

6 Ornithology

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6 Ornithology

6.1 Executive Summary

- 6.1.1 This chapter provides an assessment of the potential effects associated with the Proposed Development on ornithological features present.
- 6.1.2 Field surveys were conducted in accordance with consultation advice and relevant guidance from 2018 to 2020, in order to determine the current breeding and non-breeding assemblage within the study area. Ornithological baseline, pre-construction and post-construction surveys have taken place for the Operational Development adjacent to the Proposed Development site since 2009 and the assessment therefore utilises relevant long-term data as well as the 2018-2020 survey results.
- 6.1.3 In general, the bird assemblage recorded in 2018-2020 was consistent with results of surveys undertaken for the Operational Development. Red-throated diver *Gavia stellata*, black grouse *Tetrao tetrix*, greenshank *Tringa nebularia* and golden plover *Pluvialis apricaria* were all recorded within the Site and wider study area during the breeding season, and the Site overlaps with an occupied golden eagle *Aquila chrysaetos* territory, although no breeding attempts have been recorded to date. Slavonian grebe *Podiceps auritus* is present in the wider study area, and although there were no records within the Site during baseline surveys, potential effects on the species were assessed within both an EIA context and a Habitat Regulations Appraisal (HRA) context, due to the potential connectivity with birds which are qualifying features of Special Protection Areas (SPAs).
- 6.1.4 The ornithological assessment identified habitat loss and disturbance during the construction and decommissioning phases, and displacement and collision risk effects during the operational phase, as potential impacts. Unmitigated effects from construction, operation and decommissioning activities on all ornithological features were assessed as being at worst minor adverse and not significant in the context of the EIA Regulations, with the exception of black grouse where an unmitigated moderate adverse effect due to construction disturbance was predicted. Mitigation measures to ensure that lekking black grouse are not disturbed during the construction and decommissioning periods allowed the residual effect to be reduced to minor adverse and not significant.
- 6.1.5 The potential cumulative effects of the Proposed Development and other wind farm projects on the Natural Heritage Zone (NHZ) 7 golden eagle and greenshank populations were considered. The significance of residual effects on the two species was unchanged compared to that for the Proposed Development alone (minor adverse and not significant).
- 6.1.6 Information to inform an Appropriate Assessment on Slavonian grebe as part of the HRA process was presented separately in Appendix 6.4, and it was concluded that there was no potential of the Proposed Development to adversely affect the integrity of any SPAs, either alone or in-combination with other projects.

6.2 Introduction

- 6.2.1 This chapter considers the potential effects on ornithology associated with the construction, operation and decommissioning of the Proposed Development. The specific objectives of the chapter are to:
- describe the ornithological baseline;
 - describe the assessment methodology and significance criteria used in completing the assessment;
 - describe the potential unmitigated effects of predicted impacts (direct or indirect) on Important Ornithological Features (IOFs);
 - describe the mitigation measures proposed to address likely significant effects; and

- assess the residual effects remaining following the implementation of mitigation, including cumulatively with other wind farm projects.
- 6.2.2 This chapter is supported by four appendices listed below:
- 6.2.3 Appendix 6.1: Ornithology, which contains the following Annexes:
- Annex A – Ornithological legal protection;
 - Annex B – Ornithological survey methodologies;
 - Annex C – Ornithological survey effort and general information;
 - Annex D – Ornithological survey results; and
 - Annex E – Collision Risk Assessments.
- 6.2.4 Appendix 6.2: Confidential Ornithology.
- 6.2.5 Appendix 6.3: Golden Eagle Population Model.
- 6.2.6 Appendix 6.4: Habitats Regulations Appraisal, which provides information to inform an Appropriate Assessment on the potential effects on Natura sites, in relation to specific qualifying features of SPAs.
- 6.2.7 This chapter is also supported by the following figures:
- Figure 6.1: Vantage Points and Viewsheds: October 2018 to June 2019;
 - Figure 6.2: Vantage Points and Viewsheds: June 2019 to August 2020;
 - Figure 6.3: Ornithological Designated Sites within 20km;
 - Figure 6.4: Site Boundary and Study Areas;
 - Figure 6.5: Survey Areas 2019 to 2020;
 - Figure 6.6: Black Grouse Lek Locations and Activity: 2009 to 2019;
 - Figure 6.7: Flight Activity: Golden Eagle 2018 to 2019;
 - Figure 6.8: Flight Activity: Golden Eagle 2019 to 2020;
 - Figure 6.9: Flight Activity: Other Raptor Species 2018 to 2020;
 - Figure 6.10: Golden Plover Records: 2009 to 2020;
 - Figure 6.11: Other Wader Records: 2009 to 2020;
 - Figure 6.12: Cumulative Impact Assessment: Natural Heritage Zone;
 - Confidential Figure 6.2.1: Golden Eagle GET Model and Activity (October 2018 to August 2020);
 - Confidential Figure 6.2.2: Golden Eagle PAT Model;
 - Confidential Figure 6.2.3a: Black-throated Diver Activity and Breeding Locations;
 - Confidential Figure 6.2.3b: Red-throated Diver Activity and Breeding Locations;
 - Confidential Figure 6.2.4: Slavonian Grebe Breeding Locations and Designated Sites; and
 - Confidential Figure 6.2.5: Greenshank Records: 2009 to 2020.

6.3 Legislation, Policy and Guidelines

Legislation

6.3.1 Relevant European legislation has been reviewed and taken into account as part of this ornithological assessment. Of particular relevance is the following European legislation:

- Directive 2009/147/EC on the Conservation of Wild Birds ('Birds Directive'; European Commission, 2016a);
- Directive 92/43/EEC on Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) ('Habitats Directive'; European Commission, 2016b); and
- Environmental Impact Assessment Directive 2014/52/EU (European Commission, 2016c).

6.3.2 The following national legislation, which has recently been amended as a consequence of EU exit (Scottish Government, 2019; 2020), is also considered as part of the ornithology assessment:

- The Wildlife and Countryside Act 1981 (as amended);
- The Conservation (Natural Habitats &c.) Regulations 1994 (as amended) (The Habitats Regulations);
- The Nature Conservation (Scotland) Act 2004 (as amended); and
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended).

Planning Policy

6.3.3 Chapter 4 (Planning Policy) sets out the planning policy framework that is relevant to the EIA. This assessment considers the relevant aspects of Scottish Planning Policy (SPP), Planning Advice Notes and other relevant guidance. Of relevance to ornithology, regard has been had to the following policies:

- UK Post-2010 Biodiversity Framework (2012);
- *Scottish Biodiversity Strategy: It's in Your Hands (2004)/2020 Challenge for Scotland's Biodiversity (2013)*;
- Scottish Government (2017). Planning Advice Note 1/2013-Environmental Impact Assessment, Revision 1.0; and
- The Highland Council's *Highland-wide Local Development Plan (2012)*.

Guidance

6.3.4 Recognition has been taken of the following guidance:

- CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester;
- Eaton M.A., Aebischer N.J., Brown A.F., Hearn R.D., Lock L., Musgrove A.J., Noble D.G., Stroud D.A. and Gregory R.D. (2015). *Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man*. British Birds 108, 708–746;
- European Commission (2010). Natura 2000 Guidance Document 'Wind Energy Developments and Natura 2000'. European Commission, Brussels;
- NatureScot (2020). *General pre-application and scoping advice for onshore wind farms*. Guidance;

- Scottish Natural Heritage (SNH) (2000). *Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action*. SNH Guidance Note;
- SNH (2016a). *Assessing connectivity with Special Protection Areas (SPAs)*. Version 3;
- SNH (2016b). *Environmental Statements and Annexes of Environmentally Sensitive Bird Information; Guidance for Developers, Consultants and Consultees* Version 2;
- SNH (2017). *Recommended Bird Survey Methods to inform impact assessment of Onshore Windfarms*;
- SNH (2018a). *Assessing significance of impacts from onshore windfarms on birds out with designated areas*. Version 2;
- SNH (2018b). *Assessing the cumulative impacts of onshore wind farms on birds*. SNH Guidance Note;
- SNH (2018c). *Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland*; and
- 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.

6.4 Consultation

6.4.1 During the pre-application EIA process, NatureScot, the Royal Society for the Protection of Birds (RSPB) Scotland and The Highland Council provided comment relating to ornithological matters presented in the Scoping Report for the Proposed Development. NatureScot was presented with further information on confidential data, and planned scope of surveys and assessment in November 2019, and provided further comment in January 2020. A further consultation letter describing survey effort in 2020 was provided in December 2020, with a response from NatureScot in January 2021.

6.4.2 A summary of the consultation responses and how they have been addressed in this chapter is presented in Table 6.1.

Table 6.1 – Scoping Key Issues

Consultee	Comment	How Addressed in Chapter
NatureScot (formerly Scottish Natural Heritage) Scoping Response 23 August 2019	A number of important and sensitive species have been recorded in the immediate vicinity of the proposal. Our advice is our bird survey guidance [SNH, 2017] should be closely followed and two full years of survey will be required.	Two consecutive years of ornithology surveys have taken place following the recommended SNH (2017) guidance. Full details of survey methodology and effort are presented in Annexes B and C of Appendix 6.1.
	An assessment of the impacts on the North Inverness Lochs Special Protection Area (SPA) and the Loch Knockie and nearby Lochs SPA should be included within the EIA Report. We advise that information to support an appropriate	Effects of the Proposed Development on Natura sites have been considered in Appendix 6.4, with information provided to inform an Appropriate Assessment as part

Consultee	Comment	How Addressed in Chapter
	assessment is likely to be required. Given the difficulties of surveying the particular qualifying interests at these sites theoretical modelling will be required.	of the Habitats Regulations Appraisal (HRA) process. This includes the two SPAs highlighted by NatureScot.
NatureScot 26 August 2019 Confidential Scoping Response	Golden eagle territories within the study area (6km) will require modelling to show the likelihood of their interest in the wind farm site.	Predicted <i>Aquila</i> Territory (PAT) and Golden Eagle Territory (GET) modelling has been undertaken to inform the assessment. See Confidential Figures 6.2.1 and 6.2.2 for results of modelling, and Appendix 6.3 for golden eagle population modelling.
	Slavonian grebe recorded within the study area should be considered part of the SPA population.	Slavonian grebe, as qualifying features of SPAs within 20km of the Proposed Development site have been assessed as part of the HRA process (Appendix 6.4). The wider countryside population has been assessed under the EIA process in this chapter.
	Dedicated diver surveys will also be required due to activity within the study area.	Surveys for breeding divers were included in the 2km scarce breeding bird surveys.
RSPB Scotland 09 August 2019 Scoping Response	We recommend scoping in to an HRA the effects on the North Inverness Lochs SPA and Loch Knockie SPA which are notified for breeding Slavonian grebes.	As noted above, this has been undertaken (see Appendix 6.4).
	It is important that any potential effects on the North Scotland Slavonian grebe population are carefully assessed in the context of nearby SPAs.	As noted above, this has been undertaken within an EIA context in this chapter, and in an HRA context in Appendix 6.4.
	The EIA Report should include a full survey, impact assessment and proposals for mitigation/enhancement in relation to important habitats and species on this site, including a specific plan for Slavonian grebe.	Full survey details are presented in Appendix 6.1, Annexes B and C. Mitigation and enhancement measures considered necessary and relevant to the Proposed Development are presented in section 6.8.
	We are generally happy with the scope of survey work undertaken. However, the initial vantage points undertaken from Sept 2018-June 2019 did not achieve full coverage of the Proposed	A second breeding bird season was surveyed in 2020 which provided spatial coverage of the Proposed Development's final turbine layout, as requested.

