Chapter 11: Ornithology - Contents

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11. Ornithology

11.1 Executive Summary

11.1.1 This Chapter considers the potential effects of the Proposed Development on the wild bird populations of relevance and reaches conclusions on the likely significant effects on ornithology.

11.1.2 A desk study and field study were undertaken during the summers of 2021 and 2022 to establish baseline bird populations in the area. Two ornithologically-designated sites are located within 5 km of the Proposed Development (Loch Knockie and Nearby Lochs Special Protection Area (SPA) and Knockie Lochs Site of Special Scientific Interest (SSSI)), and of the species recorded during the survey period, 21 are considered to be of local value, with a further four being considered as Valued Ornithological receptors (VORs).

11.1.3 There were three potential impacts on the bird life of the area identified during the construction phase of the Proposed Development (habitat loss, disturbance and displacement), with disturbance and displacement also being assessed as potential impacts during the operational phase.

11.1.4 The assessment of the 21 species considered to have local value determined that all species would be subjected to minor displacement and disturbance throughout the construction period. However, due to the low numbers of the birds nesting on the Site, 17 of these ornithological receptors would only suffer negligible impacts from the Proposed Development. Four of the receptors (meadow pipit, skylark, tree pipit and willow warbler) were determined to suffer low impacts from the Proposed Development. The effects of the Proposed Development on all 21 species are considered to be not significant.

11.1.5 Once standard mitigation measures (provision of an Ecological Clerk of Works (ECoW), preconstruction monitoring of nesting birds, creating no-go zones around any sensitive nesting areas, etc.) are successfully implemented, there will be no residual effect from the construction or operational activity of the Proposed Development on ornithological receptors within the area.

11.1.6 This Chapter does not assess the VORs identified in the area. A full assessment on these species is contained within **Volume 4, Appendix 11.4: Sensitive Bird Records (Confidential).** However, once the appropriate mitigation and compensation measures have been undertaken on the VORs, the potential impacts on these species are considered to be negligible and the residual effects considered to be not significant.

11.2 Introduction

11.2.1 This Chapter considers the potential effects, including cumulative effects, of the Proposed Development on ornithology during construction and operation, and reaches conclusions on the likely significant effects.

11.2.2 This Chapter outlines the scope and methodologies used to assess potential effects on sensitive ornithological receptors, both within the footprint of the Proposed Development and the surrounding area. It presents an assessment of the significance of potential effects, along with suggested mitigation measures to avoid or reduce these effects. An assessment of predicted residual effects of the Proposed Development after mitigation measures have been implemented is then provided.

11.2.3 As described in **Chapter 3: Description of Development**, with proper maintenance the Proposed Development should remain functional indefinitely. As such, a separate assessment of potential decommissioning effects on ornithology is not included in this Chapter.

11.2.4 This assessment was carried out by Adam Fraser MRes, MSc, BSc (Hons), Director of Blairbeg Consulting Ltd, and was updated by Mike Coleman MSc, BA (Hons), Owner of Mike Coleman Ecology, and a highly experienced ornithologist. Both Adam and Mike are full members of the Chartered Institute of Ecology and Environmental Management (CIEEM), and are based in Inverness-Shire, Scotland. The assessment has been carried out in line with CIEEM's code of conduct and relevant standards and guidance. Field surveys were carried out by Adam Fraser (MCIEEM), Helen Chance (MCIEEM), and Mike Coleman (MCIEEM). A table presenting relevant qualifications and experience of key staff involved in the preparation of this Chapter is included in **Volume 4, Appendix 4.1: EIA Team**, contained within Volume 4 of this EIA Report.

11.2.5 This Chapter is supported by:

- **Volume 4, Appendix 11.1**: Ornithological Field Survey Methodology;
- **Volume 4, Appendix 11.2**: Ornithological Baseline Survey Results;
- **Volume 4, Appendix 11.3**: Assessment of Ornithological Receptors of Local Value; and
- **Volume 4, Appendix 11.4**: Sensitive Bird Records (Confidential).

11.2.6 **Volume 2, Figures 11.1 – 11.5** are referenced in the text where relevant.

11.3 Scope of Assessment

Study Area

11.3.1 The Study Area encompasses the area over which all desk-based and field data were gathered to inform the assessment presented in this Chapter.

11.3.2 The survey areas which make up the Study Area for this assessment, as shown in **Volume 2, Figure 11.1: Ornithological Survey Areas**, comprise the following:

- Upland Breeding Bird Survey (BBS): within 250m of the Proposed Development Area;
- Breeding Raptor and Owl Surveys: all suitable breeding habitat within 2 km of the Proposed Development Area;

- Black grouse (*Lyrurus tetrix*) lek survey: suitable lek habitat within 2 km of the Proposed Development Area; and
- Waterbird Survey: suitable lochs and lochans within 2 km of the Proposed Development Area. Suitable lochans include Loch Kemp, Lochan a' Choin Uire, Loch Cluanie, Loch Paiteag and unnamed pools near Dell Lodge.

11.3.3 The suite of bird surveys undertaken were developed in accordance with scoping responses received from NatureScot and RSPB Scotland, as discussed in **Chapter 5**: **Scoping and Consultation**, using buffer distances in accordance with recognised guidance[1] Scottish Natural Heritage (2017).

Consultation Responses

11.3.4 The scope of the assessment has been determined through a combination of professional judgement, reference to the relevant guidance documents and consultation with statutory and non-statutory bodies through a formal EIA scoping process and is based on the Scoping Opinion issued by Scottish Ministers in October 2022. **Table 11.1: Consultation Responses** summarises the scoping responses relevant to ornithology and provides information on where and/or how points raised have been addressed in this assessment.

