018, whilst in 2019, a single chick was reared at one of the historic locations, approximately 1.7km from the nearest turbine. This chick had a satellite tag fitted as part of a wider study across Lewis and Harris looking at juvenile dispersal (Lewis and Harris Raptor Study Group LHRSG).

Pair B is known to have made nesting attempts in two locations, although they are thought to have failed to produce fledged young for a considerable period (over 20 years). This pair has shown signs of breeding regularly, although reaching the egg laying phase has been sporadic. One of these nesting locations is historic and has not been built up in many years (over 10 years); nothing now remains of the nest previously constructed at this location. The nearest nest location is approximately 3.9km from the closest proposed turbine and access track.

During the 2009-2010 flight activity surveys for the 2012 Stornoway Wind Farm application, golden eagle were recorded throughout the Development Site but with a concentration in the north-west part of the survey area. Of the 187 flights, at least 59 were of sub-adult, 42 by adult birds with the remainder not being aged due to visibility issues (e.g. identified in silhouette). The total number of individuals using the Development Site was unknown, but from plumage characteristics and observing more than one bird simultaneously it was thought that at least six individuals were recorded (comprising two adults, three sub-adults and one juvenile).

Surveys undertaken in 2015-2016 indicated that the levels of activity were considerably less than that recorded from the same location in 2009 – 2010, with the main areas of activity being north of the Pentland Road Wind Farm, with the majority of the 13 recorded flights noted approximately 2km from the Development Site.

Predicting Aquila Territories (PAT) Modelling was undertaken and presented in **EIA Appendix 8D (annex B)**. The PAT model uses the estimated location of home range centres of territory-holding eagles, terrain features and habitat information to predict areas likely to be important for territorial eagles. It can be used to assess the likely impact of developments, including windfarms, hydro-electric schemes and new forestry on territory-holding eagles.

Field Surveys

Field surveys were carried out from October 2017 – September 2019, and full details are provided in **EIA Appendix 8B, 8C, and 8D** and **AI Appendix 8A, 8B and 8C**.

Breeding Raptor Surveys

Please refer to the Desk Study for a summary of breeding activity in 2018 and 2019.

Flight Activity Surveys 2017-18

Golden eagle flight activity from VP surveys shows that there were two main areas of activity. One of these fell outside of the survey area, whilst the second fell to the east and south of Pentland Road Wind Farm within the survey area. There were also occasional flights across the Development Site itself. **Table 3.3** presents a summary of all flight activity recorded during VP and focal watch surveys between October 2017 – September 2019.

Table 3.3 Golden Eagle: VP Flight Activity Data

Season	Total Number Flights	Total Seconds Below PCH	Total Seconds at PCH	Total Seconds Above PCH
October 2017 – March 2018	29	204	4,174	45
April 2018 – September 2018	57	1,410	6,270	1,435
October 2018 – March 2019	57	1,745	13,585	135
April 2019 – September 2019	38	690	7,965	1,680

Predicted Effects and their Significance

Operation: Potential Collision with Operational Turbines

PAT modelling indicates that there would be 1.8% (Pair A) and 5.7% (Pair B) overlap between available foraging habitat and the ZOI for the two SPA pairs respectively (**EIA Appendix 8D**). CRM predicted a mean theoretical 0.235 collisions per breeding season and combined with the predicted mean collision risk from the non-breeding season (0.073), resulted in a combined theoretical collision risk of 0.308 fatalities per year (**AI Appendix 8E**). This is equivalent to 3.08% of the SPA population. However, population modelling of the Western Isles population predicts that the Western Isles population would be 129 pairs after 25 years, whilst with additional cumulative mortality from all wind farm developments in the Western Isles, it is predicted to reach 104 pairs (**AI Appendix 8F**), representing an increase of nine pairs from the 2015 population estimate. The Western Isles golden eagle population has been found to be genetically isolated from the mainland population, and as the cumulative collisions from all wind farm developments on the Western Isles will not lead to a decline in the golden eagle population, this also indicates that the North Harris and Lewis Peatlands SPA populations would not be at risk.

Furthermore, evidence suggests that golden eagle actively avoid wind turbines (Walker et al, 2005) and so it is probable that actual collision risks will be lower than predicted here. Hotker et al (2006) found only 1 reported casualty of a golden eagle due to a collision with a wind turbine in Spain.

It is therefore considered that any magnitude of potential effect would be low and that there will not be any adverse effect on the Lewis Peatlands SPA golden eagle.

Assessment against Conservation Objectives

European Site Conservation Objectives for Lewis Peatlands SPA are:

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

To ensure for the qualifying species that the following are maintained in the long term:

- *Population of the species as a viable component of the site;*
- *Distribution of the species within site;*
- *Distribution and extent of habitats supporting the species;*
- *Structure, function and supporting processes of habitats supporting the species;*
- *No significant disturbance of the species.*

For golden eagle, the only potential LSEs were associated with potential collision with operational turbines which could directly relate to two conservation objectives of the SPA: "*population of the species as a viable component of the site*" and "*distribution of the species within site*". The assessment concluded that any potential effects would have a low potential magnitude for change and correspondingly no significant adverse effects on these conservation objectives in relation to golden eagle.

Conclusion on Integrity

No significant adverse effects are predicted on the conservation objectives of the Lewis Peatlands SPA golden eagle and the Proposed Development will therefore not adversely affect the integrity of the Lewis Peatlands SPA.