Consultee	Comment	How Addressed in Chapter
	Development area, and although these were then adapted to achieve better coverage, the survey work is proposed to continue only until August 2019. We would therefore recommend that survey work is undertaken for a second breeding season.	Figure 6.1 and Figure 6.2 present the location of VPs and spatial coverage of associated viewsheds in relation to proposed turbine locations.
	We recommend that more information is provided within the EIA report to demonstrate that the survey data are adequate, robust and accurate.	Full survey details are presented in Appendix 6.1, Annexes B and C. Any relevant (non-significant) limitations to the assessment are presented in the <i>Limitations to Assessment</i> section within section 6.5.
	We request that a detailed Habitat Management Plan (HMP) is prepared and submitted with any application that comes forward.	An Outline HMP is presented in Appendix 5.7. Details of final management plans would be agreed with consultees prior to commencement of construction.
	Cumulative impacts on species that are sensitive to wind energy developments should be assessed across the Natural Heritage Zone (NHZ).	A cumulative assessment is presented in section 6.12. Effects on breeding bird populations have been conducted at an NHZ scale.
The Highland Council 23 August 2019 Scoping Response	The presence of protected species such as Schedule 1 Birds must be included and considered as part of the planning application process.	Protected bird species that are listed in Schedule 1 of the Wildlife & Countryside Act and/or Annex I of the EU Birds Directive have been determined to be important ornithological features (IOFs) and taken forward for assessment if there is the possibility of a significant effect.
	An assessment of the impacts to birds through collision, disturbance and displacement from foraging / breeding / roosting habitat will be required for both the proposed development site and cumulatively with other proposals.	All potentially significant impacts on birds, including those listed (left) have been considered as part of the assessment within this chapter. This includes cumulative effects (section 6.12).
	The EIA Report should be clear on the survey methods and any deviations from guidance on ornithology matters.	Details of survey methods are provided in Appendix 6.1, Annexes B and C. Any survey limitations and deviations are presented in section 6.5, <i>Limitations to Assessment</i> .

Consultee	Comment	How Addressed in Chapter
NatureScot 10 January 2020 Post-scoping: response to Technical Note	We disagree with the suggestion that Slavonian grebe impacts can be excluded at this stage [prior to EIA Report assessment]. We therefore remain of the view that there is a likely significant effect with the Loch Knockie and nearby Lochs SPA and North Inverness Lochs SPA. An appropriate assessment will therefore be required.	Noted. Information to inform an Appropriate Assessment on relevant SPAs is provided in this chapter.
	While we appreciate there is data covering nearby areas and this provides some context, due to the numerous sensitive species including those connected to international designations we do not agree that it is appropriate to undertake less than the minimum number of surveys described in the guidance. We therefore require that two years of surveys covering the suite set out in the guidance are required for this site.	Two years of surveys have been completed within the Site and appropriate survey buffers, following SNH (2017) guidance.
NatureScot 22 January 2021 Post-scoping: response to letter (Dec 20)	NatureScot agrees the survey gaps highlighted in the letter due to lockdown restrictions will not prevent an impact assessment being undertaken.	Noted. See section 6.5, <i>Limitations to Assessment</i> for a summary of survey effort in 2020.

6.5 Assessment Methodology and Significance Criteria

6.5.1 This chapter takes an appropriate and topic-specific approach to assessment of the Proposed Development within the parameters identified in Chapter 2 (Design Iteration and Proposed Development). This chapter provides a worst-case assessment of the Proposed Development for ornithology and presents sufficient information for consultees and the decision makers to comment on and determine the application within the parameters of the Proposed Development.

Study Area

6.5.2 The assessment focuses on the Site and appropriate buffer areas, based on SNH (2017) survey guidance and SNH (2016a; 2018a,b,c) assessment guidance (see Appendix 6.1 for further details).

6.5.3 The specific study areas associated with this assessment are as follows:

- ornithological designated sites: within 20km of the Site (Figure 6.3);
- scarce breeding birds (divers, raptors, Slavonian grebe): up to 2km buffer around the Site (Figure 6.4);
- black grouse up to 1.5km buffer around the Site (Figure 6.4);
- breeding birds (waders): up to 500m around the Site (Figure 6.4); and

- flight activity (Vantage Point, VP) surveys: within the turbine area and a 500m buffer of the outermost turbine locations, referred to for collision risk modelling (CRM) purposes as the Collision Risk Analysis Area (CRAA) (see Appendix 6.1: Ornithology, Annex E and Figures 6.1 and 6.2).

Desk Study

6.5.4 The desk study used the following sources for information:

- NatureScot Sitelink (<https://sitelink.nature.scot/home>) for designated sites;
- The Highland Raptor Study Group (HRSRG) for historic raptor nest site locations, occupancy and breeding success;
- RSPB Scotland – provision of their Scottish Slavonian grebe breeding dataset;
- The Bhlaraidh Wind Farm (Operational Development) Environmental Statement (ES) (baseline survey data from 2009 to 2012), pre-construction survey report from 2015 and post-construction monitoring in 2018; and
- Relevant ornithological information presented in ESs, EIA Reports, Technical Reports etc. for other nearby wind farm projects.

Field Surveys

6.5.5 Ornithological fieldwork for the Proposed Development commenced in October 2018 and was completed in August 2020, and comprised the surveys detailed below (see Appendix 6.1, Annex B for methodologies and Annex C for survey effort details; and Figure 6.5 for survey areas).

- Flight activity surveys: October 2018 to August 2020.
- Scarce breeding bird surveys: February to August 2019 and February to August 2020.
- Black grouse surveys: April/May 2019 (surveys in 2020 were not undertaken due to access restrictions relating to Covid-19 – see *Limitations to Assessment* below for details).
- Breeding bird surveys: April to July 2019 and May to July 2020 (surveys in April 2020 were not undertaken due to access restrictions relating to Covid-19 – see *Limitations to Assessment* for details).
- Winter walkover surveys: November and December 2018, February and November 2019, January and February 2020.

Assessment of Likely Effect Significance

Outline Assessment Process

6.5.6 This section defines the methods used to assess the significance of effects through the process of an evaluation of the sensitivity of a feature (a combination of nature conservation importance and conservation status) and magnitude for each likely impact. The assessment focuses on a ‘worst-case’ Proposed Development as described in *Likely Effects*, section 6.9.

6.5.7 The evaluation for wider-countryside interests (not relating to Natura sites covered by the HRA process) involves the following process:

- identifying the potential impacts associated with the Proposed Development;
- considering the likelihood of occurrence of potential impacts where appropriate;
- defining the nature conservation importance and conservation status of the bird populations present to establish level of sensitivity;

- establishing the magnitude of the likely impact (both spatial and temporal);
- based on the above information, making a judgement as to whether or not the resultant unmitigated effect is significant with respect to the EIA Regulations;
- if a potential effect is determined to be significant, suggesting measures to mitigate or compensate the effect where required;
- considering opportunities for enhancement where appropriate; and
- confirming residual effects after mitigation or enhancement are considered.

HRA Process

6.5.8 The method for assessing the likely significant effects on a Natura site (in this context, an SPA) is different from that outlined above for wider-countryside ornithological interests. This is based on the Habitats Directive, which is transposed into domestic legislation by the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) Regulation 48, and includes a number of steps to be taken by the competent authority before granting consent (these are referred to here as an HRA). All information relating to the assessment of potential effects on SPAs is presented separately in Appendix 6.4: Habitats Regulations Appraisal and not addressed in this chapter.

Sensitivity of Feature

6.5.9 Determination of the level of sensitivity of a feature is based on a combination of the feature's nature conservation importance and conservation status.

6.5.10 There are three levels of nature conservation importance as detailed in Table 6.2.

Table 6.2 – Determining factors of a feature's Nature Conservation Importance

Importance	Description
High	Populations receiving protection by an SPA, proposed SPA, Ramsar Site, Site of Special Scientific Interest (SSSI) or which would otherwise qualify under selection guidelines. Species present in nationally important numbers (>1% national breeding or wintering population).
Medium	The presence of species listed in Annex 1 of the Birds Directive (but population does not meet the designation criteria under selection guidelines). The presence of breeding species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). The presence of rare breeding species noted on the latest Birds of Conservation Concern (BoCC) Red list (Eaton <i>et al.</i> 2015). Regularly occurring migratory species, which are either rare or vulnerable, or warrant special consideration on account of the proximity of migration routes, or breeding, moulting, wintering or staging areas in relation to the Proposed Development. Species present in regionally important numbers (>1% regional breeding population).
Low	All other species' populations not covered by the above categories.