11.3.5 Further details on the consultation responses and scoping opinion can be reviewed in **Chapter 5: Scoping and Consultation**, and associated appendices.

Table 11.1 Consultation Responses

Consultee	Consultation Type	Comment	Response
Energy Consents Unit	Scoping	Ministers agree with the requirements set out by NS in relation to the River Moriston SAC, Lochs SPA and Knockie Lochs SSSI, and would ask that the Applicant comply with all of the information requirements as requested in NS's consultation response. The Company should set out any development which is integral to the project and for which planning permission may be sought as part of the application, which set out to avoid, minimise or remove negative effects on the SAC or which may contribute positively to the conservation objectives of the SAC.	A Shadow HRA, containing information to inform an Appropriate Assessment, has been completed for European sites including the Knockie Lochs and nearby Lochs SPA. The Shadow HRA has been submitted as a standalone document alongside the EIA Report. Potential impacts on the nature conservation interests of all the designated sites in the vicinity of the Proposed Development relating to ornithological interests, including the Knockie Lochs and nearby Lochs SPA and Knockie Loch SSSI, have been assessed and are detailed in Section 11.7.7 of this Chapter of the EIA Report.
The Highland Council	Scoping	The EIA Report should provide a baseline survey of the bird and animals (mammals, reptiles, amphibians, etc) interest on site. It needs to be	A full suite of baseline ornithology surveys has been undertaken. The results are detailed in **Section 11.6** of this Chapter of the EIA Report.

[1] Scottish Natural Heritage (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms, version 2.

		categorically established which species are present on the site, and where, before a future application is submitted. Further the EIA Report should provide an account of the habitats present on the Proposed Development site. Habitat enhancement and mitigation measures should be provided. It is expected that the EIA Report will address whether the development could assist or impede delivery of elements of relevant Biodiversity Action Plans.	Where relevant, this Section will address the potential role the Proposed Development has in delivering elements of the current Highland Biodiversity Action Plan.
NatureScot	Scoping	Loch Knockie and Breeding Birds Slavonian grebe (Podiceps auritus) is a qualifying feature of Loch Knockie and Nearby Lochs Special Protection Area (SPA) and Knockie Lochs Site of Special Scientific Interest (SSSI). Whilst no records of Slavonian grebe exist for waterbodies affected by the Proposed Development, a full data search is recommended to inform assessment of impacts.	Consultation with RSPB Scotland provides additional advice on proposed baseline survey requirements, which have been followed as part of this assessment. An assessment on the potential impacts on the qualifying features of the Knockie Lochs and nearby Lochs SPA and Knockie Loch SSSI are included in **paragraph 11.7.7** of this Chapter of the EIA Report and associated appendices. Potential impacts of the Proposed Development on the qualifying features of the Knockie Lochs and nearby Lochs SPA are also considered as part of the Shadow HRA, which forms a standalone document submitted alongside the EIA Report.
		The survey work already undertaken in 2021 is appropriate. However, NS advise that the proposed surveys for 2022 are expanded to include waterfowl. The assessment should pay particular attention to any potential impacts on Loch Knockie and nearby Lochs SPA and Knockie Lochs SSSI through connectivity to the proposal.	Additional breeding bird surveys (waterfowl and black grouse) were carried out in 2022 to satisfy the request from RSPB Scotland to supplement the baseline data for assessment. An assessment on the potential impacts on the qualifying features of the Knockie Lochs and nearby Lochs SPA and Knockie Loch SSSI are included in **paragraph 11.7.7** of this Chapter of the EIA Report and associated appendices. Potential impacts of the Proposed Development on the qualifying features of the Knockie Lochs and nearby Lochs SPA are also considered as part of the Shadow HRA, which forms a standalone document submitted alongside the EIA Report.
RSPB Scotland	Scoping	Loch Knockie is part of the Loch Knockie and Nearby Lochs SPA, designated for breeding Slavonian grebe. It is also designated as part of the Knockie Lochs SSSI. The nearby SPA should be specifically	An assessment on the potential impacts on the qualifying features of the Knockie Lochs and nearby Lochs SPA and Knockie Loch SSSI are included in **paragraph 11.7.7** of this Chapter of the EIA Report and associated appendices.

		noted in the ornithology chapter. Sufficient information must be gathered to inform the EIA and a Habitats Regulations Appraisal.	Potential impacts of the Proposed Development on the qualifying features of the Knockie Lochs and nearby Lochs SPA are also considered as part of the Shadow HRA, which forms a standalone document submitted alongside the EIA Report.
		A second year of four-visit waterfowl surveys (additional to surveys undertaken in 2021) should be undertaken, visiting all wqterbodies to identify present of red-throated diver, black-throated diver and goldeneye.	Additional breeding bird surveys (waterfowl and black grouse) were carried out in 2022 to satisfy the request from RSPB Scotland to supplement the baseline data for assessment.
		RSPB Scotland does not hold any recent data for breeding Slavonian grebe in this area (using Loch Kemp, Lochan a' Choin Uire, Loch Cluanie or Loch Paiteag). We do hold annual data for Loch Knockie which can be supplied via a data request.	Annual data for breeding Slavonian grebe Loch Knockie has been requested from RSPB Scotland and used to inform the ornithological assessment and Shadow HRA.
		The Highland Raptor Study Group (HRSG) should be contacted to provide data on breeding raptor interest in the vicinity of the Proposed Development.	A comprehensive data search was requested and supplied by HRSG, details of which are included in this assessment. Additional site visits were undertaken during 2022 and 2023 to supplement previously obtained data on raptor activity within the area.
		Black grouse surveys should be carried out in the absence of any detailed existing datasets.	Black grouse surveys have been undertaken to inform the ornithology assessment and are detailed in **paragraph 11.5.5** of this Chapter.

