

Appendix 8A

Ornithology Desk Based Review



1. Desk Based Review

1.1 Methodology

- 1.1.1 The following desk based assessment was carried out with the aim of identifying potential ornithological constraints to the Proposed Development, following the Chartered Institute of Ecology and Environmental Management (CIEEM) best practice guidelines¹. The exercise was undertaken to obtain existing information relating to relevant ecological features; these are statutory and non-statutory biodiversity sites, species of principal importance², legally protected species and other conservation notable species that have been recorded over the previous 10 years (i.e. 2009 to 2019).
- 1.1.2 **Table 8A.1** lists the data compiled within the desk study area, which is the Proposed Development boundary and the additional areas of search beyond, and are shown on **Annex A, Figure 8A.1.1**.

Table 8A.1 Information Relevant to the Desk Study

Ecological feature	Example/description	Study Area
Statutory sites designated under International conventions or European legislation	Wetlands of International Importance (also known as Ramsar sites) and Special Protection Areas (SPAs) ³	The Proposed Development area and within 20km of it.
Statutory sites designated under national legislation	Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs) with ornithological qualifying features.	The Proposed Development area and within 10km of it.
Locally designated sites	Often termed as Local Wildlife Sites (LWS), County Wildlife Sites (CWS), Sites of Interest for Nature Conservation (SINC)	The Proposed Development area and within 2km of it.
Scottish Biodiversity List Red listed species⁴ and Legally protected species.	Bird species of principal importance for the conservation of biodiversity in Scotland. Red listed Birds of Conservation Concern (Eaton et al 2015). Legally protected bird species include those listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended in Scotland).	The Proposed Development area and within 2km of it.

- 1.1.3 **Table 8A.2** lists the organisations and other sources that have supplied data, together with the nature of that data.
- 1.1.4 Where appropriate, data were drawn from existing ecological records and site information obtained through field surveys conducted in 2010/11 as part of the Stornoway Wind Farm 2012 application

¹ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

² The Scottish Biodiversity List is a list of plants, animals and habitats that Scottish Ministers consider to be of principal importance to biological conservation. <https://www.gov.scot/Topics/Environment/Wildlife-Habitats/16118/Biodiversitylist/SBL>

³ The designations considered in this assessment as European sites include SPAs, SACs and candidate SACs and Sites of Community Importance (SCI); these sites are collectively referred to Natura 2000 sites. Draft SPAs (dSPA), Potential SPAs (pSPA), possible SACs (pSACs), draft SACs (dSAC), Ramsar sites are also considered in line with planning policy

⁴ Red listed species for the purposes of this assessment refer to those who, following a review of the status of birds in the UK, Channel Islands and Isle of Man using standardised criteria, were assessed and assigned to the Red list of Birds of Conservation Concern (BoCC). The assessment criteria include conservation status at global and European levels and, within the UK, historical decline, trends in population and range, rarity, localised distribution and international importance (Eaton et al 2015).

and surveys carried out over 2015 - 2016 in the north-western area of the site. Field data collected during this period (pertinent to this assessment) included breeding and non-breeding bird surveys.

Table 8A.2 Sources of Desk Study Data

Source	Summary of information provided
SNH's interactive map facility at (https://sitelink.nature.scot/home)	Access to data and information on key protected areas across Scotland.
Stornoway Wind Farm 2012 Environmental Statement (ES)	Desk based review, breeding and non-breeding bird baseline surveys of the Stornoway Wind Farm (2011) together with contextual material regarding the consented wind farm.
Stornoway Wind Farm surveys 2015-2016	Breeding and non-breeding bird baseline surveys of the north western area of the Stornoway Wind Farm together with additional updated desk based review of original ES.
Scottish Raptor Study Group	Annual publication detailing population and productivity estimates based on monitored populations for raptor species at the regional level.

2. Results

2.1 Statutory and non-statutory designated sites

2.1.1 **Table 8A.3** provides details of statutory sites identified within the Study Area defined in **Table 8A.1**. A map detailing the location of each site presented in **Figure 8A1.1**. No non-statutory sites were identified.