- 6.5.11 IOFs (as per CIEEM, 2018) to be assessed for the purposes of EIA, were taken to be those species of high and medium nature conservation importance.
- 6.5.12 As defined by SNH (2018a), the conservation status of a species is “*the sum of the influences acting on it which may affect its long-term distribution and abundance, within the geographical area of interest*”. Conservation status is considered by SNH (2018a) to be ‘favourable’ under the following circumstances:
- “*population dynamics indicate that the species is maintaining itself on a long-term basis as a viable component of its habitats;*
 - *the natural range of the species is not being reduced, nor is likely to be reduced for the foreseeable future; and*
 - *there is (and probably will continue to be) a sufficiently large habitat to maintain its population on a long-term basis”.*
- 6.5.13 SNH (2018a) recommends that “*the concept of favourable conservation status of a species should be applied at the level of its Scottish population, to determine whether an impact is sufficiently significant to be of concern. An adverse impact on a species at a regional scale (within Scotland) may adversely affect its national conservation status*”. Thus, “*An impact should therefore be judged as of concern where it would adversely affect the existing favourable conservation status of a species or prevent a species from recovering to favourable conservation status, in Scotland.*”
- 6.5.14 In the case of non-designated sites in Scotland, the relevant regional scale for breeding species is considered to be the appropriate NHZ which the site falls within. The Proposed Development site is within NHZ 7 (North Highlands).
- 6.5.15 For wintering or migratory species, the national UK population or flyway population is considered to be the relevant scale for determining effects on the conservation status, and this approach is applied here.

Magnitude of Impact

- 6.5.16 An impact is defined as a change of a particular magnitude to the abundance and/or distribution of a population as a result of the Proposed Development. Effects can be adverse, neutral or favourable.
- 6.5.17 In determining the magnitude of impacts, the resilience of a population to recover from temporary adverse conditions is considered in respect of each potentially affected population.
- 6.5.18 The sensitivity of individual species to disturbance during relevant behaviours is considered when determining spatial and temporal magnitude of effect and is assessed using guidance described by Bright *et al.* (2006), Hill *et al.* (1997) and Ruddock and Whitfield (2007).
- 6.5.19 Impacts are judged in terms of magnitude in space and time. There are five levels of spatial and temporal impact magnitude as detailed in Table 6.3 and Table 6.4 respectively.

Table 6.3 – Spatial magnitude of impact

Spatial magnitude	Description
Very High	Total/near total loss of a bird population due to mortality or displacement. Total/near total loss of productivity in a bird population due to disturbance. Guide: >80% of population lost or increase in additive mortality.
High	Major reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Guide: 21-80% of population lost or increase in additive mortality.

Spatial magnitude	Description
Medium	Partial reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Guide: 6-20% of population lost or increase in additive mortality.
Low	Small but discernible reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Guide: 1-5% of population lost or increase in additive mortality.
Negligible	Very slight reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Reduction barely discernible, approximating to the “no change” situation. Guide: <1% of population lost or increase in additive mortality.

Table 6.4 – Temporal magnitude of Impact

Temporal magnitude	Description
Permanent	Effects continuing indefinitely beyond the span of one human generation (taken as approximately 25-30 years), except where there is likely to be substantial improvement after this period. Where this is the case, long-term may be more appropriate.
Long-term	Approximately 15-25 years or longer (see above).
Medium-term	Approximately 5-15 years.
Short-term	Up to approximately 5 years.
Negligible	<12 months.

Potential Cumulative Effects

- 6.5.20 The *Cumulative Assessment* section (section 6.12) presents information about the potential cumulative effects of the Proposed Development combined with other operational, consented or proposed wind farm projects.
- 6.5.21 SNH (2018b) has provided guidance on assessing the cumulative effects on birds. This assessment follows the principles set out in that guidance.
- 6.5.22 Cumulative effects may include cumulative disturbance-displacement, collision mortality, habitat loss or barrier effects. Some cumulative impacts, such as collision risk, may be summed quantitatively, but according to SNH (2018b) “*In practice, however, some effects such as disturbance or barrier effects may need considerable additional research work to assess impacts quantitatively. A more qualitative process may have to be applied until quantitative information becomes available for developments in the area, e.g. from post-construction monitoring or research*”.
- 6.5.23 The main projects likely to cause similar effects on ornithological features are other Operational Developments, or those under construction, consented, or in the planning process within NHZ 7.

Statement of Significance

6.5.24 The potential significance of effect was determined through a standard method of assessment based on professional judgement, considering both sensitivity and magnitude of change as detailed in Table 6.5. Major and moderate effects are considered significant in the context of the EIA Regulations.

Table 6.5 – Significance criteria

Significance	Description
Major	Significant effect, as the effect is likely to result in a permanent/ long term and very high/ high extent significant adverse effect on the integrity of the feature.
Moderate	Significant effect, as the effect is likely to result in a medium term and high / medium extent partially significant adverse effect on the integrity of the feature.
Minor	The effect is likely to adversely affect the feature at an insignificant level by virtue of its limited duration and/or extent, but there will probably be no effect on its integrity. This is not a significant effect.
Negligible	No material effect. This is not a significant effect.

Requirements for Mitigation

6.5.25 Mitigation will be required if the potential effect determines that there is an unmitigated moderate adverse or major adverse and therefore potentially significant effect on any IOF identified in this chapter.

Assessment of Residual Effect Significance

6.5.26 If a potential effect is determined to be significant, suggested measures to mitigate the effect to a non-significant level will be considered and the revised significance of residual effects after mitigation will be assessed.

Limitations to Assessment

Flight Activity Surveys – Vantage Point Coverage

6.5.27 The viewsheds from vantage points covered the majority of the Site, although turbines T8 and T9 are just outside of the predicted VP1 viewshed coverage at 20m altitude (Figure 6.2). However, it is likely that any flights over these turbine locations above 20m, and therefore at potential risk height (22m-180m), would be observable. Turbine T13 is just beyond the 2km viewshed of VP1, but lies in an area similar to that covered by VP1, VP6 and VP7 and so coverage is considered representative of this area, and the Site as a whole.

Survey Coverage – 2020 Breeding Season

6.5.28 The UK wide Covid-19 lockdown was implemented on 23rd March 2020 and access to the site (which is via the Operational Development) was suspended. Consequently the 2020 breeding season surveys at the site (which commenced in February) were also suspended from the 23rd of March until the 20th of May 2020. As agreed with NatureScot (Table 6.1) this gap is not considered to be a significant limitation to allow a robust assessment for the reasons outlined per survey type below:

- Flight activity surveys: the recommended minimum of 36 hours survey effort per VP was still achieved for each VP during the 2020 breeding season;

- Scarce breeding bird surveys: whilst there is some potential for breeding activity to have been missed in April, the key species known to be present at the Site are likely to have been adequately surveyed due to the reasons outlined below.
 - Golden eagle: early breeding season surveys were completed in February and March 2020, with surveys then continuing as planned from May to August 2020. Considering that 2020 was the second year of surveys (with four alternative eyries within the territory already known to surveyors), the lack of surveys in April is not likely to have resulted in any missed breeding attempts.
 - Slavonian grebe: survey timings to check for breeding activity are defined by Gilbert *et al.* (1998) as a first visit in late May with a second visit in July. Consequently, the lack of April surveys is not considered to be a limitation.
 - Black-throated diver: survey timings to check for breeding activity are defined by Gilbert *et al.* (1998) as two or more visits between 23rd April and 23rd July. Consequently, whilst there may have been some very early breeding attempts that failed prior to surveys restarting on 20th May 2020, given the presence of multiple previous years of diver breeding data (from 2019 surveys and baseline surveys from the Operational Development), the lack of April surveys is not considered to be a limitation.
 - Red-throated diver: survey timings to check for breeding activity are defined by Gilbert *et al.* (1998) as a first visit in late May/early June with a second visit in July. Consequently, the lack of April surveys is not considered to be a limitation.
- Breeding bird surveys (waders): breeding bird surveys in 2020 comprised of three complete visits (May, June and July) rather than the recommended four visits between April and July (SNH 2017). Whilst it is acknowledged that the lack of surveys for breeding waders in April may have resulted in missing any early failed breeding attempts by waders, given the data available from 2019, and the baseline surveys for the Operational Development, this is not expected to affect the robustness of the assessment. Furthermore, the site is located at between 400m and 580m elevation in the Scottish Highlands, and so whilst breeding wader activity may have commenced in April, it is likely that May/June represent the peak of activity.
- Black grouse: SNH (2017) survey guidance recommends that surveys are undertaken in April and May for black grouse. As access was not permitted until 20th May 2020, the decision was taken to prioritise the breeding bird, scarce breeding bird and flight activity surveys in the remaining 12 days of May 2020 and as a result no black grouse surveys were undertaken in 2020. However, considering that black grouse data are available for the site from 2011, 2015, 2018 and 2019, and that distribution is well known, the data available are considered to provide a good understanding of black grouse activity at the site.

6.6 Baseline Conditions

Designated Sites

- 6.6.1 There are no statutory nature conservation designations with an ornithological interest within the site. Table 6.6 details the designated sites located within 20km of the Proposed Development Site that have ornithological interests, with locations shown on Figure 6.3.

Table 6.6 – Designated Sites within 20 km of the Proposed Development

Name	Distance	Qualifying interests	Status
Loch Knockie and Nearby Lochs SPA	6.7km south	Slavonian grebe (breeding)	Unfavourable no change: July 2002
Knockie Lochs SSSI		Common scoter <i>Melanitta nigra</i> (breeding) SSSI only	Favourable maintained: March 2005
North Inverness Lochs SPA	7.7km northwest	Slavonian grebe (breeding)	Favourable maintained: May 2009
Dubh Lochs SSSI			
Glen Affric to Strathconon SPA	7.9km northwest	Golden eagle (breeding)	Favourable maintained: October 2010
Glen Affric SSSI		Breeding bird assemblage (SSSI only)	Favourable maintained: July 2003
Balnagrantach SSSI	13km northwest	Slavonian grebe (breeding)	Favourable Maintained: July 2002
West Inverness-shire Lochs SPA	15.4km west	Black-throated diver <i>Gavia arctica</i> (breeding)	Favourable maintained: June 2010
West Inverness-shire Lochs SSSI		Common scoter (breeding)	Unfavourable declining: August 2018
Glendoe Lochans SSSI	15.7km south	Slavonian grebe (breeding)	Favourable Maintained: August 2002
		Common scoter (breeding)	Favourable Maintained: March 2005
Loch Ruthven SPA	19.7km east	Slavonian grebe (breeding)	Favourable maintained: May 2009
Loch Ruthven Ramsar			
Loch Ruthven SSSI		Breeding bird assemblage (SSSI only)	Favourable maintained: June 2010

Birds Recorded During Desk and Field Surveys

6.6.2 The following paragraphs summarise the results of the 2018 to 2020 ornithology field surveys and of the desk study. Full details of the results of 2018 to 2020 surveys can be found within Appendix 6.1, Confidential Appendix 6.2, Figure 6.6 to Figure 6.11 and Confidential Figure 6.2.1 to Confidential Figure 6.2.5.