11.4 Legislation and Guidance

Legislative Context

11.4.1 The following legislation has been considered in carrying out this assessment:

- Directive 2009/147/EC on the Conservation of Wild Birds ('Birds Directive');
- Directive 92/43/EEC on Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) ('Habitats Directive');
- Convention on Wetlands of International Importance ('Ramsar Convention');
- The Wildlife and Countryside Act 1981 (as amended);
- The Conservation (Natural Habitats &c.) Regulations 1994 (The Habitats Regulations);
- The Nature Conservation (Scotland) Act 2004 ;
- The British Standard for Biodiversity BS 42020:2013;
- Wildlife and Natural Environment (Scotland) Act 2011 ; and

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

Guidance

11.4.2 The following technical guidance has been considered in the assessment:

- SERAD (Scottish Executive Rural Affairs Department) (2000). Habitats and Birds Directives, Nature Conservation; Implementation in Scotland of EC Directives on the Conservation of Natural Habitats and of Wild Flora and Fauna and the Conservation of Wild Birds ("the Habitats and Birds Directives"). Revised Guidance Updating Scottish Office Circular No 6/1995;
- European Commission (2010). Natura 2000 Guidance Document 'Wind Energy Developments and Natura 2000'. European Commission, Brussels;
- The UK Biodiversity Action Plan (BAP) and UK Post-2010 Biodiversity Framework (2012);
- Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2021). Birds of Conservation Concern 5: the population status of birds in the United Kingdom, Channel Islands and Isle of Man;
- Scottish Natural Heritage (2000). Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action. SNH Guidance Note;
- Scottish Natural Heritage (2012). Assessing the Cumulative Impact of Onshore Wind Energy Developments;
- Scottish Natural Heritage (2014). Repowering onshore wind farms: bird survey requirements;
- Scottish Natural Heritage (2016a). Assessing connectivity with Special Protection Areas (SPAs). Version 3;
- Scottish Natural Heritage (2016). Environmental Statements and Annexes of Environmentally Sensitive Bird Information; Guidance for Developers, Consultants and Consultees Version 2;
- Scottish Natural Heritage (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2;
- Scottish Natural Heritage (2018). Assessing the cumulative impacts of onshore wind farms on birds. SNH Guidance Note;
- Scottish Natural Heritage (2018). Assessing the impact of repowered wind farms on nature, consultation draft;
- Scottish Natural Heritage (2018). Assessing significance of impacts from onshore windfarms on birds out with designated areas. Version 2; and
- Scottish Natural Heritage (2018). Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland.

11.5 Methodology

Desk Study

11.5.1 Baseline data on the ornithological interest of the Study Area and its surroundings, including information on sites designated for nature conservation and species records, were sought from the following sources:

- Highland Raptor Study Group (HRSG) raptor and owl records within 2 km of the Proposed Development Area from 2003 onwards;
- Joint Nature Conservation Committee (JNCC) website (http://www.jncc.gov.uk/);
- NatureScot Site Link (https://sitelink.nature.scot/home); and
- Large-scale 1:10,000 Ordnance Survey (OS) maps in conjunction with colour 1:25,000 OS map (to determine the presence of ponds and other features of nature conservation interest).

11.5.2 Further information on the potential ornithological features that have potential to be affected by the Proposed Development was obtained through searches of internet sources (e.g. UK Biodiversity Action Plans (UKBAP), Scottish Biodiversity List (SBL), The Highland Biodiversity Action Plan 20121-26 (HBAP)) and the relevant published literature (i.e. relevant guidance documents and scientific papers).

Field Study

11.5.3 Full details of bird survey methodologies are provided in **Volume 4, Appendix 11.1: Ornithology Field Survey Methodology** and are summarised below**.**

11.5.4 Four Breeding Bird Survey (BBS) visits using a modified version of the Brown and Shepherd[2] method were carried out between April and July 2021. Woodland areas near Loch Ness and within Whitebridge Forest were surveyed using the same methodology. Territorial behaviour of all species was mapped and collated to identify territory centres for each species recorded. Territory data for Birds of Conservation Concern was extracted and carried forward for assessment.

11.5.5 Where suitable habitat for target raptor and owl species was present within 2 km of the Proposed Development, specific surveys for these target species were carried out using a combination of walkover surveys combined with short vantage point watches (1-3 hrs) in accordance with methods described in Hardey *et al.,* 2013[3]. Four survey visits for breeding raptors and owls were undertaken between May and July 2021 and repeated between March and July 2022.

11.5.6 Two walkover surveys of suitable habitat were undertaken to search for black grouse in May 2022, as per methodologies described in Gilbert et al 2018[4].

11.5.7 Waterbird surveys were carried out using a combination of walkover surveys around waterbodies, and short vantage point watches (1-2 hrs) over waterbodies with suitable habitat for breeding waterfowl. Waterbird surveys comprised four visits between April and July 2021, and were repeated between April and July 2022.

11.5.8 No specific wintering bird surveys were undertaken due to the lack of any overwintering bird designations in proximity to the Proposed Development.

11.5.9 Additional surveys were undertaken in June and July 2023 to survey areas within the 250m buffer that had not previously been surveyed, and to provide supplementary data on breeding bird and raptor activity in the wider area.

[2] Brown, A.F. & Shepherd, K.B. (1993) A method for censusing upland breeding waders. Bird Study, **40**: 198 – 195.