Table 8A.3 Statutory Designated Sites within the Study Area with Ornithological Qualifying Features

Site name	Designation	Central Grid Reference	Description	Distance and orientation from works site
Lewis Peatlands	SPA	NB 326379	<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> <p>red-throated diver <i>Gavia stellata</i> (80 pairs, 9% of the GB population);</p> <p>black-throated diver <i>Gavia arctica</i> (13 pairs, 8% of the GB population);</p> <p>golden eagle <i>Aquila chrysaetos</i> (5 pairs, 1% of the GB population);</p> <p>merlin <i>Falco columbarius</i> (20 pairs, 2% of the GB population);</p> <p>golden plover <i>Pluvialis apricaria</i> (1,800 pairs, 8% of the GB population), and</p> <p>dunlin <i>Calidris alpina schinzii</i> (3,400 pairs, 37% of the GB population).</p> <p>Lewis Peatlands SPA further qualifies under Article 4.2, by regularly supporting a population of the migratory species:</p> <p>greenshank <i>Tringa nebularia</i> (1994 to 1996, 140 pairs, <0.1% of the Europe/Western Africa biogeographic population and 10.4% of the GB population).</p>	Immediately adjacent to western and northern site boundary, 100 m from closest proposed infrastructure.
Lewis Peatlands	Ramsar	NB 36379	<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>	Immediately adjacent to western and northern site boundary, 100 m from closest proposed infrastructure.
Ness and Barvas	SPA	NB 360505	<p>Article 4.1 of the Birds Directive:</p> <p>Regularly supporting a nationally important breeding population of the Annex 1 species corncrake <i>Crex crex</i>. Between 1993 and 1997, the site supported an average of 18 calling males, representing about 3% of the British breeding population.</p>	Approximately 13.5 km north of from closest proposed infrastructure.

Site name	Designation	Central Grid Reference	Description	Distance and orientation from works site
Achmore Bog	SSSI	NB314275	<p>The site is one of the best examples of blanket bog habitat in Lewis, with a wide range of plants and animals characteristic of western-Scottish blanket bogs.</p> <p>Achmore Bog SSSI is part of Lewis Peatlands Special Protection Area (SPA), which is designated for the birds listed below:</p> <p>Black-throated diver Dunlin Golden eagle Golden plover Greenshank Merlin Red-throated diver</p>	Approximately 3.8 km south-west of the closest proposed infrastructure.
Tong Saltings	SSSI	NB 440358	<p>The site contains one of the largest areas of saltmarsh and tidal flats in the Outer Hebrides and is the best representative intertidal system on the eastern seaboard. Notified features include wintering and breeding birds including terns, waders and wildfowl.</p>	Approximately 3 km east of the closest proposed infrastructure.

2.2 Previous Field Surveys

2009-2010

- 2.2.1 The baseline surveys largely followed the then current SNH guidance on survey methods to assess wind farm impacts on upland bird communities (2005) and was agreed prior to commencement with SNH.
- 2.2.2 A single year of survey was confirmed as adequate by SNH at the time due to the large amount of contextual information available for this area from previous development applications (for example the previous Lewis Wind Farm survey area overlapped considerably with the Stornoway Wind Farm site).
- 2.2.3 Subsequent analysis and assessment of this data in support of the 2012 application focussed on the following key issues:
- Potential significant effects on the qualifying interests of the Lewis Peatlands Special Protection Area (SPA), and in particular golden eagle and red-throated diver. Analysis for golden eagle included population modelling and range use (PAT) modelling. Outputs from theoretical collision risk modelling were fed into population models to assess the potential impacts of collision for the SPA population of red-throated diver flying through the development to access foraging areas;
 - Cumulative impacts associated with other consented wind farms in the western isles;
 - Collision risk modelling (with particular emphasis on golden eagle, red-throated diver and white-tailed eagle).
- 2.2.4 These analyses were revised in support of the 2015 amended scheme.