3.5 Lewis Peatlands Special Protection Area – Golden Plover

Baseline Conditions

The Lewis Peatlands SPA citation (December 2000) is for 1,800 pairs, approximately 4.8% of the Scottish breeding population (Wilson *et al* 2015).

Based on the data provided ten territories fell within the MBS survey area in 2018 (**EIA Appendix 8C**), and nine in 2019 (**AI Appendix 8B**). Territories were distributed around the edges of the Proposed Development Site boundary, with a concentration on the western, southern and northern edges of the Site, overlapping with the Lewis Peatlands SPA site boundary.

Flight activity from golden plover during the breeding season (March – July) was intermittent, with just 11 flights recorded in 2018 and 26 in 2019 within the CRZ and did not follow any discernible pattern in distribution (**AI Appendix 8E**).

Predicted Effects and their Significance

Construction and Decommissioning Disturbance.

Although the Proposed Development would result in some disturbance during construction, given the small number of territories involved (assuming all territories are associated with the SPA population, 10 territories equates to 0.5% of the SPA population), the survey area is considered to be of low importance for the SPA population during the breeding season. Due to the extent of available habitat within the SPA that would

remain undisturbed during construction and decommissioning, availability of foraging and breeding habitat is not considered to be a limiting factor.

Furthermore, construction and de-commissioning related disturbance/displacement effects to golden plover that may be connected to the SPA would be minimised via the mitigation measures outlined in **EIA Chapter 8 Table 8.10** (and summarised below):

- As part of an overarching CEMP, a BPP would be developed in consultation with the relevant consultees in advance of construction works commencing. MSs would be developed to detail the mitigation approach for all bird receptors. These would cover the site and receptor specific requirements of the embedded mitigation as outlined in the remainder of this table;
- Site supervision would be provided by a suitably experienced ECoW, who would be responsible for ensuring the successful implementation of embedded measures, including pollution prevention, monitoring of buffers around construction areas and reference to areas of high ecological sensitivity, and adherence to current construction best practice;
- Pre-construction verification check surveys would be undertaken for all protected bird species where potential significant effects or legal breaches could occur otherwise. Mitigation measures would be regularly reviewed throughout the phase to ensure that they continue to be applicable and fit for purpose, and MSs updated as required;
- Maintain species specific buffers detailed in the BPP from nests during the breeding or roosting season until young fledge or method statements would be developed outlining the methods to allow works to continue within buffer areas where appropriate. For example, in some cases, there may be a requirement to install suitable screening around working areas to allow it to continue within a buffer area. An ornithologist may be required to monitor the nesting birds during the working phase in certain areas and halt any significantly disturbing activities;
- An emergency procedure would be implemented by site workers if a nest of a breeding bird is encountered. All works within 100m would cease as soon as it is safe to do so, and the ECoW would inspect the site and define appropriate measures (if required);
- When construction activities are taking place at more than one location at any one time, this would be subject to ECoW approval, to avoid any cumulative impact on breeding bird activity.

Given the temporary nature of the construction/decommissioning works, the magnitude of change to the Lewis Peatlands SPA golden plover population is considered to be low, and there would be no significant adverse effects.

Assessment against Conservation Objectives

European Site Conservation Objectives for Lewis Peatlands SPA are:

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

To ensure for the qualifying species that the following are maintained in the long term:

- *Population of the species as a viable component of the site;*
- *Distribution of the species within site;*
- *Distribution and extent of habitats supporting the species;*
- *Structure, function and supporting processes of habitats supporting the species;*
- *No significant disturbance of the species.*

For golden plover, the only potential LSEs were associated with disturbance in relation to construction and decommissioning. These effects had potential to relate to three conservation objectives of the SPA: “population of the species as a viable component of the site”, “no significant disturbance of the species” and “distribution of the species within site”. The assessment concluded that any potential effects would have a very low potential magnitude for change and with the adoption of the mitigation measures outlined in **EIA Chapter 8 Table 8.10** and the low value of the development site for golden plover there would be no significant adverse effects on these conservation objectives in relation to golden plover.

Conclusion on Integrity

No significant adverse effects were predicted on Lewis Peatlands SPA golden plover and the Proposed Development would therefore not adversely affect the integrity of the Lewis Peatlands SPA.

3.6 Lewis Peatlands Special Protection Area – Greenshank

Baseline Conditions

Desk Study

The Scottish population of greenshank is estimated to be 1,297 breeding pairs, and the Lewis Peatlands SPA supports 140 pairs, c 11% of the Scottish breeding population (Wilson *et al* 2015). The SPA population was considered as favourable maintained in the most recent site condition assessment (2015).

Five greenshank territories were noted within the survey area in 2009, three of which were associated with the Lewis Peatlands SPA. The other two territories were located in the south-east corner of the survey area. All territory centres recorded were greater than 500m from a turbine location. Of the 42 greenshank flights noted the majority were outside of the turbine envelope; no flights at collision risk height were noted within 250m of any of the proposed turbine locations.

A single pair of greenshank were recorded in 2016 within the potential north west extension area (see **EIA Appendix 8A**, Section 2.2).

Field Surveys

Field surveys were carried out from April to July in 2018 and 2019, and full details are provided in **EIA Appendix 8C and 8D** and **AI Appendix 8B and 8C**.

Breeding Wader Surveys 2018

Based on the method of Hancock (1997) for deriving population estimates from survey data, an estimated maximum of six pairs were present within the moorland bird survey (MBS) area (**EIA Appendix 8D** and **AI Appendix 8C**) during the 2018 and 2019 breeding seasons (March – July 2018 as specified by SNH (2017)). Most activity was distributed within the 500m buffer outside of the Development Site boundary, overlapping the SPA boundary.