[3] Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013) Raptors: a field guide to survey and monitoring (3rd Edition). The Stationery Office, Edinburgh.

[4] Gilbert, G., Gibbons, D. and Evans, L. (1998) Bird Monitoring Methods. RSPB, Sandy

Assessment Methodology

11.5.10 The assessment has been undertaken according to the current guidance detailed by CIEEM[5].

11.5.11 The assessment of the significance of predicted effects on ornithological receptors is based on both the 'sensitivity' of a receptor and the nature and magnitude of the impact that the Proposed Development will have on it. A key consideration in assessing the effects of any development on ornithological features is to define the species that need to be considered. In identifying these receptors, it is important to recognise that a development can affect ornithological features directly (e.g. destruction of nests) and indirectly, by affecting land beyond the development site (e.g. if birds are displaced through noise generation during the construction phase).

11.5.12 It is impractical for such an assessment to consider every species that may be affected, instead it should focus on valued ornithological receptors. These are species that are valued in some way and could be affected by the Proposed Development. Where there is no potential for valued receptors to be affected significantly, it is not necessary for them to be considered in the assessment.

11.5.13 Ornithological features have been valued using the scale set out in **Table 11.2: Approach to Valuing Ornithological Receptors** below, with examples provided of criteria used when defining the level of value.

Table 11.2: Approach to Valuing Ornithological Receptors

Level of Value	Examples (Guidance to Evaluation)
Very High (International)	A species listed as a qualifying feature of an internationally designated site (e.g. SPA). A regularly occurring, substantial population of an internationally important species (listed on Annex I of the Birds Directive), or regularly occurring migratory species listed under Annex II of the Birds Directive connected to an SPA designated for this species.
High (National)	A species listed as a qualifying feature of a nationally designated site (e.g. Site of Special Scientific Interest (SSSI)). Species present in nationally important numbers (>1% UK population) Ecologically sensitive species such as rare birds (<300 breeding pairs in the UK)
Medium (Regional)	A species listed under Schedule 1 of the Wildlife and Countryside Act or Annex I of the Birds Directive. Species present in regionally important numbers (>1% of the regional population) Species occurring within SPAs but not crucial to the integrity of the site.
Low (Local)	Species described above but which are present very infrequently or in very low numbers. A regularly occurring, substantial population of a nationally scarce species, including species listed on the UK and Local BAPs

11.5.14 Within the context of the EIA Regulations and in line with current guidance[6], the top three geographical tiers (international, national and regional) are the most important. This means that if there is an effect at this population level, it is considered 'significant' in terms of the EIA Regulations. For breeding bird species, NatureScot uses Natural Heritage Zones (NHZ) as the appropriate regional

[5] Chartered Institute of Ecology and Environmental Management (2018). Guidelines for ecological impact assessment in the United Kingdom. Winchester. Chartered Institute of Ecology and Environmental Assessment.

[6] SNH (2018) Assessing significance of impacts from onshore wind farms outwith designated areas. (Version 2). SNH

biogeographical unit of assessment. Twenty-one zones covering Scotland have been drawn to reflect biogeographical differences between zones. The Proposed Development lies within the South Highland NHZ 7 – Northern Highlands. The Scottish Wind Farm Bird Steering Group published a review of NHZ bird populations across Scotland (Wilson *et al*., 2015)[7]. The regional population estimates used in this assessment are mostly derived from this reference but have been superseded where more up-to-date population data are available for individual species.

11.5.15 Another key consideration in assessing the impacts of any development on ornithological receptors is to define the areas of habitat and the species that need to be considered. This requires the identification of a potential zone of influence, which is defined as those areas and resources that may be affected by biophysical changes caused by project activities, however remote from a site.

11.5.16 The zone of sensitivity for ornithological features varies according to the characteristics of the feature and the nature of the potential impact. In this assessment, impacts are assessed within the site (defined as the Study Area) and the zones as displayed on **Volume 2, Figure 11.1: Ornithological Survey Areas**.

11.5.17 The behavioural sensitivity of ornithological receptors is also important when assessing potential impacts. Different species respond differently to stimuli, making some particularly sensitive to development activities and others less so. By way of example, sensitivity is determined according to species behaviour, using broad criteria set out in **Table 11.3: Behavioural Sensitivity Criteria** below. Sensitivity can vary depending on the activity the species is undertaking, for example, a species is likely to be less tolerant of disturbance close to its nest during the breeding season than at other times of the year. Thus, sensitivity changes with both space and time.

Table 11.3: Behavioural Sensitivity Criteria

Sensitivity	Definition
High	Species occupying remote areas away from human activities and exhibiting strong and long-lasting reactions to disturbance events.
Medium	Species that appear to be warily tolerant of human activities and exhibiting short-term reactions to disturbance events.
Low	Species occupying areas subject to frequent human activity and exhibiting mild and brief reaction to disturbance events.

Characterising Potential Impacts on Receptors

11.5.18 Impacts on ornithological receptors are judged in terms of magnitude and duration. Magnitude refers to the size of an impact and is determined on a quantitative basis where possible. Magnitude is assessed within four levels as detailed below in **Table 11.4: Magnitude of Impact**. Impacts can be permanent or temporary; direct or indirect; adverse or beneficial, and can be cumulative. They can vary according to scales of size, extent, duration, timing and frequency. These factors are brought together to assess the potential impact on the conservation status of the receptor and on the integrity of the habitats that support them:

- Integrity is the coherence of the ecological structure and function of a site or habitat that enables it to sustain its plant and animal communities and populations; and

[7] Wilson, M.W., Austin, G.E., Gillings, S., and Wernham, C.V. (2015) Natural Heritage Zone Population Estimates. SWBSG Commissioned Report: 1504.