Flight Activity Surveys

6.6.3 A summary of the results of flight activity surveys conducted from 2018 to 2020 is presented below in Table 6.7. Further detail is presented in Appendix 6.1: Ornithology Annex E.

Table 6.7 – Flight Activity Survey Results 2018-2020

Species	Total flight events	Total birds recorded	Total flight seconds recorded
Black-throated diver	2	2	247
Golden eagle	90	105	19,838
Golden plover	2	2	78
Goshawk <i>Accipiter gentilis</i>	2	2	193
Greenshank	4	5	689
Greylag goose <i>Anser anser</i>	2	8	834
Osprey <i>Pandion haliaetus</i>	2	2	1,130
Peregrine falcon <i>Falco peregrinus</i>	3	3	351
Pink-footed goose <i>Anser brachyrhynchus</i>	1	28	4,228
Red kite <i>Milvus milvus</i>	7	7	817
Red-throated diver	7	9	1,123
Snipe <i>Gallinago gallinago</i>	1	1	12
White-tailed eagle <i>Haliaeetus albicilla</i>	7	11	3,395

6.6.4 Collision risk modelling was undertaken using the flight activity survey data across the baseline period (Table 6.8, and see Appendix 6.1: Ornithology Annex E for further details). The annual collision rate for each species has been calculated by summing the mean breeding season (2019 and 2020) and the mean non-breeding season (2018-2019 and 2019-2020) collision rates.

6.6.5 Six species were recorded during flight activity surveys, but no flights were considered to be ‘at-risk’ (i.e., the flights were outside of the CRAA and associated viewshed and/or were only recorded flying below lower rotor tip height) and are therefore not included in Table 6.8.

Table 6.8 – Collision Risk Modelling Results (collision rate per season)

Species	2018-2019 NBS	2019 BS	2019-2020 NBS	2020 BS	Mean Annual	Years per collision
Golden eagle	0.100	0.093	0.029	0.138	0.180	5.6
Goshawk	0	0	0.018	0	0.009	109.6
Greenshank	0	0	0	0.012	0.006	169.9
Osprey	0	0.029	0	0	0.015	68.5
Red kite	0	0	0.050	0	0.025	39.9
Red-throated diver	0	0	0	0.009	0.004	226.3
White-tailed eagle	0.089	0	0	0.010	0.050	20.0

NBS = non-breeding season; BS = breeding season.

Wildfowl

6.6.6 Geese species were infrequently recorded during baseline surveys, with a small number of migratory greylag goose (up to 50 birds) and pink-footed goose (up to 140 birds) flocks in flight above the Site. There was no evidence that these species make any use of habitats within the Site.

6.6.7 Geese were also infrequently recorded in flight during surveys for the Operational Development in 2009-2011.

Divers

6.6.8 Diver breeding information is available from baseline surveys for the Proposed Development in 2019 and 2020, and for the Operational Development in 2009-2011 (baseline surveys), 2015 (pre-construction surveys) and 2018 (post-construction monitoring).

Black-throated diver

6.6.9 In 2019 black-throated divers were recorded on Loch ma Stac (c.1km to the west of the Operational Development) and Loch a' Chrathaich (adjacent to the Site and the Operational Development, but over 1.5km from the nearest proposed turbine location) (Confidential Figure 6.2.3). In mid-May it was thought that a pair may have been establishing a nest on the eastern edge of Loch a' Chrathaich (near operational turbine T25), however no further signs of breeding activity were recorded, and it was concluded that the pair did not breed.

6.6.10 Only one black-throated diver was recorded in 2020, with an individual loafing on Loch à Chrathàich in July.

6.6.11 Baseline surveys for the Operational Development recorded breeding black-throated diver in 2009, around 4km to the east of the site, but no observations within the 2km study area.

6.6.12 During pre-construction surveys for the Operational Development in 2015, single black-throated divers were recorded on Lochan an Ruighe Duibh (within the Site boundary); on Loch Liath (southwest of the Operational Development site); and on Loch nam Meur (north of the 2km study area). In 2018, birds were recorded on Loch ma Stac but no breeding evidence was observed.

Red-throated diver

6.6.13 Red-throated diver activity was recorded at a number of locations within the 2km study area during the 2019 breeding season, particularly to the north of the Site (Confidential Figure 6.2.3) but no

breeding evidence was observed. Birds were recorded on Loch a' Chrathaich at the edge of the Site; an unnamed loch due east of Loch a' Chrathaich (within the Site, between operational T25 and T23); Loch Carn Tarsuinn (within the Site); Loch a' Mhuilinn (400m north west of the Site); and further afield on waterbodies within the loch complex of Loch na Ruighe Duibhe, Loch nam Meur and Loch Aslaich (500m to 2km north of the Site); and Loch an t-Sionnaich (2.2km to the east).

- 6.6.14 In 2020, pairs were recorded on Loch na Ruighe Duibhe, and Lochan Coire na Rainich within the Site, and Loch Liath, Loch na Faoleige, and two un-named lochs within the northern 2km study area. Although breeding was considered possible on one of the un-named lochs, this could not be confirmed.
- 6.6.15 Baseline surveys for the Operational Development showed again that the loch complex to the north of the Site was more widely used by the species than the Site itself. Surveys recorded breeding red-throated diver on an unnamed lochan directly to the north west of Loch Aslaich (2010) and an unnamed lochan east of Loch nan Oighreagan (2009 and 2010) (Confidential Figure 6.2.3), with both locations 2km or more from the Site. Few records were within the Site, with presence noted on three lochs in 2011, and on Loch Liath and Loch a' Chrathaich just outside of the Site in 2009 and 2010 respectively.
- 6.6.16 There were no records made during pre-construction surveys for the Operational Development in 2015, but in 2018 monitoring recorded non-breeding presence on Lochan an Ruighe Duibh and an un-named loch within the northern 2km study area buffer.

Slavonian Grebe

- 6.6.17 As well as baseline breeding survey results from 2019 and 2020, and Operational Development breeding survey results from 2009 to 2018, information on Slavonian grebe was obtained from RSPB who provided a copy of their dataset on breeding locations across Scotland, from 1970 to 2018.
- 6.6.18 During baseline surveys in 2019, a pair of Slavonian grebe (SZ_1) was recorded on a lochan outside of the Site but within the 2km study area (see Confidential Figure 6.2.4 for details). One chick was successfully fledged. In 2020 the lochan was again occupied by a pair but it was likely that the breeding attempt failed.
- 6.6.19 A pair (SZ_2) was also recorded on a loch to the east, over 2km from the Site in 2019. This site was not checked in 2020 as it was outside of the final study area.
- 6.6.20 A third loch within the 2km study area buffer had a pair present (SZ_3) in 2020, but breeding success could not be confirmed.
- 6.6.21 In 2011, three pairs of Slavonian grebes were recorded nesting within the Operational Development's wider survey area. The nearest was around 2km from the Site, with another pair located on a loch close to that occupied by SZ_2 in 2019, and a third around 8km from the Site. There were no records of the species during monitoring in 2015 or 2018.
- 6.6.22 The historic Slavonian grebe dataset provided by RSPB Scotland provided one further probable breeding location (from 2016) within the 2km study area buffer, and another one (from 2004) close to the location of the pair recorded at the 2km buffer distance in 2011. Probable breeding was also recorded in the area around SZ_2, in years up to and including 2018. When viewing the whole dataset in the wider Highlands area it is evident that breeding locations run in an arc from north of the Site to the southeast of the Site, with breeding records absent to the west (Confidential Figure 6.2.4).

Black Grouse

- 6.6.23 Black grouse lek data are available from Operational Development black grouse surveys in 2012, 2015 and 2018, and from baseline black grouse survey results from 2019 (plus incidental records from other surveys in 2018-2020).
- 6.6.24 Black grouse were located lekking at four locations within the 1.5km survey area during the 2019 baseline surveys (Table 6.9, Figure 6.6). Of these, Lek 1 was the most frequently used and also the largest lek located during surveys, with up to ten males and two females present.

6.6.25 Baseline surveys for the Operational Development in 2011 identified a total of ten black grouse lekking areas in the wider survey area, with four located in the Proposed Development 1.5km study area, roughly in the same area as Leks 1-4 in 2019. A peak of seven males attended Lek 1 in 2011. During pre-construction and operational monitoring, Lek 1 continued to have male presence (with a peak of 13 males and six females in 2015). Other previously recorded lek sites were outside of the monitoring survey area and so were not checked in 2015 or 2018, with the largest (around 2km from the Site) holding 18 males in 2011.

Table 6.9 – Summary of Black Grouse Lek Activity 2011, 2015, 2018 and 2019 (no. males / females)

Lek ID	Distance from nearest turbine / access track	Operational Development			Proposed Development
		2011 Baseline	2015 Pre-construction	2018 Operational	2019 Baseline
1 (AB)	1.9km: T8 / 73m (1.8km: T8 / 52m)	7 / 1	13 / 6	7 / 0	10 / 2
2 (AA)	2.5km: T9 / 383m (1.3km: T9 / 1.2km)	1 / 0	Not surveyed	Not surveyed	3 / 0
3 (Z)	1.8km: T16 / 2km (965m: T16 / 2.4km)	1 / 0	Not surveyed	Not surveyed	4 / 0
4 (X)	711m: T18 / 3.2km (2km: T18 / 4km)	3 / 1	Not surveyed	Not surveyed	6 / 0

Raptors

Golden Eagle

6.6.26 Golden eagle data are available from survey results from 2009 to 2012, 2015 and 2018 for the Operational Development; baseline breeding survey results in 2019 and 2020; and HRSG data on breeding locations, NHZ occupancy and productivity.

6.6.27 Baseline surveys for the Operational Development in 2009-2012 identified a golden eagle pair holding territory within the 6km study area, however there was no indication of breeding at the known historic nest site (EA_1.2, Confidential Figure 6.2.1) during this period. During pre-construction surveys in 2015 the pair again appeared to be resident without any breeding activity observed.

6.6.28 In 2019 and 2020, the territory was again occupied by a pair, with a further four potential nest/roost locations identified by surveyors (EA_1.1, EA_1.3, EA_1.4 and EA_1.5, Confidential Figure 6.2.1), all over 1km from the Site. Despite displaying territorial behaviour (individual and pair displaying, chasing off sub-adult(s)) and some evidence of recent refurbishment at EA_1.3 in 2019, and at EA_1.2 in 2020, no breeding attempts were recorded at any of the nest locations, and both adults were frequently seen in flight throughout the breeding season, suggesting incubation was unlikely.