Flight Activity Surveys 2018

Greenshank were recorded intermittently across the survey area during breeding season VP surveys, with flights did not follow any real pattern in distribution (**EIA Appendix 8C** and **AI Appendix 8D**).

Table 3.4 presents a summary of all flight activity recorded during VP and focal watch surveys between April – September 2018 and 2019.

Table 3.4 Greenshank: VP Flight Activity Data

Season	Total Number Flights	Total Seconds Below PCH	Total Seconds at PCH	Total Seconds Above PCH
2018	16	345	555	-
2019	5	120	150	-

Predicted Effects and their Significance

Construction and Decommissioning Disturbance

Four (2018) and six pairs (2019) were recorded within the Zol, equivalent to up to 4.2% of the SPA population.

Construction and de-commissioning related disturbance/displacement effects to greenshank that may be connected to the SPA would be minimised via adoption of the mitigation measures outlined in **EIA Chapter 8 Table 8.10** (and summarised below):

- As part of an overarching CEMP, a BPP would be developed in consultation with the relevant consultees in advance of construction works commencing. MSs would be developed to detail the mitigation approach for all bird receptors. These would cover the site and receptor specific requirements of the embedded mitigation as outlined in the remainder of this table;
- Site supervision would be provided by a suitably experienced ECoW, who would be responsible for ensuring the successful implementation of embedded measures, including pollution prevention, monitoring of buffers around construction areas and reference to areas of high ecological sensitivity, and adherence to current construction best practice;
- Pre-construction verification check surveys would be undertaken for all protected bird species where potential significant effects or legal breaches could occur otherwise. Mitigation measures would be regularly reviewed throughout the phase to ensure that they continue to be applicable and fit for purpose, and MSs updated as required;
- Maintain species specific buffers detailed in the BPP from nests during the breeding or roosting season until young fledge or method statements would be developed outlining the methods to allow works to continue within buffer areas where appropriate. For example, in some cases, there may be a requirement to install suitable screening around working areas to allow it to continue within a buffer area. An ornithologist may be required to monitor the nesting birds during the working phase in certain areas and halt any significantly disturbing activities;
- An emergency procedure would be implemented by site workers if a nest of a breeding bird is encountered. All works within 100m would cease as soon as it is safe to do so, and the ECoW would inspect the site and define appropriate measures (if required);
- When construction activities are taking place at more than one location at any one time, this would be subject to ECoW approval, to avoid any cumulative impact on breeding bird activity.

Due to the extent of available habitat within the SPA that would remain undisturbed during construction and decommissioning, availability of foraging and breeding habitat is not considered to be a limiting factor. Given the temporary nature of the construction/decommissioning works, the magnitude of change to the Lewis Peatlands SPA greenshank population is considered to be very low, and there would be no significant adverse effects.

Assessment against Conservation Objectives

European Site Conservation Objectives for Lewis Peatlands SPA are:

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

To ensure for the qualifying species that the following are maintained in the long term:

- *Population of the species as a viable component of the site;*
- *Distribution of the species within site;*
- *Distribution and extent of habitats supporting the species;*
- *Structure, function and supporting processes of habitats supporting the species;*
- *No significant disturbance of the species.*

For greenshank, the only potential LSEs were associated with disturbance in relation to construction and decommissioning. These effects had potential to relate to three conservation objectives of the SPA: "population of the species as a viable component of the site", "no significant disturbance of the species" and "distribution of the species within site". The assessment concluded that any potential effects would have a very low potential magnitude for change and with the adoption of the mitigation measures outlined in **EIA Chapter 8 Table 8.10** there would be no significant adverse effects on these conservation objectives. Therefore no adverse effects are expected on any conservation objectives of the Lewis Peatlands SPA greenshank.

Conclusion on Integrity

No adverse effects predicted on the conservation objectives for Lewis Peatlands SPA greenshank and the Proposed Development will therefore not adversely affect the integrity of the Lewis Peatlands SPA.

3.7 Lewis Peatlands Special Protection Area – Red-throated Diver

Baseline Conditions

Desk Study

Scotland supports approximately 1,268 breeding pairs of red-throated diver and the Lewis Peatlands SPA citation is for 80 pairs, c 6.3% of the Scottish breeding population (Wilson et al 2015). The population was considered as unfavourable declining in the most recent site condition assessment (2004).

Red-throated diver breed widely across the Isle of Lewis, with a number of known nest locations/breeding areas (recorded at various scales) being located within and around the Development Site. The species is known to change between favoured breeding locations between years. There are seven known historical breeding locations (based on kilometre squares) that are either within the Consented Development site or are due west of it (within the SPA). In years for which data are available no more than three of these sites were occupied simultaneously.

Breeding surveys for the Stornoway Wind Farm in 2009 recorded divers or diver signs (nest scrapes) at seven locations, one of which was located within the Development Site boundary with a further five located within the SPA to the north and west. Breeding was confirmed at three of these locations (all within the SPA, two locations to the north of the site and one to the south west). None of these sites supported a successful breeding attempt.

In 2016, divers or diver signs were recorded at four locations, all within the SPA, with a juvenile recorded at one site. Activity was recorded at two of the same locations in 2009 and 2016.

Red-throated diver flight activity recorded in 2009 during VP watches and focal watches overlooking active breeding sites showed that the greatest level of flight activity was focussed on the central and southern areas of the Consented Development, with further areas of high activity to the north east. These areas have a high density of lochs and lochans, with birds showing signs of prospecting for nesting locations, socialising and undertaking foraging trips to the coast. During surveys in 2016, flight activity was focussed on the single confirmed breeding location.