- Conservation status is the ability of an animal community or population to maintain its distribution and/or extent.

Table 11.4: Magnitude of Impact

Magnitude	Definition
Major	A total or major alteration or loss on the integrity of a site or conservation status of a species assemblage / community, population or group. If adverse, this is likely to threaten its sustainability; if beneficial, this is likely to enhance its conservation status.
Moderate	A loss or alteration on the integrity of a site or conservation status of a species assemblage / community, population or group. If adverse, this is unlikely to threaten its sustainability; if beneficial; this is likely to be sustainable but is unlikely to enhance its conservation status.
Low	A minor, and reversible, shift away from the existing or predicted future baseline conditions. Change arising from the loss or alteration will be discernible on the integrity of a site or conservation status of a species assemblage / community, population or group that is within the range of variation normally experienced between years.
Negligible	A very slight change from the existing or predicted future baseline conditions. Change barely discernible, approximating to the 'no change' situation on the integrity of a site or conservation status of a species assemblage / community population or group that is within the normal range of annual variation.

Determining Significance of Potential Ornithological Effects

11.5.19 Having followed the process of attributing a value to an ornithological receptor, determining its sensitivity and characterising potential impacts, the significance is then determined. The CIEEM guidelines use only two categories to classify effects: "significant" or "not significant". The significance of an effect is determined by considering the value of the receptor and the magnitude of the impact and applying professional judgement as to whether the integrity of the receptor will be affected.

11.5.20 Effects are more likely to be considered significant where they concern receptors of higher conservation value or where the magnitude of the impact is high. Effects not considered to be significant would be those where the integrity of the receptor is not threatened, the receptor is of a lower conservation value, or where the magnitude of the impact is low.

11.5.21 If an effect is determined to be significant adverse, measures to mitigate the effect are proposed wherever possible, and the effect is then re-evaluated as a residual effect. Where effects are not significant, no specific mitigation is required, however good practice and adherence to relevant wildlife legislation would control these effects as far as practicable.

Assumptions and Limitations

11.5.22 Bird surveys are based on sampling techniques and results give an indication of numbers and activities of birds at the particular times that surveys were carried out. The surveys for the Proposed Development were distributed by time of day and by date throughout the year to give a representation of the range of activity. Additional surveys were undertaken to include areas within the surrounding buffer that were not covered by survey effort in the original design of the Proposed Development. As a result of this supplementary survey effort, no gaps were identified in the baseline data that would prevent assessments being undertaken for the purposes of determining likely significant effects as is required by the EIA Regulations.

11.5.23 Based on the consultation responses and the known environmental sensitivities, this assessment considers the following:

- potential on the ornithological features of nearby SPAs (refer to the Shadow Habitats Regulations Appraisal (HRA), which is provided as a standalone document alongside this EIA Report. Further information on the Shadow HRA is provided in **Chapter 10: Terrestrial Ecology;**
- removal of habitat (including breeding, foraging and roosting) during construction activities;
- disturbance during construction activities; and
- nest destruction during construction activities.

11.6 Baseline Conditions

Existing Baseline

Designated Sites

11.6.1 There are eight sites with statutory designations for ornithological features that have potential connectivity to the Proposed Development. Details of the sites and their qualifying features are provided in **Table 11.5: Ornithological Designated Sites** (see also **Figure 11.3: Nationally Designated for Nature Conservation Importance**).

Table 11.5: Ornithological Designated Sites

Site Name	Distance from Proposed Development and Direction	Qualifying Feature
Loch Knockie and Nearby Lochs SPA	The Proposed Development is located approximately 1.8 km to the north, north-east of the designation.	Slavonian grebe
Knockie Lochs SSSI	The Proposed Development is located approximately 1.8 km to the north north east of this designation.	Slavonian grebe Component site of the Loch Knockie and Nearby Lochs SPA.
North Inverness Lochs SPA	The Proposed Development is located approximately 9 km to the south of this designation.	Slavonian grebe
Dubh Lochs SSSI	The Proposed Development is located approximately 9 km to the south of this designation.	Slavonian grebe Component site of the North Inverness Lochs SPA
Loch Ruthven SPA	The Proposed Development is located approximately 16 km to the south south west of this designation.	Slavonian grebe
Loch Ruthven SSSI	The Proposed Development is located approximately 16 km to the south south west of this designation.	Slavonian grebe Breeding bird assemblage
Loch Ashie SPA	The Proposed Development is located approximately 23 km to the south south west of this designation.	Slavonian grebe
Loch Ashie SSSI	The Proposed Development is located approximately 23 km to the south south west of this designation.	Slavonian grebe

Species

11.6.2 A total of twenty-one species of conservation concern (Schedule 1 / Annex I species, Red and Amber listed in BoCC) was recorded as breeding within the Study Area; full details are contained in **Volume 4, Appendix 11.2: Ornithological Baseline Survey Results**, with territory locations displayed in **Volume 2, Figure 11.3: Nationally Designated for Nature Conservation Importance**. Territory locations of Schedule 1 species are displayed in confidential **Volume 2, Figure 11.5: Confidential: Breeding Raptor and Owl Survey**.

11.6.3 Four target species (golden eagle (*Aquila chrysaetos*), red kite (*Milvus milvus*), osprey (*Pandion haliaetus*) and white-tailed eagle (*Haliaeetus albicilla*)) were recorded during the breeding raptor and owl surveys, details are provided in **Volume 4, Appendix 11.4: Sensitive Bird Records (Confidential)** and **Volume 2, Figure 11.5: Confidential: Breeding Raptor and Owl Survey**. Secondary species recorded include Buzzard (*Buteo buteo*) and Kestrel (*Falco tinnunculus*).