6.6.29 Golden eagle flights were recorded throughout the year (Figure 6.7 and Figure 6.8) with most activity recorded outside of the Site, in areas closer to potential nest/roost sites.

Other Raptors

- 6.6.30 No other raptor species was confirmed as breeding within the 2km study area during the baseline survey period, and in general raptor species presence was consistent with that recorded during the 2009-2011 Operational Development baseline surveys and 2015 and 2018 monitoring.
- 6.6.31 One possible merlin *Falco columbarius* territory, some 4km east of the Site, was recorded in 2019, where an adult was observed mobbing a golden eagle. In July 2020 a female merlin with juvenile was observed in the Loch Liath area to the north of the Site, indicating possible breeding, but no flight activity was recorded during the baseline surveys. During surveys in 2009-2011 for the Operational Development, one pair of merlin nested in 2010 and 2011 outside of the Site but within the 2km study area buffer (different locations). There was no breeding evidence recorded in 2015 or 2018.
- 6.6.32 As indicated in Table 6.7 and Figure 6.9, the presence of other raptor species was infrequent. On single days in March and May 2019, two white-tailed eagles were present, but appear to be transient birds, with no other observations made that year, and only single birds rarely present in 2020.
- 6.6.33 Likewise, red kite, peregrine and hen harrier *Circus cyaneus* were observed in flight on a small number of occasions, with osprey also being recorded fishing around Lochan an Ruighe Dhuibh and Loch Carn Tarsuinn Beag. In 2009-2011 ospreys were recorded occasionally fishing at Loch na Feannaig (NH 396, 202) and the pool above the dam at Loch a' Mheig (NH 414, 199). No other raptor breeding attempts were recorded in 2015 or 2018.

Waders

- 6.6.34 Baseline surveys recorded nine wader species within the study area, almost exclusively during the breeding seasons. Of these, six displayed signs of breeding: golden plover, greenshank, dunlin *Calidris alpina*, common sandpiper *Actitis hypoleucos*, curlew *Numenius arquata* and snipe; with non-breeding lapwing *Vanellus vanellus*, ringed plover *Charadrius hiaticula* and woodcock *Scolopax rusticola* recorded on very few occasions.
- 6.6.35 Table 6.10 compares wader activity recorded during the 2019 and 2020 baseline surveys with the Operational Development baseline (2009-2011) pre-construction (2015) and post-construction (2018) breeding bird surveys. The total number of estimated breeding territories recorded each year within the Proposed Development Site and the 500m study area buffer is indicated in parenthesis during these years (where known).
- 6.6.36 It should be noted that whilst the baseline survey breeding wader study area for the Operational Development extended across the Proposed Development's 500m breeding wader study area, the pre- and post-construction surveys for the Operational Development only covered the area within the Operational Development site boundary. Therefore, the earlier surveys did not cover the full Proposed Development study area (nor does the Proposed Development study area overlap with the entire Operational Development site boundary) so values may be considered minimum estimates in these years (i.e. in 2009- 2018).

Table 6.10 – Breeding Wader Summary 2009 to 2020: total estimated number of territories (territories within 500m study area)

Species	2009	2010	2011	2015	2018	2019	2020
Golden plover	22 (2)	30 (6)	11 (6)	11 (6)	4 (2)	10-18 (3)	4 (2)
Greenshank	5 (0)	4 (0)	3 (1)	2 (2)	3 (0)	11-17 (5)	3 (3)
Dunlin	5 (0)	6 (0)	3 (0)	3 (0)	4 (1)	1 (0)	1 (0)
Common sandpiper	-	-	-	13 (6)	7 (5)	9 (5)	10 (7)
Curlew	1	1	0	0	0	1 (1)	0 (0)

Species	2009	2010	2011	2015	2018	2019	2020
Snipe	13	14	-	-	10 (6)	8 (3)	3 (1)

“-” = no information available.

Greenshank

- 6.6.37 Greenshank breeding activity was recorded close to lochs throughout the 2km study area, but mainly within the loch complex to the north of the Site. In 2019 it was likely that there was one breeding territory within the Site, and a further four territories within around 500m of the Site boundary. In 2020 two territories were found near the Site boundary, with a further territory in the 500m study area buffer.
- 6.6.38 During surveys for the Operational Development in 2009-2018 up to two territories were recorded within the Site (in 2015), with most other territories over 500m away from the Site boundary, mainly to the north (Confidential Figure 6.2.5).

Golden Plover

- 6.6.39 In 2019 most golden plover territories were located outside of the 500m study area, particularly to the north and east. In both 2019 and 2020, one territory was within the Site, with a further two overlapping with the 500m study area buffer in 2019, and one in 2020 (Figure 6.10).
- 6.6.40 During pre-construction surveys for the Operational Development in 2015, up to six territories were located within the western part of the 500m study area with two in this area in 2018 during post-construction monitoring.

Dunlin

- 6.6.41 Dunlin presence is low within the 500m study area, with only one year of surveys (2018) recording a territory at the edge of the study area boundary. Most observations of breeding activity were made to the north, over 2km from the Site, with smaller numbers within the Operational Development site.

Common Sandpiper

- 6.6.42 Common sandpipers have been regularly recorded in association with waterbodies within the Site and 500m study area. Up to ten territories were observed in 2020 (all observations shown in Figure 6.11).

Curlew

- 6.6.43 Curlew is likely to be a rare breeder within the local area, with one possible territory in 2019 outside of the study area (Figure 6.11).

Snipe

- 6.6.44 Snipe is likely to breed in relatively low numbers within the Site, with up to a maximum of six territories recorded in the Site and 500m study area in 2018, but lower numbers recorded in 2019 and 2020 (Table 6.10).

6.7 Important Ornithological Features Brought Forward for Assessment

Scoped-in Important Ornithological Features

- 6.7.1 The assessment is applied to those ‘scoped-in’ IOFs of Medium or High nature conservation importance (see Table 6.2) that are known to be present within the Site or surrounding area (as confirmed through survey results and consultations outlined above). These comprise: **red-throated diver, Slavonian grebe, black grouse, golden eagle, greenshank and golden plover.**

6.7.2 In addition, all SSSIs and Ramsar sites within 20km that have Slavonian grebe as a qualifying feature (see Table 6.6) are scoped-in to the assessment, based on consultation requests outlined in Table 6.1. These are:

- Knockie Lochs SSSI;
- Dubh Lochs SSSI;
- Balnagrantach SSSI;
- Glendoe Lochans SSSI; and
- Loch Ruthven SSSI and Ramsar site.

6.7.3 All SPAs in Table 6.1 where Slavonian grebe is a qualifying feature are considered separately as part of the HRA process in Appendix 6.4. These are:

- Loch Knockie and Nearby Lochs SPA;
- North Inverness Lochs SPA;
- Glen Affric to Strathconon SPA;
- West Inverness-shire Lochs SPA; and
- Loch Ruthven SPA.

Table 6.11 – Scoped-in IOFs

Species	Nature Conservation Importance	Reason for inclusion
Red-throated diver	Medium	Annex I; Schedule 1
Slavonian grebe	High	Annex I; Schedule 1; potential SPA, SSSI and Ramsar connectivity
Black grouse	Medium	Red-listed; sensitive to wind farm development (SNH, 2018a)
Golden eagle	Medium	Annex I; Schedule 1
Greenshank	Medium	Schedule 1
Golden plover	Medium	Annex I

6.7.4 In addition, it is necessary to consider the species' conservation status when assessing the likely effects. Relevant conservation status information for the 'scoped in' IOFs is detailed within Table 6.12.

Table 6.12 – Conservation Status of Scoped-in IOFs

IOF	Conservation Status	Information
Red-throated diver	BoCC Green list (Eaton <i>et al.</i> 2015)	The British breeding population of red-throated divers in 2006 was estimated by Dillon <i>et al.</i> (2009) to be 1,143 breeding pairs, significantly up from the previous survey in 1994, although this may be in part due to differences in recording methods. In the Scottish population as a whole,

IOF	Conservation Status	Information
		<p>there has been considerable regional variation in trends between 1994 and 2006, with an apparent increase in numbers away from the Northern Isles.</p> <p>The NHZ 7 population was estimated by Wilson <i>et al.</i> (2015) to be 39 (range 19-64) pairs in 2006 and is considered to be in unfavourable conservation status due to its relatively low size, albeit this is likely in part to be a reflection of much of the NHZ's distance from the coast and availability of suitable feeding areas.</p>
Slavonian grebe	Red list (BDp1, BDp2, BDMr1, BR)	<p>Woodward <i>et al.</i> (2020a) have estimated that the UK breeding population is 28 pairs based on 2013–17 data, and in their scoping response, RSPB stated that the provisional estimate for 2019 was 26 pairs. Latest trends by Burns <i>et al.</i> (2020) estimate a -32% 10-year decline and a -55% long-term decline.</p> <p>Wilson <i>et al.</i> (2015) do not provide NHZ population estimates for the species but based on the RSPB data of breeding distribution in Scotland, NHZ 7 is likely to be a stronghold. Nevertheless, with national declines and a small national population size, the NHZ populations is considered to be in unfavourable conservation status.</p>
Black grouse	Red List (HD, BDp1, BDp2, BDMr2)	<p>Black grouse is Red-listed due to a historical decline in the UK, without substantial recent recovery. It also qualifies due to a severe decline in the UK breeding population size of >50% over 25 years.</p> <p>Breeding numbers in the UK declined by 80% between 1991 and 2004. Sim <i>et al.</i> (2008) estimated there to be 5,078 male black grouse in the UK in 2005, with approximately two-thirds of these occurring in Scotland. However, Forrester <i>et al.</i> (2007) estimate that in Scotland there are around 3,550 to 5,750 lekking males, representing about 71% of the British population. In Scotland the breeding range is contracting, and numbers are declining, though the rate of decline varies regionally, being higher in south western Scotland (-49%) compared to north Scotland (-16%). Evidence suggests that the national and regional populations are in unfavourable conservation status.</p> <p>The NHZ 7 population was estimated by Wilson <i>et al.</i> (2015) to be 473 (range 307-638) displaying males.</p>
Golden eagle	Green list	<p>The Scottish golden eagle population has steadily grown over the last few decades, with a total of 442 breeding pairs estimated at the 2003 national census (Eaton <i>et al.</i> 2007),</p>