2015-2016

- 2.2.5 During the determination of the original section 36 consent, five turbine positions in the north-west of the application area were removed from the scheme following concerns raised by Comhairle nan Eilean Siar (CnES), Scottish Natural Heritage (SNH) and RSPB Scotland (RSPB). These turbines were in an area that had been shown to be used by a breeding pair of golden eagles known as the Beinn Bharbhais pair, resulting in concerns that displacement effects and losses to collision may ensue should these locations be developed. These turbines, known in the original application as T1, T5, T10, T11 and T15, are now in an area where golden eagle activity is likely to have reduced due to the construction and operation of two wind farms, Pentland Road Wind Farm (six turbines to the north-west of the Stornoway Wind Farm) and the Beinn Ghrideag Wind Farm (three turbines to the west of the Stornoway Wind Farm).
- 2.2.6 The study area (known as the North West Extension Area) was a minimum convex polygon based on the original proposed locations of T1, T5, T10, T11 and T15 plus a buffer zone that altered dependent on the species-specific survey being undertaken. The exception to this was the vantage point watches which used 180° viewsheds to a maximum viewing distance of 2 km. Survey scope and methods were agreed with SNH and RSPB prior to surveys being undertaken.

2.3 Key Species Summaries

- 2.3.1 The species accounts presented below are based on the key species identified during the assessment undertaken to inform the application for the Stornoway Wind Farm in 2009/10 and include data from desk based reviews, results from surveys in 2015-2016 including previous discussions held with both SNH and RSPB with regards to the species considered to be of importance in the area presented in previous reports. Species have been arranged alphabetically as opposed to taxonomically for convenience.

Black-throated Diver

- 2.3.2 Black-throated diver is a qualifying feature of the Lewis Peatlands SPA and Ramsar sites, is listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended) and the Scottish Biodiversity List. This species is amber listed on Birds of Conservation Concern 4 (Eaton *et al.* 2015).
- 2.3.3 Black-throated divers breed on lochs across the Isle of Lewis in smaller numbers than red-throated diver. During surveys carried out in 2009 to inform the Stornoway Wind Farm application, two black-throated diver nests were located within the survey area, one of which lay within the SPA. No nests were located during breeding surveys in 2016, with just a single record of an adult within the survey area.
- 2.3.4 Flight activity by black-throated diver was similar in pattern to that described for red-throated diver, although the number of flights was lower in 2009. No flights were recorded during surveys in 2016.

Dunlin

- 2.3.5 Dunlin is a qualifying feature of the Lewis Peatlands SPA and Ramsar sites, and is listed on the Scottish Biodiversity List. This species was red listed on Birds of Conservation Concern 3, but has been moved onto the amber list in the recently published Birds of Conservation Concern 4 (Eaton *et al.* 2015).
- 2.3.6 Fourteen dunlin territories were recorded within the survey area in 2009, though only one was recorded within 250m of a proposed wind turbine location. There were a further two territories recorded within 500m of proposed wind turbine locations. The majority of dunlin were recorded in

the southern section of the survey area where many of the other wader species were aggregated. Thirty-one dunlin flights were recorded during the breeding season; however the vast majority of these were outside of the proposed turbine envelope and associated with breeding locations.

- 2.3.7 An estimated two pairs were recorded during the MBS surveys in 2016.

Golden Eagle

- 2.3.8 Golden eagle is a qualifying feature of the Lewis Peatlands SPA, is listed on Annex I of the Birds Directive, Schedule 1, 1A and A1 of the Wildlife & Countryside Act 1981 (as amended), and the Scottish Biodiversity List. This species was amber listed on Birds of Conservation Concern 3, but has been moved onto the green list in the recently published Birds of Conservation Concern 4 (Eaton *et al.* 2015).
- 2.3.9 There are three pairs of golden eagle that hold breeding territories within 6 km of the Development Site boundary. These are known as the Pair A, Pair B and Pair C (see Confidential Appendix D 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 final location was the site of a new nest built in 2015. A single chick was fledged successfully from this new nest location in 2016. This new location is approximately 1.2 km from the closest proposed infrastructure.
- 2.3.10 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 3.9 km from the closest proposed infrastructure.
- 2.3.11 Pair C has two known nesting locations, both of which have been the site of successful breeding attempts. The nearest location is approximately 4 km from the closest proposed infrastructure.
- 2.3.12 During the 2009-2010 flight activity surveys, golden eagle were recorded throughout the proposed 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-adults; 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 proposed 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).
- 2.3.13 Within the north-west extension, the levels of activity in 2015-2016 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 2 km from the wind farm.