11.6.4 Black grouse surveys identified no lek locations within the Study Area.

11.6.5 Breeding waterfowl surveys did not identify any target species within the Study Area; further information is contained in in **Volume 4, Appendix 11.2: Ornithological Baseline Survey Results** and **Volume 2, Figure 11.5: Confidential: Breeding Raptor and Owl Survey**.

11.6.6 Following the results of the desk study and baseline surveys outlined in **Section 11.5**, a number of Valued Ornithological Receptors (VORs) have been identified. These VORs and their assessment values are shown in **Table 11.6: Summary of Valued Ornithological Receptors within the Survey Area** below.

Table 11.6: Summary of Valued Ornithological Receptors (VORs) within the Survey Area.

Value	VORs	Justification
International	Slavonian grebe	Designated feature of an SPA and Ramsar site within 10 km of the Proposed Development, recorded within the Study Area.
Regional	Golden eagle, red kite, osprey and white-tailed eagle	Not a designated feature of an SPA or Ramsar site within 10 km of the Proposed Development, however probable connectivity with SPAs in wider area and recorded within Study area in significant numbers; or Annex 1 and Schedule 1 species recorded on the site
Local	Snipe (*Gallinago gallinago*); common sandpiper (*Actitis hypoleucos*), cuckoo (*Cuculus canorus*), mallard (*Anas platyrhynchos*), teal (*Anas crecca*); passerine species of medium or high conservation concern (bullfinch (*Pyrrhula pyrrhula*), common redstart (*Phoenicurus phoenicurus*), grasshopper warbler (*Locustella naevia*), grey wagtail (*Motacilla cinerea*), meadow pipit (*Anthus pratensis*), mistle thrush (*Turdus viscivorus*), reed bunting (*Emberiza*	Target species of high conservation concern (SBL / LBAP / UK BoCC Red and Amber list species) that are present in locally important numbers but are not a qualifying feature of any statutory sites within 10 km of the Proposed Development.

	schoeniclus), sedge warbler (*Acrocephalus schoenobaenus*), skylark (*Alauda arvensis*), song thrush (*Turdus philomelos*), tree pipit (*Anthus trivialis*), whinchat (*Saxicola rubetra*), willow warbler (*Phylloscopus trochilus*), woodpigeon (*Columba palumbus*) and wren (*Troglodytes troglodytes*)).	
Negligible	Secondary raptor species (buzzard, sparrowhawk (*Accipiter nisus*), kestrel); gulls (common gull (*Larus canus*)); corvids (raven (*Corvus corax*), hooded crow (*Corvus cornix*)); passerine species of low conservation concern (chaffinch (*Fringilla coelebs*), coal tit (*Periparus ater*), goldcrest (*Regulus regulus*), blue tit (*Cyanistes caeruleus*), great tit (*Parus major*), blackcap (*Sylvia atricapilla*), pied wagtail (*Motacilla alba yarrellii*), robin (*Erithacus rubecula*), siskin (*Spinus spinus*), stonechat (*Saxicola torquata*), barn swallow (*Hirundo rustica*)).	Generally common and widespread non-target species of low conservation concern (i.e. species on the UK BoCC Green List that are not afforded any special protection) that are not a designated feature of any statutory sites within 10 km of the Proposed Development.

11.6.7 Results from all relevant surveys have been compiled to produce baseline descriptions for each receptor detected. Receptors of regional or higher value are discussed individually; those assessed as being of local value are included in **Volume 4, Appendix 11.3: Assessment of Ornithological Receptors of Local Value**.

11.6.8 Receptors of negligible conservation value are not considered further in this assessment as these receptors are generally common and widespread species and none were recorded within the Study Area in numbers considered to be locally, regionally, nationally or internationally important.

Valued Ornithological Receptors (VORs)

11.6.9 Details of golden eagle, red kite, osprey and white-tailed eagle within the Study Area are contained within Confidential **Volume 4, Appendix 11.4: Sensitive Bird Records (Confidential)**.

Future Baseline

11.6.10 In the absence of change to current management regimes of the habitats present within the Site, the status of bird life (abundance, diversity) is anticipated to remain in the current state of uncertainty, with some species declining and others expanding their ranges. Any changes in species' populations would be a result of continued management practices, climate change, and population changes to species across their whole range.

11.6.11 Proposed felling rotations within Whitebridge plantation may lead to short-term, short-distance, displacement of species found in conifer woodland coupes. Replanting of areas may lead to recovery of species populations in these areas and offer opportunities for colonisation and breeding attempts by other species (e.g. Hen harrier (*Circus cyaneus*) and black grouse).

11.7 Assessment of Potential Impacts

11.7.1 This section considers the potential impacts and associated significance of effect on the avifauna of the area from the construction, and operation, of the Proposed Development based on the typical activities described in **Chapter 3: Description of Development.**

11.7.2 The potential impacts and associated significance of effect on habitats is covered **Chapter 10: Terrestrial Ecology**.

11.7.3 Construction impacts are categorised as those relating to habitat loss, disturbance to the birds and their preferred foraging, roosting or nesting areas and displacement of birds from their preferred foraging, roosting or nesting areas.

11.7.4 Operational impacts are likely to consist of a slight increase in disturbance and displacement compared to baseline levels, and a decrease in disturbance and displacement from the levels during the construction phase.

Designated Sites

11.7.5 The potential impacts and associated significance of effect on European-designated sites is covered in the standalone Shadow Habitats Regulations Appraisal (HRA).