IOF	Conservation Status	Information
		<p>increasing by 15% to 508 territorial pairs in 2015 (Hayhow <i>et al.</i> 2017).</p> <p>The NHZ 7: North Highlands' golden eagle population was determined by Whitfield <i>et al.</i> (2008) to be in unfavourable conservation status because, in 2003, only 43 ranges out of 90 known at that time were occupied. Data provided from the Highland Raptor Study Group showed that there were at least 49 pairs within NHZ 7 in 2019, although it was noted that the increase in numbers elsewhere in the Highlands has not occurred to the same extent in NHZ 7. Thus, it is unlikely that the criteria for favourable condition (>66% occupancy) has been met due to continued low occupancy rates.</p>
Greenshank	Amber list (BL)	<p>The UK greenshank breeding population was estimated to be 1,100 pairs in 1995 (Woodward <i>et al.</i> 2020a). The Scottish breeding population has more recently been estimated as 1,297 pairs (range 851-1,792) by Wilson <i>et al.</i> (2015), although it was considered by the authors that this may be a significant underestimate.</p> <p>The NHZ 7 population was estimated by Wilson <i>et al.</i> (2015) to be 148 (range 92-210) pairs, based on amended 1995 data. The authors did again believe that this may be a significant underestimate.</p> <p>Humphreys <i>et al.</i> (2017) reported an apparent increase in the Scottish breeding population, with a moderate increase in winter numbers, suggesting that the species' population is on balance, likely to be stable or favourable at a national and NHZ level.</p>
Golden plover	Green list	<p>The UK golden plover breeding population is estimated to be 32,500-50,500 pairs (Woodward <i>et al.</i> 2020a), although Forrester <i>et al.</i> (2007) give a Scottish breeding population estimate of 15,000 pairs, stating that this represents 80% of the British breeding population.</p> <p>The NHZ 7 breeding population was estimated by Wilson <i>et al.</i> (2015) to be 3,009 (range 2,762-3,255) pairs in 2005.</p> <p>Woodward <i>et al.</i> (2020b) estimate a 7% decline in Scotland over a 23-year period, although there has been a 10-year increase in national breeding numbers by 8% (2008-2018). These trends are likely to reflect the regional/NHZ population.</p>

Conservation Status Key:

HD: = Historical decline in breeding populations. Species judged to have declined severely between 1800 and 1995;

BR = Breeding rarity. Species qualified as rare breeders if the UK breeding population was <300 pairs.

BDp = Breeding Population Decline. Severe decline in the UK breeding population size, of >50 %, over 25 years (BDp1) or the entire period used for assessments since the first BoCC review, starting in 1969 (“longer-term”) (BDp2);

BDMr = Breeding range decline. Moderate decline (>25% but <50%) between 1988–91 and 2007–11 (BDMr1) or 1968–71 and 2007–11 (BDMr2);

BL = Breeding localisation. Species were considered localised if more than 50% of the UK population was found at ten or fewer sites in the breeding season.

Scoped-out Ornithological Features

- 6.7.5 Based on listed qualifying interests, distance from the Site, foraging ranges during the breeding season (Pendlebury *et al.* 2011; SNH, 2016a) and consultation responses (Table 6.1), all designated sites in Table 6.6 that do not contain Slavonian grebe as a qualifying feature have been scoped out of the EIA (and HRA – see Appendix 6.4) due a lack of likely connectivity with the Site. For similar reasons, all qualifying features other than Slavonian grebe in the scoped-in designated sites are excluded from further consideration.
- 6.7.6 Black-throated diver has been scoped-out of the assessment due to the distance of the nearest lochs used from the proposed turbine locations (over 1.5km west) and the lack of presence within the Site boundary during any surveys since 2009 (Confidential Figure 6.2.3a). No ‘at-risk’ flights were recorded during baseline surveys and it appears that the airspace over the Site is unimportant for the local population, suggesting collision risk is very low. Any mitigation proposed for red-throated divers can also be considered as enhancement for black-throated divers should management take place on lochs suitable for both species (see section 6.10).
- 6.7.7 Due to the lack, or low numbers of ‘at-risk’ flights or breeding activity recorded during baseline surveys, and lack of habitat suitability within the Site, the following target species have also been scoped out:
- Wildfowl: no suitable habitat for geese or swans found within survey area, and no estimated collision rates (see Table 6.8 and Appendix 6.1 for details);
 - Other raptor species: no breeding evidence within 2km of site, and low activity rates recorded during baseline surveys. Low collision rates predicted (see Table 6.8 for details).
 - Other waders which were non-breeders (lapwing, ringed plover, woodcock), or found breeding in low numbers (common sandpiper, curlew and snipe) within the context of likely NHZ 7 populations, generally in areas away from infrastructure, with consequently low or zero collision rates predicted; and
 - All passerine species, as per SNH (2017 and 2018a) guidance.

6.8 Standard Mitigation

- 6.8.1 A range of measures have already been applied as part of the iterative design process (see below and Chapter 2 (Design Iteration and Proposed Development)), to avoid areas of relatively high conservation value such as blanket bog and waterbodies, which are often favoured by the IOFs taken forward for assessment.
- 6.8.2 A Breeding Bird Protection Plan (BBPP) will be implemented regardless of the predicted level of potential effects on IOFs. The BBPP will be produced to ensure that disruption to all nesting birds during the construction period is avoided. Pre-construction surveys carried out by an Ecological Clerk of Works (ECoW) or suitably qualified ornithologist will determine whether any breeding activity is taking place within potential species-specific disturbance zones of any proposed infrastructure. If breeding is found to occur within a potential disturbance zone, all construction works will be halted immediately, and a disturbance risk assessment would be prepared. The risk assessment will consider the likelihood and possible implications of the associated construction

activities on the breeding attempt and set out necessary measures to ensure that no disturbance occurs. The proposed mitigation measures and, if required in particular cases, the exact distance of any disturbance-free zone would be agreed with NatureScot, within which any construction activity that is considered to be potentially disturbing will be prohibited in that area until chicks are fledged.

6.9 Likely Effects

6.9.1 The assessment of potential effects is based on the project description outlined in Chapter 2 (Design Iteration and Proposed Development). In relation to describing impacts on ornithological features, the relevant specifications used to determine the 'worst-case' Proposed Development involve:

- Up to 18 turbines with a maximum tip height of 180m and a maximum rotor diameter of 158m. Total generating capacity would be in excess of 100MW. As agreed by the Civil Aviation Authority, no visible obstacle lights are required on these turbines (refer to Chapter 15 (Aviation and Radar) for further details).
- The construction period will last for up to 18 months, comprising a construction programme as described in Chapter 2 (Design Iteration and Proposed Development). The associated infrastructure will include wind turbines, turbine foundations, crane hardstanding, access tracks, underground cabling, on-site substation and maintenance building, temporary construction compound, laydown area, concrete batching plant, and permanent LiDAR.
- Existing access roads and laydown areas which part of the Operational Development will be reused where possible.

6.9.2 The key ornithological impacts relating to the Proposed Development are as follows:

- Permanent or temporary direct habitat loss for birds through construction and operation of the Proposed Development;
- Permanent or temporary displacement of birds through direct and indirect loss of habitat as a result of construction activity disturbance, turbine operation and maintenance, or visitor disturbance. This also includes barrier effects to commuting or migrating birds due to the presence of wind turbines;
- Death or injury through collision with wind turbine blades or other types of infrastructure associated with the Proposed Development; and
- Cumulative effects of the Proposed Development during construction and operation when considering wind farms (including the Operational Development) and other projects within NHZ 7.

Construction

6.9.3 The main potential impacts of construction activities across the Site are the displacement and disruption of breeding, foraging or roosting birds as a result of noise and general disturbance over a short-term period (either the duration of a particular construction activity within working hours, or the duration of the whole construction period).

6.9.4 Impacts on breeding birds would be confined to areas in the locality of temporary construction compounds, turbines, tracks and other infrastructure. Few attempts have been made to quantify the impacts of disturbance of birds due to activities of this type, and much of the available information is inconsistent. However, as a broad generalisation, larger bird species such as raptors, or those that feed in flocks in the open tend to be more susceptible to disturbance than small birds living in structurally complex habitats (such as woodland, scrub and hedgerow) (Hill *et al.* 1997).

6.9.5 Direct habitat loss would also occur due to the Proposed Development's construction, which would be both temporary (e.g., construction compounds) and longer term (access tracks and turbines). This has the potential to impact on breeding or foraging individuals.

Red-throated Diver

- 6.9.6 **Impact:** red-throated divers may be displaced from breeding or foraging lochs due to the impacts of construction activities. No direct habitat loss is predicted, with all infrastructure being located at least 50m from waterbodies.
- 6.9.7 **Sensitivity:** as an Annex I and Schedule 1 species, red-throated diver is classified as being of medium nature conservation importance (Table 6.2 and Table 6.11). The NHZ 7 red-throated diver population is considered to be in unfavourable conservation status because of its low size (<50 pairs) (Table 6.12). Overall species sensitivity is therefore considered to be medium-high.
- 6.9.8 **Magnitude of impact:** red-throated divers may be present within the Site and wider study area during the breeding season only. Although no breeding activity was recorded within the study area during the baseline period in 2019-2020 or on earlier surveys for the Operational Development, individuals, and up to four birds together, were occasionally present on lochs. These are likely to be non-breeders, either young birds or from adult pairs that failed elsewhere, and are thus less constrained in their choice of loafing and feeding locations than breeding birds would be. Any construction disturbance is therefore not likely to be as impactful at a population level compared to that which may directly prevent breeding occurring on Site. Nevertheless, red-throated divers were recorded on a number of lochs within the Site, and these lochs may be avoided where construction activities occur within 500m, and possibly up to 750m, based on advice on disturbance distances in Ruddock and Whitfield (2007). Without associated mitigation measures employed during construction (as would be required for Schedule 1 species if breeding was recorded) this may prevent a breeding attempt occurring there during that particular breeding season, or prevent non-breeding birds from foraging, although as construction is a temporary disturbance, and alternative lochs would be available nearby, the magnitude of impact on the wider NHZ 7 population is considered to be low and short-term.
- 6.9.9 **Significance of Effect:** the unmitigated effect on the NHZ 7 red-throated diver population from construction is classified as at worst, **minor** adverse and is therefore not significant in the context of the EIA Regulations.