Golden Plover

- 2.3.14 Golden plover is a qualifying feature of the Lewis Peatlands SPA and Ramsar sites, and is listed on the Scottish Biodiversity List. This species is green listed on Birds of Conservation Concern 4 (Eaton *et al.* 2015).
- 2.3.15 Eighteen golden plover territories were noted within the survey area in 2009 with the majority of these being associated with the eastern boundary (i.e. the Lewis Peatlands SPA) or the southern section of the proposed Development Site. Only one of the territories mapped lay within 250m of a proposed turbine location, with the majority being over 500m away. During the 2014 monitoring of the Pentland Road Wind Farm a single golden plover territory was noted within 500m of the

potential north west extension area, whilst three pairs were estimated to be breeding here during the 2016 MBS surveys.

- 2.3.16 Flocks of golden plover ranging from 1 to 110 individuals were regularly seen throughout the breeding, passage and winter periods in 2009-2010. Golden plover flights were largely outside of the Stornoway Wind Farm Development Site as they were associated with breeding locations, with the majority of flights to be away from the turbine envelope with concentrations in the north-east and south of the survey area. Golden plover were noted in all months of the survey period suggesting that wintering birds on Lewis stay relatively close to their breeding grounds throughout the winter period.

Greenshank

- 2.3.17 Greenshank is a qualifying feature of the Lewis Peatlands SPA and Ramsar sites, and is listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended). This species was green listed on Birds of Conservation Concern 3, but has been moved onto the amber list in the recently published Birds of Conservation Concern 4 (Eaton *et al.* 2015).
- 2.3.18 The UK population of greenshank was estimated to be 1,100 breeding pairs in 1995 (Musgrove *et al.* 2013). The population of greenshank on the Western Isles has increased significantly since the 1950's when the species only bred sporadically.
- 2.3.19 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.
- 2.3.20 During the breeding surveys undertaken in 2009 to inform the application for the Stornoway Wind Farm no greenshank territories were noted within the potential North West Extension Area. A single pair of greenshank were recorded in 2016 in the same area.

Hen Harrier

- 2.3.21 Hen harrier is listed on Annex I of the Birds Directive, Schedule 1 and 1A of the Wildlife & Countryside Act 1981 (as amended) and the Scottish Biodiversity List. This species is red listed in Birds of Conservation Concern 4 (Eaton *et al.* 2015).
- 2.3.22 At the time of the 2009-2010 surveys, hen harrier was a common winter visitor to Lewis, and flight activity surveys at the time recorded 58 flights, only one of which were observed during the breeding season.
- 2.3.23 Since the 2009-2010 surveys, the hen harrier breeding population on the Isle of Lewis has increased from a single breeding attempt recorded in 2015 to four breeding attempts in 2016 (the Lewis Raptor Study Group monitored a single nest location in 2017). All breeding activity has been recorded within a 2km buffer of the Site and all within OS 10km grid square NB 33 (it being assumed that the home range monitored in 2017 is within the same 10km square).
- 2.3.24 Flight activity surveys during the winter period recorded three flights in 2015-16, whilst nine were recorded during the breeding season of 2016. A further twenty flights were recorded from hen harrier focal watches, most of which were in close proximity to the nest site.

Merlin

- 2.3.25 Merlin is a qualifying feature of the Lewis Peatlands SPA, is listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended) and the Scottish Biodiversity List. This species was amber listed

on Birds of Conservation Concern 3, but has been moved onto the red list in the recently published Birds of Conservation Concern 4 (Eaton *et al.* 2015).