11.7.6 Having assessed the impact pathways of displacement, changes to hydrological conditions, invasive non-native species and disturbance impacts on Slavonian grebe at four SPAs, the HRA concluded that no SPA conservation objectives would be compromised due to the Proposed Development, and no adverse effect on integrity of any SPA would result, either alone or in-combination with other projects.

11.7.7 Slavonian grebe - the qualifying feature of the four SPAs covered in the HRA (and the four associated SSSIs included in **Table 11.5: Ornithological Designated Sites**) does have potential connectivity with Loch Kemp, however, it was not recorded during surveys within the Proposed Development, and Loch Kemp appears unsuitable due to the distinct habitat requirements of the species. As a result, neither Slavonian grebe nor the designated sites for which it is a qualifying species will be assessed further within this Chapter.

Habitat Loss

11.7.8 The creation of a larger waterbody (reservoir) enveloping Loch Kemp would result in the permanent loss of plantation forest, open moorland and broadleaved woodland habitat. These habitats are currently used as nesting, roosting and foraging habitats for species of conservation concern.

11.7.9 The construction of dams, new permanent or upgraded access tracks, would result in the permanent loss of plantation forest, open moorland and broadleaved woodland habitat. These habitats are currently used as nesting, roosting and foraging habitats for species of conservation concern.

11.7.10 Certain areas of the construction footprint (potentially including borrow pits, construction tracks, laydown areas, welfare areas, site compounds, car parks, etc) would be reinstated following construction. In these areas, the habitat loss would be temporary, although the reinstated ground may not contain the same floral diversity as it did prior to commencement of the construction phase.

Disturbance

11.7.11 Disturbance during construction may be derived from increased noise and visual stimuli resulting from increased vehicular and personnel movements and the creation of development infrastructure within the Site. Disturbance consists of the regular interruption of species from their regular behaviour, potentially resulting in failed nesting attempts, increased predation, abandonment of territories, and long-distance dispersal of foraging, roosting or nesting sites.

11.7.12 The use of ALAN (Artificial Light at Night) is a potential source of disturbance that may not be covered within the standard noise and movement of general construction activity.

11.7.13 During the winter, work areas across the site would have temporary construction lighting at the start and end of the working day for surface works, with the exception of the tunnel portals, which would require temporary lighting when vehicle access is required to the underground operations. Vehicle access into / out of the tunnel portal outside of surface working hours would be minimised to limit the use of lighting during these hours and appropriate mitigation would be implemented to minimise illumination, glare or light spillage from these lights to nearby receptors.

11.7.14 In the event of surface work being required outside of the surface working hours stated in **Chapter 3: Description of Development**, temporary lighting would also be required in these areas and would be agreed with the Planning Authority in advance and incorporated into the CEMP.

11.7.15 Once operational, with the exception of the powerhouse building, external lighting, including at the dams and upper reservoir inlet/outlet structure, would only be used during essential operational and maintenance activities. This would be subject to detailed design and in agreement with the Planning Authority.

11.7.16 Internal lighting would be required in the powerhouse building, predominantly during working hours, unless essential operational and maintenance activities were required outwith these hours. Any external lighting required at the powerhouse building would be designed to be discrete and minimise light pollution.

Displacement

11.7.17 Displacement during construction may be derived from increased noise and visual stimuli resulting from increased vehicular and personnel movements and the creation of development infrastructure within the Site. Displacement consists of the construction activity resulting in the birds' preferred nesting, foraging or roosting areas being unavailable, and suboptimal locations being used for the duration of the construction period.

Construction Impacts

Other Ornithological Receptors

11.7.18 The assessment of the 21 species considered to have local value determined that all species would be subjected to minor displacement and disturbance throughout the construction period. However, due to the low numbers of the birds nesting on the Site, 17 of these ornithological receptors would only suffer **negligible** impacts from the Proposed Development. Four of the receptors (meadow pipit, skylark, tree pipit and willow warbler) were determined to suffer **low** impacts from the Proposed Development. The effects of the Proposed Development on all 21 species are considered to be **not significant**.

11.7.19 The assessments of construction impacts on ornithological receptors of local value are presented in **Volume 4, Appendix 11.3: Assessment of Ornithological Receptors of Local Value.**

Operational Impacts

Other Ornithological Receptors

11.7.20 Due to the activity on site during operation being similar to the baseline levels, the 21 species considered to have a local value would only suffer short-term, **negligible** impacts from the Proposed Development. As disturbance would be drastically reduced, this includes the four receptors (meadow pipit, skylark, tree pipit and willow warbler) that were determined to suffer **low** impacts during the construction phase. The operational effects of the Proposed Development on all 21 species are considered to be **not significant**.

11.7.21 The assessments of construction impacts on ornithological receptors of local value are presented in **Volume 4, Appendix 11.3: Assessment of Ornithological Receptors of Local Value.**

Valued Ornithological Receptors

11.7.22 The assessment of construction and operational impacts on golden eagle, red kite, osprey and white-tailed eagle are contained within **Volume 4, Appendix 11.4: Sensitive Bird Records (Confidential)**.

Cumulative Effects

11.7.23 The cumulative effects of the Proposed Development concern all construction activity, and all infrastructure and activity once operational.

11.7.24 Due to the impacts and effects of the Proposed Development being considered negligible and not significant to the general bird life of the area, no cumulative effects have been considered.

11.7.25 Cumulative effects with other developments in the planning system relating to protected bird species can be found within **Volume 4, Appendix 11.4: Sensitive Bird Records (Confidential)**.