Field Surveys

Field surveys were carried out from April – September 2018 (see **EIA Appendix 8D**) and April – September 2019 (**AI Appendix 8C**).

Breeding Diver Surveys

Table 3.5 summarises the results of the breeding diver surveys (**EIA Appendix 8D** and **AI Appendix 8C**). A total of nine territories were recorded across the two years survey. Two territories fell within the Zol of the Proposed Development, one of which also lies within the SPA boundary.

Table 3.5 Red-throated Diver: Breeding Records

Territory*	Distance to Lewis Peatlands SPA (m)	Distance to Nearest Proposed Track (m)	Distance to Nearest Proposed Turbine (m)	Season	Outcome
RH1	Within SPA	935	942	2018	Fledged 1 chick
RH2	Within SPA	980	988	2019	Fledged 1 chick
RH3	Within SPA	270	277	2018	Fledged 2 chicks
				2019	Fledged 1 chick
RH4	Within SPA	1,370	1,378	2019	Late breeding attempt failed
RH5	Within SPA	815	821	2018	Fledged 1 chick
				2019	Fledged 2 chicks
RH6	1,565	231	222	2018	Fledged 2 chicks
				2019	Failed - predated
RH7	Within SPA	3,307	3,307	2018	Fledged 1 chick
				2019	Fledged 1 chick
RH8	2,434	1,787	1,961	2019	Failed
RH9	5,447	2,438	4,032	2018	Outcome unknown

* **SEI Appendix 8C** provides locations for these territory codes

Flight Activity Surveys

Red-throated diver flight activity recorded from VP and focal watch surveys shows that the majority of flights occurred around and between breeding and non-breeding lochs as well as movements of birds off-site towards coastal feeding areas (**EIA Appendix 8D, AI Appendix 8C**).

Table 3.6 presents a summary of all flight activity recorded during VP and focal watch surveys between April – September 2018 and 2019.

Table 3.6 Red-throated Diver: VP and Focal Watch Flight Activity Data

	Season	Total Number Flights	Total Seconds Below PCH	Total Seconds at PCH	Total Seconds Above PCH
VP	2018	123	2,145	14,310	15
	2019	101	2,145	19,725	735
Focal watch	2018	168	3,665	10,437	3,945
	2019	192	3,620	17,865	330

Predicted Effects and their Significance

Construction and De-commissioning Disturbance

One pair of SPA red-throated diver falls within the Zol, being equivalent to 1.2% of the SPA population. Construction and decommissioning related disturbance/displacement effects on red-throated diver within the Zol would be temporary and sporadic.

Furthermore, construction and de-commissioning related disturbance/displacement effects would be minimised via the mitigation measures outlined in **EIA Chapter 8 Table 8.10** (and summarised below):

- As part of an overarching CEMP, a BPP would be developed in consultation with the relevant consultees in advance of construction works commencing. MSs would be developed to detail the mitigation approach for all bird receptors. These would cover the site and receptor specific requirements of the embedded mitigation as outlined in the remainder of this table;
- Site supervision would be provided by a suitably experienced ECoW, who would be responsible for ensuring the successful implementation of embedded measures, including pollution prevention, monitoring of buffers around construction areas and reference to areas of high ecological sensitivity, and adherence to current construction best practice;
- Pre-construction verification check surveys would be undertaken for all protected bird species where potential significant effects or legal breaches could occur otherwise. Mitigation measures would be regularly reviewed throughout the phase to ensure that they continue to be applicable and fit for purpose, and MSs updated as required;
- Maintain species specific buffers detailed in the BPP from nests during the breeding or roosting season until young fledge or method statements would be developed outlining the methods to allow works to continue within buffer areas where appropriate. For example, in some cases, there may be a requirement to install suitable screening around working areas to allow it to continue within a buffer area. An ornithologist may be required to monitor the nesting birds during the working phase in certain areas and halt any significantly disturbing activities;



- An emergency procedure would be implemented by site workers if a nest of a breeding bird is encountered. All works within 100m would cease as soon as it is safe to do so, and the ECoW would inspect the site and define appropriate measures (if required);
- When construction activities are taking place at more than one location at any one time, this would be subject to ECoW approval, to avoid any cumulative impact on breeding bird activity.

Due to the extent of available habitat within the SPA that would remain undisturbed during construction and decommissioning, the availability of foraging and breeding habitat is not considered to be a limiting factor. Given the temporary nature of the construction works and the series of embedded mitigation measures, the magnitude of change to the Lewis Peatlands SPA red-throated diver population is considered to be low.

Operation: Barrier to Flights Leading to Displacement

The Proposed Development has the potential to act as a barrier to red-throated divers undertaking foraging flights between breeding lochs within the SPA and coastal feeding areas. Flight activity surveys in 2018 highlighted that birds from the two breeding locations within the SPA to the west of the Development Site were taking a direct route to coastal feeding areas, and crossed the proposed turbine envelope.

The wind turbines within the Development Site are more widely spaced than in normal wind farm design and there are two potential corridors (one situated north of the Beinn Grideag Wind Farm, running east to Loch a Leadharain, and a second to the south heading south east towards Loch Briodag) that birds could utilise to fly through the Proposed Development.