Slavonian Grebe

- 6.9.10 **Impact:** breeding Slavonian grebe may be displaced from breeding or foraging lochs due to the impacts of construction activities. No direct habitat loss is predicted, with all infrastructure being located at least 50m from waterbodies.
- 6.9.11 **Sensitivity:** as an Annex I and Schedule 1 species, with potential connectivity to designated sites, Slavonian grebe is classified as being of high nature conservation importance (Table 6.2 and Table 6.11). The NHZ 7 Slavonian grebe population is considered to be in unfavourable conservation status because of its low size (Table 6.12). Overall species sensitivity is therefore considered to be high.
- 6.9.12 **Magnitude of impact:** Slavonian grebe may be present within the Site and wider study area during the breeding season only. The closest known breeding loch, which was occupied in 2019 and 2020, is approximately 500m from the Site boundary and 650m from the closest proposed infrastructure. The results of the expert survey conducted by Ruddock and Whitfield (2007) indicated that 300m is the upper limit of disturbance to breeding birds, albeit most evidence did relate to sources of disturbance from the water, e.g. boat traffic. In a study of the characteristics of lochs used by Slavonian grebe in Scotland, Summers *et al.* (2011) recorded a mean distance of 450m from occupied lochs to the nearest house, with a range of 2m-1,900m. Similarly, the mean distance to a road was 375m (range 2m-1,925m). As the closest nesting is likely to take place at over 500m from the Site, no disturbance impacts on nesting birds are therefore predicted.
- 6.9.13 Any connectivity with the Site is likely to be restricted to transit flights across the Site, most likely during migration prior to or after breeding, which may be disrupted by construction activity. No Slavonian grebe flights were however recorded during baseline surveys, and although it is possible that flights may take place outside of survey periods (e.g. during hours of darkness), it is considered very unlikely that the temporary, localised construction disturbance would affect the flight route of any individuals, particularly if flights are likely to take place outside of working hours.

- 6.9.14 Overall, an impact of negligible, short-term magnitude on both the NHZ 7 population and SSSI and Ramsar populations is predicted.
- 6.9.15 **Significance of Effect:** The unmitigated effect on the NHZ 7, and SSSI and Ramsar Slavonian grebe populations from construction is classified as at worst, **minor** adverse and is therefore not significant in the context of the EIA Regulations.
- 6.9.16 For an assessment of effects on Natura sites where Slavonian grebe is a qualifying feature, see Appendix 6.4.

Black Grouse

- 6.9.17 **Impact:** lekking or foraging black grouse may be displaced from the Site during construction, either by disturbance or direct habitat loss.
- 6.9.18 **Sensitivity:** due to its Red-list conservation status (Eaton *et al.* 2015) and sensitivity to wind farms, the species is classified as being of medium nature conservation importance. The NHZ and national populations are likely to be of unfavourable conservation status and the species sensitivity in the context of this site is therefore medium-high.
- 6.9.19 **Magnitude of Impact:** no black grouse leks have been recorded within the Site boundary, although four locations within the 1.5km study area were found during the 2019 baseline surveys, which was roughly consistent with the locations of four leks recorded in 2011 (Table 6.9). Black grouse were also recorded at a number of other lek locations in 2011, which are outside the 1.5km study area, indicating that there is a healthy population within the estate and local area. Few observations of black grouse were made within the main part of the Site where turbines would be located, suggesting that the habitats there are of relatively low importance for the species, and therefore direct habitat loss is unlikely to be a concern.
- 6.9.20 The closest lek to a proposed wind turbine location is Lek 4, which is around 700m away, and downslope. Lek 4 held up to six males in 2019.
- 6.9.21 Lek 1 and Lek 2 are located within 750m of the existing Operational Development access track, and numbers appear to have remained consistent at these locations since 2011. For Lek 1, this is likely to be at least in part due to the implementation of a No Stopping / No Parking restriction along the part of the access track closest to the lek, during the main lekking period (March to July) each year. This would be an ongoing requirement for the Operational Development and would therefore be in place during the construction period of the Proposed Development. Disturbance to Lek 1 is therefore unlikely.
- 6.9.22 Lek 2 (three males in 2019) is screened from the existing access track by forestry, and so disturbance to this lek is also unlikely. However, as a worst-case, unmitigated, up to nine lekking males from Leks 2 and 4 may be affected, either resulting in a drop in productivity, or a worst-case loss to the NHZ 7 population (473 lekking males). This represents 1.9% of the population and so a low, short-term impact magnitude.
- 6.9.23 **Significance of Effect:** as black grouse is of medium-high sensitivity, unmitigated effect on the NHZ 7 black grouse lekking population from construction is classified as **moderate** adverse and is therefore potentially significant in the context of the EIA Regulations.

Golden Eagle

- 6.9.24 **Impact:** breeding or foraging golden eagles may be displaced from the Site during construction, either by disturbance or direct habitat loss.
- 6.9.25 **Sensitivity:** as an Annex I and Schedule 1 species, golden eagle is classified as being of medium nature conservation importance. The NHZ 7 population is in unfavourable conservation status due to a low territory occupancy rate. Overall sensitivity is therefore considered to be medium-high.
- 6.9.26 **Magnitude of impact:** an active golden eagle territory overlaps with the Site and although a pair has apparently been resident since at least 2011, no breeding evidence has been recorded during any survey year. Five potential nest/roost sites were identified during baseline surveys, including a known historic nest site (EA_1.2, Confidential Figure 6.2.1). The closest potential nest/roost site to

the Site is EA_1.4 which is 1.2km away, with the historic nest site being 1.8km away from the Site boundary. No direct loss of nesting or roosting habitat is therefore predicted. NatureScot guidance (e.g., SNH, 2015) recommends a 1km disturbance-free zone for helicopter traffic around nest and roost sites, and this is likely to be a useful guide for wind farm construction-related disturbance. Based on this distance, it is considered unlikely that any known or potential nest and roost sites would be affected by construction activities.

- 6.9.27 Golden Eagle Territory (GET) modelling of the 6km study area shows that large parts of the Site are of suitable topography for golden eagle foraging, which is broadly consistent with the flight activity recorded (Confidential Figure 6.2.1). There may therefore be some localised, temporary displacement for breeding and non-breeding golden eagles from foraging habitat within the Site due to construction activity. This is however unlikely to significantly affect the ability of the resident pair to obtain sufficient food within the territory, with an abundance of alternative habitat likely to be available away from disturbance sources at any time. This is particularly the case if no breeding attempts continue and birds are less constrained in their foraging ranging ability.
- 6.9.28 Overall, a small, temporary loss in foraging habitat within the territory at any time is predicted to result in a negligible, short-term impact magnitude on the NHZ 7 breeding population.
- 6.9.29 **Significance of Effect:** the predicted effect on the NHZ 7 golden eagle population from construction disturbance is classified as **minor** adverse and is therefore not significant in the context of the EIA Regulations.

Greenshank

- 6.9.30 **Impact:** breeding greenshank may be displaced from the Site during construction, either by disturbance or direct habitat loss.
- 6.9.31 **Sensitivity:** greenshank is Schedule 1 listed. The national and regional/NHZ 7 populations are likely to be in favourable conservation status (Table 6.12) and so the species' sensitivity is Medium.
- 6.9.32 **Magnitude of Impact:** survey results suggest that in any year around three, and possibly up to five greenshank territories may be found by waterbodies within the Site and 500m study area, and therefore may be subject to disturbance, if unmitigated, during the breeding season. This equates to up to 3.4% of the NHZ 7 breeding population (a minimum of 148 pairs), although should be considered as a worst-case, as construction activities at any time are likely to be concentrated around particular parts of the Site, and may be at a low intensity at times, and so in any year some territories may be unaffected. However, the BBPP outlined in section 6.8 will be enforced as standard, and this will include additional mitigation for greenshank as a Schedule 1 species to avoid any disturbance to breeding birds. When this is considered, the predicted impacts are considered to be negligible, short-term magnitude.
- 6.9.33 **Significance of Effect:** the predicted effect on the NHZ 7 greenshank population from construction disturbance is classified as at worst, **minor** adverse and is therefore not significant in the context of the EIA Regulations.

Golden Plover

- 6.9.34 **Impact:** breeding golden plover may be displaced from the Site during construction, either by disturbance or direct habitat loss.
- 6.9.35 **Sensitivity:** golden plover is Annex I listed. The national and regional/NHZ 7 populations are likely to be in favourable conservation status and so the species' sensitivity is medium.
- 6.9.36 **Magnitude of Impact:** based on survey results since 2009, up to six golden plover territories (0.2% of the NHZ 7 breeding population of 3,009 pairs) may be located within the Site and 500m study area buffer (Table 6.10) and therefore most likely subject to temporary construction disturbance if activities overlap with the breeding season. Similar to greenshank above, this should be considered as a worst-case as in any year some territories may be unaffected if construction activities are localised. As the BBPP outlined in section 6.8 will be enforced as standard, with specific mitigation for Annex I species to avoid any disruption to breeding birds, a negligible, short-term impact magnitude is predicted.

6.9.37 **Significance of Effect:** the predicted effect on the NHZ 7 golden plover population from construction disturbance is classified as at worst **minor** adverse and is therefore not significant in the context of the EIA Regulations.

Operation

6.9.38 The following operational impacts are assessed in this section:

- displacement of birds around operational turbines; and
- collisions with turbines.

Potential Effects: Displacement

6.9.39 The displacement of nesting, foraging or roosting birds from the Site has the potential to extend beyond the construction phase, as described above, and to occur during the operational phase.

6.9.40 Evidence of displacement away from operational turbines has been found to occur in a number of individual wind farm studies, although the effects vary considerably between sites and species. It is recognised that disturbance may occur due to maintenance or recreational activities throughout the operational phase, although since these are likely to be of shorter duration and smaller extent than construction activities, effects would be lower than those predicted for construction effects.

Red-throated Diver

6.9.41 **Impact:** nesting, foraging or loafing red-throated divers may be subject to displacement from, or reduced access to lochs due to the presence of turbines or other infrastructure, thereby impacting on breeding success, productivity or survival rates.

6.9.42 **Sensitivity:** medium-high.