11.8 Mitigation

Mitigation By Design / Embedded Mitigation

11.8.1 The Applicant's approach to the EIA process has been to prioritise and implement mitigation in a hierarchical way. This approach focuses on developing a design through the consideration of alternative infrastructure layouts to avoid likely significant adverse effects as far as possible, as discussed in **Chapter 2: Design Evolution and Alternatives** of this EIA Report.

Mitigation during Construction Phase

11.8.2 A Construction Environmental Management Plan (CEMP) will be developed by the Principal Contractor detailing measures to manage, control and monitor the potential effects of noise, dust, litter, pollution and personnel / vehicular movements. An outline CEMP is included in **Volume 4, Appendix 3.3: Outline Construction and Environmental Management Plan.** Best practice pollution control measures, with reference to the Scottish Environmental Protection Agency (SEPA) and Control of Substances Hazardous to Health (COSHH) guidelines[8] will be included in the CEMP. Particular reference will be made to managing handling, storage and use of hazardous chemicals

[8] The Control of Substances Hazardous to Health Regulations 2002, UK Government. Available online at: https://www.legislation.gov.uk/uksi/2002/2677/contents/made (Accessed August 2023)

and fuels used during the construction process. A detailed spill response plan will be developed and fully-briefed to all site operatives and forms part of the CEMP.

11.8.3 Construction (including enabling works and felling) should avoid being commenced in the breeding bird season (later March to end of July inclusive) to minimise disturbance to nesting birds. As the construction of the Proposed Development is anticipated to take approximately 5 years to complete, it would not be possible for all works to be undertaken outwith the breeding bird season.

11.8.4 Where it is not possible to schedule all works out with the breeding bird season, the appointed Environmental Clerk of Works (ECoW), or suitably qualified ornithologist, would undertake pre-construction surveys to identify the presence of protected bird species and nests. Should a nest of any bird be located during pre-construction surveys, the EcoW would:

- Recommend suitable mitigation measures (including appropriate buffer zones depending on the species);
- Implement any Species Protection Plan (SPP) and provide toolbox talks to contractors to ensure accidental / reckless disturbance of the nesting bird is avoided; and
- Undertake regular monitoring of birds present within the proximity of works to ensure any nests are promptly located, identified and suitably protected from damage or disturbance.

Mitigation during Operational Phase

11.8.5 No specific measures are anticipated to be required during the operational phase, however there are a number of enhancement measures pertaining to birds that can be found in **Volume 4, Appendix 10.7: Outline Habitat Management Plan (non-SAC)**. These include provision of barn owl (Tyto alba) boxes and, in line with the Highland Nature Biodiversity Action Plan (HNBAP), some land management practices to enhance the habitat for upland waders (predominantly curlew (*Numenius arquata*), lapwing (*Vanellus vanellus*) and snipe), all HNBAP priority species.

11.9 Residual Effects

11.9.1 This section considers the predicted residual effects and associated significance of effect of the construction and operation of the Proposed Development, following the implementation of the mitigation measures proposed in Section 11.8.

11.9.2 A summary of the residual effects on the valued ornithological receptors (VORs) is provided in **Volume 4, Appendix 11.4: Sensitive Bird Records (Confidential)**. However, once the appropriate mitigation and compensation measures have been undertaken on the VORs, the potential impacts on these species are considered to be negligible and the residual effects considered to be not significant.

11.9.3 No other significant effects (pre-mitigation) were identified. Nevertheless, good practice management measures have been identified, as detailed in Section 11.8 above, to further avoid and reduce effects. The residual effects on ornithological receptors are considered to be **not significant**.

Cumulative Residual Effects

11.9.4 As identified in **Section 11.7**, above, the negligible potential impacts during the construction and operation phases of the Proposed Development, in conjunction with other construction projects within 20km, have been assessed as having no significant cumulative effects on the bird life of the area.

11.10 Conclusion

11.10.1 An assessment has been made of the predicted significance of effects of the Proposed Development on ornithological interests.

11.10.2 A desk study and field study were undertaken during the summer of 2021 and 2022 to establish baseline bird populations in the area. Two ornithologically-designated sites are located within 5 km of the Proposed Development, and of the species recorded during the survey period, 21 were considered to be of local value, and four were considered to be Valued Ornithological Receptors (VORs).

11.10.3 Likely impacts during the construction phase of the Proposed Development were considered (habitat loss, displacement, and disturbance), with disturbance and displacement also considered potential impacts during the operational phase.

11.10.4 The assessment of the 21 species considered to have local value determined that all species would be subjected to minor displacement and disturbance throughout the construction period. However, due to the low numbers of the birds nesting on the Site, 17 of these ornithological receptors would only suffer negligible impacts from the Proposed Development. Four of the receptors (meadow pipit, skylark, tree pipit and willow warbler) were determined to suffer low impacts from the Proposed Development. The effects of the Proposed Development on all 21 species are considered to be not significant.

11.10.5 Specific mitigation measures are proposed to minimise the potential effects of displacement and disturbance and to ensure compliance with the Wildlife and Countryside Act (1981) as amended by the Nature Conservation (Scotland) Act (2004). Once the standard mitigation measures (provision of an Ecological Clerk of Works (ECoW), preconstruction monitoring of nesting birds, creating no-go zones around any sensitive nesting areas, etc.) are successfully implemented, there will be no residual effect from the construction or operational activity of the Proposed Development on ornithological receptors within the area.

11.10.6 This Chapter does not take into account the VORs identified in the area. For an assessment on the VORs, please refer to **Volume 4, Appendix 11.4: Sensitive Bird Records (Confidential)**. However, once the appropriate mitigation and compensation measures have been undertaken on the VORs, the potential impacts on these species are considered to be negligible and the residual effects considered to be not significant.