Evidence from offshore wind farms show that divers strongly avoid complex turbine arrays, and if this same behaviour applies here, birds will adjust their flight paths and/or flight height accordingly, potentially adding to the energy expenditure required. Calculations of energy expenditure indicate that the increased energy cost of avoiding a wind farm during flight is typically negligible: for example, increased energy costs of 0.2 – 0.7% have been calculated for migrating eider ducks passing offshore wind farms in Denmark (Petersen *et al.* 2006) and Sweden (Pettersson 2005). Low costs have been calculated for other migrating seabirds as well (Desholm & Kahlert 2005, Christensen *et al.* 2006, Masden *et al.* 2012), including red-throated divers. However, the cumulative energy cost from avoidance over multiple flights may have significant impacts on individual fitness (Masden *et al.* 2010). Given that breeding red-throated divers fly from their inland breeding lochs to foraging grounds at sea an average of 11 times per day to feed a single chick during the pre-fledging period (Reimchen and Douglas 1984), wind farms located between breeding and foraging sites may significantly increase the energy cost of reproduction for breeding red-throated divers (Masden *et al.* 2010, Schuster *et al.* 2015).

However, a range of evidence shows that barrier effects do not have a significant negative effect. Divers may often have circuitous commuting routes in order to reach feeding sites, without any reduction in productivity. Commuting distances up to 13km were recorded during surveys in 2009 (Stornoway Wind Farm ES 2012). Gomersal (1987) found no significant effects on distance between the nest and the sea on breeding success in Shetland. Given the distribution of confirmed breeding lochs and the flights paths present at Stornoway, the additional flight length required to fly around the Proposed Development is limited.

Should barrier effects stop red-throated divers utilising the flight corridors that have been incorporated into the design of the Proposed Development, any additional energy expenditure required to fly around the Proposed Development is not considered significant, and, the magnitude of change in respect of potential barrier effects on the SPA population of red-throated diver would be no more than low. On this basis, effects would be not significant and there would be no adverse significant effect on Lewis Peatlands SPA red-throated diver.

Potential Collision with Operational Turbines

The flight activity recorded from focal watch surveys (**Table 3.6**) was subject to CRM and this resulted in a theoretical annual collision risk of 0.46 (**AI Appendix 8F**), equating to 0.28% of the SPA population.

A simple population model was created, which indicates that this level of additional mortality would still allow the Lewis Peatlands SPA population to increase over the lifetime of the wind farm (**AI Appendix 8F**) and therefore the magnitude of any potential effects would be low and not significant.

Assessment against Conservation Objectives

European Site Conservation Objectives for Lewis Peatlands SPA are:

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

To ensure for the qualifying species that the following are maintained in the long term:

- *Population of the species as a viable component of the site;*
- *Distribution of the species within site;*
- *Distribution and extent of habitats supporting the species;*
- *Structure, function and supporting processes of habitats supporting the species;*
- *No significant disturbance of the species.*

Only potential LSEs associated with construction and de-commissioning disturbance and operational barrier to flights leading to displacement and collision risk during the operational phase were scoped in for assessment, these effects had potential to relate to three conservation objectives of the SPA: "population of the species as a viable component of the site" and "distribution of the species within site" and "no significant disturbance of the species". Any potential effects associated with flight barrier/displacement and collision risk were assessed as having a low potential for change and with the adoption of the mitigation measures outlined in **EIA Chapter 8 Table 8.10** in relation to disturbance minimisation resulting in very low magnitude of change, there were no resultant significant adverse effects on these relevant conservation objectives for red-throated diver.

Conclusion on Integrity

No adverse effects predicted on conservation objectives of the Lewis Peatlands SPA red-throated diver and the Proposed Development will therefore not adversely affect the integrity of the Lewis Peatlands SPA.

3.8 Lewis Peatlands Ramsar – Black-throated Diver

The assessment for the Ramsar black-throated diver population is considered to be consistent with that carried out for the SPA population, given that the site boundaries are the same.

The effects would be not significant, there is no adverse significant effect on the Lewis Peatlands Ramsar site's integrity.

3.9 Lewis Peatlands Ramsar – Dunlin

The assessment for the Ramsar dunlin population is considered to be consistent with that carried out for the SPA population, given that the site boundaries are the same.

The effects would be not significant, there is no adverse significant effect on the Lewis Peatlands Ramsar site's integrity.

3.10 Lewis Peatlands Ramsar – Greenshank

The assessment for the Ramsar greenshank population is considered to be consistent with that carried out for the SPA population, given that the site boundaries are the same.

The effects would be not significant, there is no adverse significant effect on the Lewis Peatlands Ramsar site's integrity.

3.11 Lewis Peatlands Ramsar – Golden Plover

The assessment for the Ramsar golden plover population is considered to be consistent with that carried out for the SPA population, given that the site boundaries are the same.

The effects would be not significant, there is no adverse significant effect on the Lewis Peatlands Ramsar site's integrity.

3.12 Lewis Peatlands Ramsar – Red-throated Diver

The assessment for the Ramsar red-throated diver population is considered to be consistent with that carried out for the SPA population, given that the site boundaries are the same.

The effects would be not significant, there is no adverse significant effect on the Lewis Peatlands Ramsar site's integrity.

3.13 Lewis Peatlands SAC – Otter

Baseline Conditions

The Lewis Peatlands SAC is located approximately 900m from the western edge of the Development Site at its closest point. The SAC is designated for the following qualifying features: acid peat-stained lakes and ponds; blanket bog; clear water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels; wet heathland with cross-leaved heath; and otter populations. The only featured considered for potential LSE is otter.