- 2.3.26 Merlin was the only target raptor species recorded breeding within the survey area in 2009 with a further three records from 2010 provided by the SRSG. Three definite territories were found and nests located. In addition, it is considered likely that a fourth territory was present early in the season but had apparently failed before the third and fourth survey visits took place. Fledged young were seen near each of the confirmed nest locations so all three appeared to have successfully fledged at least one young. Two of the three nests are located within the Lewis Peatlands SPA.
- 2.3.27 Merlin flights recorded during the breeding season of 2009 were patchily distributed across the Development Site, though the majority were observed within approximately 1km of the western Development Site boundary; although many of the flights were associated with territories recorded during the ground nesting raptor survey. During the autumn and winter periods of 2009-2010 merlin were recorded across the proposed Development Site which is consistent with the ranging behaviour this bird demonstrates outside of the breeding season. In total 80 flights were recorded.
- 2.3.28 No breeding activity was recorded during 2015-2016. Flight activity was relatively infrequently with the majority of flights being undertaken at low altitudes. A total of eight flights were observed during 2015-2016.

Peregrine

- 2.3.29 Peregrine is listed on Annex I of the Birds Directive, Schedule 1 of the Wildlife & Countryside Act 1981 (as amended) and the Scottish Biodiversity List. This species is green listed on Birds of Conservation Concern 4 (Eaton *et al.* 2015).
- 2.3.30 Peregrine is not known to breed within close proximity to Development Site due to the lack of suitable nesting habitat, although flights of this species are noted regularly, albeit at low frequency, within the area. Nesting locations for this species in the area to the south of Stornoway are largely restricted to the coastal rocky outcrops.

Red-throated Diver

- 2.3.31 Red-throated diver is a qualifying feature of the Lewis Peatlands SPA AND Ramsar sites, is listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended) and the Scottish Biodiversity List. This species was amber listed on Birds of Conservation Concern 3, but has been moved onto the green list in the most recently published Birds of Conservation Concern 4 (Eaton *et al.* 2015).
- 2.3.32 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 consented Development Site boundary of the Stornoway Wind Farm. 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 proposed Stornoway Wind Farm or are due west of it (within 5km of the site boundary). In years for which data are available no more than three of these sites were occupied simultaneously. In 2009, none of these sites supported a successful breeding attempt; failed attempts were noted at three of the locations.
- 2.3.33 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).

- 2.3.34 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 the same two locations in 2009 and 2016.
- 2.3.35 Flight activity by red-throated diver in 2009 from vantage point watches and focal watches overlooking active breeding sites shows that the greatest level of flight activity was focussed on the central and southern areas of the consented Stornoway Wind Farm, 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.

White-tailed Eagle

- 2.3.36 White-tailed eagle is listed on Annex I of the Birds Directive, Schedules 1, 1A and A1 of the Wildlife & Countryside Act 1981 (as amended) and the Scottish Biodiversity List. This species is red listed on Birds of Conservation Concern 4 (Eaton *et al.* 2015).
- 2.3.37 A pair of white-tailed eagle nests within approximately 5 km from the closest proposed infrastructure. The territory was established in 2013 by a sub-adult female and an adult male, utilising an old golden eagle nest. The first breeding attempt was made in 2014, at which two young were fledged. In 2015 the breeding attempt failed at the egg or early chick stage. The outcome was unknown in 2016, whilst two chicks fledged in 2017.
- 2.3.38 White-tailed eagle flight activity recorded during surveys in 2009 was relatively low. However, it is considered likely that the level of activity across the area would have increased due to both the presence of the territorial pair and the likely increase in the juvenile and sub-adult population. However, data recorded during the monitoring of the Pentland Road Wind Farm showed a low level of flight activity (three flights recorded in total) and no flights were recorded during the 2015-2016 surveys of the North West Extension.



Annex A Figures