Desk Based Review

A review of the most recent condition monitoring assessment of Lewis Peatlands SAC otter population was undertaken (Findlay *et al.*, 2015). The recommended condition assessment for the site was assessed as favourable. Evidence of otter was found at 89% of sites surveyed with a predicted occupancy of 90%. Changes identified since 2004: there was 100% occupancy in 2004 so there has been a reduction in positive sites, but no loss of positive 10km squares. The number of positive mink sites has reduced from 13 sites in 2004 to just two in 2012, as a result of the Hebridean Mink Project eradication programme.

A review of the otter survey report prepared by Waterside Ecology in 2010/11 for the 2012 Stornoway Wind Farm 2012 found that resting sites and signs were present along the majority of watercourses in all four catchments with a high density of signs found along the River Creed in the centre of the survey the area, and along the Allt na Craoibhe/Abhainn Leireabhaigh, which forms its southern boundary. Few signs were identified away from the watercourses and immediate riparian zone, the main exception being the otter

paths linking catchments and sub-catchments. Paths crossing moorland often did so where watercourses or lochs came close to each other. Evidence gathered during these surveys indicated that otters were present on the Development Site throughout the year, and not just at the time of survey.

Field Surveys

Otter surveys 2018/19 (following the same methods and Study Area as previous) were undertaken between September 2018 and January 2019 and identified relatively widespread distribution of otter activity along waterbodies within the Development Site, in the form of spraints, paths, prints and feeding signs; and resting sites (comprising holts and couches).

The locations of all recorded field signs are provided in **AI Appendix 9C** (Table 9C-A1), including grid references and detailed descriptions. Target Note (TN) reference numbers were applied to each resting site record, as detailed in Table 9C-A2. Figures 9C.2a Otter field signs and 9C.2b Otter resting places present the locations of otter field signs and resting features identified during the survey.

Evidence of otter activity was recorded along a number of watercourses and waterbodies within the Study Area, including Loch Garbhaig, Allt Loch Garbhaig, Allt Hulabie, Loch a' Leadharain, Loch a Chlachain and Abhainn Ghrioda, Loch Speireag and Fedan Loch Lochan, Struth Thoma Dhuibhe, and Loch Briodag. Field signs observed include spraints, paths, prints and feeding remains. The greatest density of otter field signs was recorded along Abhainn Ghrioda and associated tributaries, which is also the largest catchment within the Development Site. Few signs were recorded away from the watercourses and immediate riparian zone.

During the survey, seventeen resting sites, including seven holts and ten couches were identified, with an additional fifteen potential resting sites also recorded within the Study Area. Several well-established paths that serve as important commuting and foraging routes for otter were also identified.

When comparing results of the 2018/19 otter survey to those conducted in 2010/11, levels of otter activity across the Proposed Development site appear to be relatively similar. Several of the resting sites recorded in 2010/11 displayed signs of continued use during the 2018/19 surveys, indicating that these features are relatively permanent and serve as important otter habitat.

Discussion of Potential Impacts

Construction and Decommissioning Disturbance and Displacement

The SAC is located upstream and approximately 900m from the Proposed Development. Given the distance from the Proposed Development, no otter resting sites within the SAC would be affected. However, individual otters supporting the SAC population will range over catchments connecting the Proposed Development and the SAC.

During surveys in 2018/19, a number of well used and apparently long-established otter travel routes were identified on the Development Site and the location of these and resting sites were taken into account when designing the Proposed Development, to avoid disturbance to these features wherever possible. This included:

- The number of watercourse crossings (two bridge crossings and six culverted crossings) was kept to a minimum to reduce the risk of pollution to watercourses;
- All turbines and infrastructure have been located a minimum 50m (including construction buffer of 25m for turbines and 10m for access tracks) from watercourses; and
- All construction works areas have been located a minimum 50m from resting sites with the exception of two resting sites (see Section 9.10.13).

No high-status resting sites were recorded and there was no evidence of breeding identified at any of the resting sites, which were categorised as being of moderate or low sensitivity (**AI Appendix 9C**).

Construction related disturbance/displacement effects to otters within the Development Site would be temporary and sporadic and in light of the mitigation measures outlined in **AI Chapter 9 Table 9.9** 'Environmental Measures Embedded into the Development Proposals' would be low (and operational effects would be neutral).

Due to the extent of available watercourses/waterbodies and abundant resting sites within the Study Area that will remain undisturbed during construction and decommissioning, availability of foraging shelter habitat resource is not considered limiting factor during all phases of the Proposed Development. Given the temporary nature of the construction works, the magnitude of change to the Lewis Peatlands SAC otter population is considered to be low.

Construction Temporary Severance of Otter Habitat and Commuting Routes

There is also potential for construction activities to cause fragmentation of otter habitat and prevent the free movement of otters across their territories.

Access tracks have avoided crossing watercourses where possible, but due to the number of watercourses on the Development Site, and limitations regarding access locations, it is not possible for the development to take place without some being crossed. The Proposed Development includes two bridge crossings and six culverted crossings. When construction activities are scheduled to take place at more than one watercourse at any one time, this would be subject to ECoW approval, to avoid any cumulative impact on otter activity.

Whilst otter is present across the Development Site, otter territories that are likely to cover many kilometres of watercourses/water bodies, potentially within four catchments (Abhainn Lacasdail (River Laxdale), Abhainn a Ghlinn Mhoir (Glen River), Abhainn Ghrioda (River Creed), and Abhainn Leireabhaigh (River Tope)) would be largely unaffected. Furthermore, the Proposed Development is likely to represent only a very small proportion of an otter's foraging territory, with alternative routes available including overland routes, and as such, the works would not be expected to result in permanent blockage of existing commuting routes.

On this basis, and in light of the mitigation measures outlined in **AI Chapter 9 Table 9.9** 'Environmental Measures Embedded into the Development Proposals', the temporary loss or barrier effects during the construction of watercourse crossings would result in a low magnitude of change to the SAC otter population.

Construction: Direct Mortality of Individual Otters

Construction and decommissioning phases of the Proposed Development would bring vehicles to a previously undeveloped area, and therefore there is potential for otters to be hit by construction vehicles. In addition, works within the vicinity of these watercourses may cause changes to existing otter activity levels and alter how they use watercourses and terrestrial habitat within the Development Site. This in turn may also result in an increased risk of mortality in road traffic accidents.

With the adoption of the environmental measures detailed in Table 9.9 'Environmental Measures Embedded into the Development Proposals', the risk of direct mortality to individuals during the construction and decommissioning phases would result in a low magnitude of change to the SAC otter population.

Construction: Reduction in Habitat Quality as a Result of Hydrological Connectivity and Pollution Incidents

Whilst the access track and turbine layout were designed wherever possible to avoid sensitive otter features including resting sites and paths, it is also necessary to protect otters' food resource by avoiding pollution to the watercourses from the Proposed Development.

With the adoption of the environmental measures detailed in Table 9.9 'Environmental Measures Embedded into the Development Proposals', degradation of food resource by pollution of habitats used by otter, during

all phases of the Proposed Development is considered to be neutral. The overall magnitude of change to the SAC otter population is also considered neutral and there would be no adverse effect on the site's integrity.

Operation Disturbance and Displacement

Operational effects on otters would be limited to potential occasional disturbance during routine maintenance and monitoring visits during the day to the Proposed Development. Such disturbance is likely to be sporadic, resulting in a 'very low' magnitude of change.

Assessment against Conservation Objectives

European Site Conservation Objectives in relation to otter for Lewis Peatlands SAC are:

To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and

To ensure for the qualifying species that the following are maintained in the long term:

- *Population of the species a viable component of the site;*
- *Distribution of the species within site;*
- *Distribution and extent of habitats supporting the species;*
- *Structure, function and supporting processes of habitats supporting the species;*
- *No significant disturbance of the species.*

For otter, only potential LSEs associated with construction, operational and de-commissioning disturbance/displacement and direct mortality of individual otters, and during construction only temporary severance of otter habitat and commuting routes and reduction in habitat quality as a result of hydrological connectivity and pollution incidents. These effects had potential to relate to all of the conservation objectives of the SAC. However all potential effects were assessed as having a neutral, very low or low magnitude of change and with the adoption of the mitigation measures outlined in **AI Chapter 9 Table 9.9** in relation to embedded mitigation measures, there were no resultant significant adverse effects on the conservation objectives for otter.

Conclusion on Integrity

No adverse effects predicted on any conservation objectives for Lewis Peatlands SAC otter and the Proposed Development will therefore not adversely affect the integrity of the Lewis Peatlands SAC.



4. In-Combination Assessment

Effects on European sites may result from a proposed development alone and/or in combination with other plans or projects; these potential cumulative effects are described as 'in-combination effects' in the Habitats Regulations.

The identification of plans and projects to include within the in-combination assessment follows the same methodology as that for the identification of European sites relevant to a project. Key to the inclusion of other plans and projects within the assessment are the spatial and temporal overlaps that may occur due to the scale of potential changes (e.g. overlaps in the zones of disturbance caused by simultaneous construction activity) or the areas over which potential receptors may travel (e.g. a bird may pass through several areas where development is proposed when moving between roosting and feeding grounds).

Within the search area, the types of projects included within the assessment of in-combination effects are:

- Existing completed projects;
- Approved but uncompleted projects;
- Ongoing activities;
- Plans or projects for which an application has been made and which are under consideration by the consenting authorities; and
- Plans and projects which are reasonably foreseeable, i.e. those in screening but for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.

Following the identification of plans and projects within the search areas, an initial screening is then undertaken to filter out minor proposals (e.g. extensions to existing dwellings, minor street works, changes of use etc.) and those with no potential to overlap with a project due to differing timescales. Adverse effects on a European Site's integrity may not occur when considering the Proposed Development in isolation, but in combination with other developments, cumulative effects may be significant. The context in which cumulative effects are considered depends upon the ecology of the species or habitat in question.

Specific guidance has also been provided for assessment of cumulative impacts of onshore wind farms on bird populations (SNH 2018). Projects to be included in such an assessment must include existing projects as well as those consented but not yet built.

In order to undertake a cumulative impact assessment, it is necessary to define:

- The features affected by the Proposed Development that may be subject to significant cumulative effects in combination with other projects; and
- The relevant projects for which cumulative effects must be considered.

All site qualifying features for Lewis Peatlands SPA/SAC/Ramsar were scoped out of the in-combination assessment due to their smaller limited range/ZoL and the corresponding lack of any potential for adverse in combination effects to occur with the exception of Lewis Peatlands SPA/Ramsar red-throated diver. Due to the widespread breeding population of red-throated diver potentially connected with the SPA/Ramsar, (80 pairs and a potential similar number of non-breeders spread over the SPA/Ramsar) and the potential for some of these birds to be at risk of collision with turbines from other wind farm developments, the only feature that had potential for significant cumulative effects in combination with other projects was collision risk associated with Lewis Peatlands SPA/Ramsar red-throated diver.

In respect of collision risk, the theoretical collision rates over the operational lifetime of the wind farms on the Western Isles that are operational and consented but not yet built are presented in for the Lewis Peatlands SPA/Ramsar red-throated diver (**Table 4.1**).

Table 4.1 Cumulative Assessment: Lewis Peatlands SPA/Ramsar Red Throated Diver Annual Mortality

Wind farm Site	Number of turbines	Status	Distance from Proposed Development (km)	Predicted annual mortality
Stornoway	35	Proposed	0.0	0.46
Beinn Greidaig	3	Operational	0.4	0.09
Pentland Road	6	Operational	0.7	0.00
Arnish	3	Operational	1.9	0.00
Creed	1	Operational	2.0	0.00
Bridge cottages	1	Operational	3.1	0.00
Horshader	1	Operational	16.1	0.00
Muaitheabhal	33	Consented	16.6	0.00
Druim Leathann	14	Consented	16.6	0.00
Baile an Truseil	3	Operational	16.8	0.00
North Tolsta	1	Operational	17.0	0.00
Muaitheabhal East and South Extensions	12	Consented	17.0	0.02
Monan	3	Operational	33.2	0.00
Cumulative annual mortality				0.57

The cumulative number of theoretical annual collisions for red throated divers is 0.57 individuals. The total was applied to a simple deterministic population model over a 25 year period and this level of loss is not great enough to result in the decline of the Lewis Peatlands SPA/Ramsar population alone (**AI Appendix 8F**).

Therefore, the resultant in-combination effects will not have adverse effects on the site integrity of the Lewis Peatlands SPA/Ramsar.

5. HRA Stage 3: Examination of Alternatives

As the conclusions reached in this report are that the Proposed Development, both alone and in combination with other plans or projects, would not have an adverse effect upon the integrity of the designated features of the European sites, the need for further examination of alternative designs, activities and processes is not required.



6. HRA Stage 4: Test for Imperative Reasons of Overriding Public Interest (IROPI)

As it has been determined that the Proposed Development would not have an adverse effect upon the integrity of any of the relevant designated European sites or their qualifying interest features, there is no requirement for testing for IROPI.





7. HRA Conclusions

HRA screening identified four individual European sites within the zone of influence of the Proposed Development that were considered in terms of the potential for LSEs arising as a result of the construction and / or operation of the Proposed Development. These sites were:

- Lewis Peatlands SPA;
- Lewis Peatlands Ramsar;
- Lewis Peatlands SAC;
- Ness and Barvas SPA.

Stage 1 of the HRA, Screening, identified 12 European Site qualifying features where potential LSE could not be ruled out:

- Lewis Peatlands SPA: black throated Diver;
- Lewis Peatlands SPA: dunlin;
- Lewis Peatlands SPA: golden eagle;
- Lewis Peatlands SPA: golden plover;
- Lewis Peatlands SPA: greenshank;
- Lewis Peatlands SPA: red-throated Diver;
- Lewis Peatlands Ramsar: black throated Diver;
- Lewis Peatlands Ramsar: dunlin;
- Lewis Peatlands Ramsar: golden plover;
- Lewis Peatlands Ramsar: greenshank;
- Lewis Peatlands Ramsar: red-throated Diver;
- Lewis Peatlands SAC: otter.

For all screened in sites taken forward to Stage 2 of the HRA, potential LSEs associated with changes to surface hydrology and increased pollution risk leading to harm or degradation to species and habitats were assessed to have no adverse effects on any sites or qualifying features due to the adoption of a series of mitigation measures (**EIA Chapter 8 Table 8.10** and **AI Chapter 9 Table 9.9**).

For changes to surface hydrology the ZoI 250m buffer extended on to the margins of the Lewis Peatlands SPA/Ramsar however there were no significant effects identified away from the Proposed Development off-site (**EIA Chapter 11**). A construction area stand-off of at least 50m has been applied to all watercourses and water bodies (except for watercourse crossings). All watercourse crossings would be designed in accordance with the SEPA Good Practice Guide for the Construction of River Crossings (2010) and, where culverts are required, have been designed in accordance with the CIRIA Culvert Design and Operation Guide (2010).

A CEMP would include or be accompanied by a WMP, a PPP and a PIRP for construction activities at the Development Site. The WMP would set out the specific details of surface water drainage, management of dewatered groundwater from excavations and watercourse crossings. The PPP would set out specific measures to protect water environment receptors from pollution arising from construction activities and a programme for inspection and monitoring to ensure the effectiveness of these measures. The PIRP would

describe the response plan for pollution incidents, should accidental spillages occur despite the control measures in place.

Therefore with the adoption of the mitigation measures there will be no detectable effects on the SPA, Ramsar or SAC populations for any potential effects associated with changes to surface hydrology and increased pollution risk, and therefore no adverse effect on the integrity of Lewis Peatlands/SPA/Ramsar/SAC.

All other potential LSE identified in screening and taken through to Stage 2 were assessed for each relevant qualifying feature and the corresponding site's conservation objectives.

Furthermore LSEs associated with collision risk were assessed in terms of in-combination effects with other relevant windfarms with the potential to effect Lewis Peatlands SPA red-throated diver.

Following assessment of LSE in Stage 2 of the HRA (**Section 3**), and in-combination effects (**Section 4**), no adverse effects were predicted, both alone and in-combination with other plans or projects, on the site integrity of, or conservation objectives for, any European Site.