6.9.43 **Magnitude of Impact:** although the wider local area has many waterbodies and is regularly used by red-throated divers, there have been a lack of breeding attempts recorded within or adjacent to the Site since at least 2009. During baseline surveys in 2019, red-throated divers were however recorded on Loch a' Chrathaich, Loch Carn Tarsuinn and an un-named loch between the two, which are within 500m from the nearest Operational Development turbine (Confidential Figure 6.2.3b). This shows that divers are unlikely to be completely excluded within this distance, although it is possible that impacts may occur in more subtle ways, e.g., by dissuading nesting attempts, reducing the frequency of usage or increasing energy expenditure required to reach the lochs due to increased flight distances around turbines. The construction of the Proposed Development turbines may therefore increase the impacts of displacement or barrier effects associated with the aforementioned lochs, and Loch Carn Tarsuinn in particular (within 500m of the closest proposed turbine location), and to a lesser extent, lochs further east within and adjacent to the Site which have also recorded presence (Loch Liath, Loch Coire na Rainich). It may also be more difficult for birds within the Site to access Loch Ness, to the east, for feeding.

6.9.44 Baseline results for the Operational Development, which covered a large spatial area, do however show that if the accessibility of any lochs within the Site should reduce, there are several lochs in the wider area that would still remain available for divers to use at all times. The number of suitable lochs does not appear to be a limiting factor for the population. Therefore, although it is possible that displacement may on occasion affect the fitness levels or productivity of a small number of individuals, within the context of the NHZ 7 (39 pairs plus a significant number of non-breeding individuals) this is unlikely to change the status of the population and so a low, long-term impact magnitude is predicted.

6.9.45 **Significance of Effect:** the predicted effect on the NHZ 7 red-throated diver population from operational displacement is classified as **minor** adverse and is therefore not significant in the context of the EIA Regulations.

Slavonian Grebe

- 6.9.46 **Impact:** breeding Slavonian grebes may be subject to displacement from, or reduced access to lochs due to the presence of turbines or other infrastructure, thereby impacting on breeding success, productivity or survival rates.
- 6.9.47 **Sensitivity:** high.
- 6.9.48 **Magnitude of Impact:** Slavonian grebes mainly nest on lochs where there are beds of bottle sedge *Carex rostrata*, and show preference for lochs with small fish, clear water, and shoreline trees (Summers *et al.* 2011). Although some lochs are used each year (e.g., Loch Ruthven SPA), many are used only on occasion without any clear reasons why some are abandoned. No Slavonian grebes were observed using waterbodies within the Site during the baseline survey period, and no flights were recorded during any survey. When considering all historic data (Confidential Figure 6.2.4), the closest known breeding loch, which was active in 2019 and 2020, is approximately 650m from the nearest proposed infrastructure, and it is unlikely that under current conditions, any breeding would take place closer to, or within the Site in future years.
- 6.9.49 There is a lack of evidence to be able to determine at what distance Slavonian grebes may be subject to displacement from nest sites due to operational turbines or other infrastructure, but based on the estimated upper limit of human disturbance distances given by Ruddock and Whitfield (2007) being 300m, and Summers *et al.* (2011) recording a mean distance of occupied lochs from houses and roads of 450m and 375m respectively, it is can be reasonably concluded that no breeding Slavonian grebes would be affected by the presence of operational turbines if the closest loch is c.650m distant.
- 6.9.50 Although no nesting behaviour is likely to be affected, it was raised during consultation by RSPB and NatureScot (see Table 6.1) that there is a possibility that birds may on occasion fly across the Site, and as noted by RSPB, Slavonian grebes can move between lochs in March/April before they settle down on one to breed. It is also possible that birds may undertake more substantial movements from lochs after breeding has ceased.
- 6.9.51 Slavonian grebes fly relatively infrequently and at night and so it is very difficult from surveys to be able to accurately determine the level of activity across the Site. The most likely risk is that associated with collisions with turbines (see paragraph 6.9.96 to 6.9.105 below) but it is also possible that displacement / barrier effects caused by the Proposed Development may exist. This would potentially increase the duration of individuals' flights between lochs and impact on fitness. The RSPB Slavonian grebe dataset shows that the large majority of known nesting lochs are to the east of the Site (Confidential Figure 6.2.4), with those to the west and northwest showing no signs of occupancy in the 21st century, bar one around 10km west which was occupied in 2018. Based on the current distribution of breeding lochs in relation to the Site, it is therefore considered very unlikely that the Proposed Development would provide a substantial barrier to movement between lochs. In the unlikely event of a bird in flight being displaced around the turbines, in relation to the overall flight distance required to reach the nearest lochs to the west, the increase in overall duration would not be significant enough to affect fitness levels, particularly if only undertaken once or twice during the breeding season.
- 6.9.52 Overall, with no breeding birds likely to be affected, and the risk of displacement / barrier effects to birds in flight being very small, the impact magnitude is considered to be negligible, long-term.
- 6.9.53 **Significance of Effect:** the predicted effect on the NHZ 7 Slavonian grebe population from operational displacement is classified as **minor** adverse and is therefore not significant in the context of the EIA Regulations. This includes all SSSIs and Ramsar sites where Slavonian grebe is a qualifying feature.
- 6.9.54 For an assessment of effects on Natura sites where Slavonian grebe is a qualifying feature, see Appendix 6.4.

Black Grouse

- 6.9.55 **Impact:** black grouse is recognised as a species being potentially sensitive to the presence of wind farms (SNH 2018a), and wind farm operation may cause some displacement of lekking, breeding

and foraging black grouse from areas close to turbines and other infrastructure. It is considered that operational disturbance (e.g., from maintenance activities) has, in general, a lesser effect than construction disturbance as operational disturbance is usually of shorter duration and smaller extent.

- 6.9.56 **Sensitivity:** medium-high.
- 6.9.57 **Magnitude of impact:** evidence from Austria has suggested that black grouse leks may be adversely affected by wind farms, although it is not clear what the exact causes may be – potentially a combination of turbine noise, maintenance activities or collisions (Zeiler and Grünschachner-Berger 2009). According to an expert review by Ruddock and Whitfield (2007), leks may be actively disturbed at 300m–500m from a disturbance source, and NatureScot has commonly advocated for wind farm projects that, based on a study by Zwart *et al.* (2015), a buffer of up to 500m around known leks should be applied for proposed turbine locations to avoid all potential displacement effects during wind farm operation. It is likely that the response of black grouse to wind turbines is however site-specific. For example, early-stage operational monitoring (in 2014 and 2015) at Berry Burn Wind Farm, Moray, indicated that there has been no obvious effect on black grouse behaviour with two different leks recorded within 250m and 420m of turbines and black grouse activity recorded across the whole wind farm (droppings and birds) (Nevis 2015 and 2016).
- 6.9.58 Baseline results have shown that since at least 2011, no black grouse leks have been recorded within 500m of a proposed turbine location, with the Proposed Development’s design layout process ensuring that this minimum distance is kept. Based on this it is unlikely that any displacement of lekking birds would occur due to the presence of turbines.
- 6.9.59 Post-construction monitoring of the Operational Development in 2018 recorded continued activity at Lek 1 close to the existing access track to the turbines, with seven males present. This is likely to be representative of the situation for the Proposed Development, which would share this access track meaning that Lek 1, or Lek 2, both within 500m of the access track, are unlikely to be adversely affected by maintenance visits or visitor activities.
- 6.9.60 Although no leks are likely to be affected, it is possible that suitable breeding or foraging habitat could be effectively lost if in proximity to wind turbines. Evidence from baseline surveys however suggests that black grouse rarely, if at all, use the Site with no registrations recorded during any surveys. Previous studies of black grouse in Scotland (e.g., Robinson *et al.* 1993; Sim *et al.* 2008) indicate that the species’ altitudinal range reaches up to around 550m above sea level (ASL). This corresponds with the distribution of leks within the study area, being mainly located on the slopes below the Site, and below 500m ASL. Lek 4, which lies adjacent to the Site lies in a valley c.400m ASL. Thus, it is likely that the large majority of the Site lies above the altitudinal range of the local population, and so would be unused for breeding or foraging purposes.
- 6.9.61 Overall, therefore the magnitude of displacement effects on black grouse is considered to be negligible, long-term.
- 6.9.62 **Significance of Effect:** the predicted effect on the NHZ 7 black grouse population from operational displacement is classified as **minor** adverse and is therefore not significant in the context of the EIA Regulations.

Golden Eagle

- 6.9.63 **Impact:** golden eagles may be at risk of displacement from nesting, roosting or foraging habitat, thereby impacting on productivity, fitness and survival rates.
- 6.9.64 **Sensitivity:** nature conservation importance of the species is medium, and the NHZ 7 population is in unfavourable conservation status. Sensitivity is therefore medium-high.
- 6.9.65 **Magnitude of impact:** as described above for construction effects, due to the distance of identified potential nest/roost sites from proposed wind turbine locations (>1km), no direct displacement of nesting or roosting birds is considered likely.
- 6.9.66 The GET model (Confidential Figure 6.2.1) predicts that much of the Site is likely to be of potentially suitable condition for foraging golden eagle, particularly along ridges and higher ground, and so

some loss of available foraging habitat due to displacement around operational turbines may occur, although results from 2019 and 2020 baseline surveys show that some golden eagle flights were recorded between Operational Development turbines and a 500m buffer of these, and so complete exclusion around turbines is unlikely. The GET model does however also show that the large majority of the wider 6km study area is likely to be favourable for foraging, and so for non-breeding birds which are able to roam widely, any loss of habitat is unlikely to impact on survival rates and therefore unlikely to create a significant impact on the NHZ 7 population as a whole.

- 6.9.67 Breeding golden eagles are considered by SNH (2016a), and by McLeod *et al.* (2002) for PAT modelling purposes, to occupy territories out to a distance of around 6km from nest sites. The result of the PAT model run for the two locations within the study area (EA_1.2 and EA_1.3) where possible nest-building activity has been recorded in 2019 and 2020, and therefore most likely to be occupied in future years, is shown in Confidential Figure 6.2.2. This shows that most activity is likely to take place in suitable habitat within approximately 1.5km of a nest (and therefore mainly outside of the Site), with pockets of slightly higher occupancy along favoured ridges beyond 1.5km.
- 6.9.68 The PAT model assumes that, based on evidence at operational wind farms in Scotland, golden eagles would generally be excluded from a 500m buffer around operational turbine areas; Confidential Figure 6.2.2 indicates a no-activity area around the Operational Development and Corrimony Wind Farm which are within 6km of EA_1.2 and EA_1.3. The Proposed Development is partly within the 500m exclusion buffer around the Operational Development.
- 6.9.69 The PAT model predicts that the Proposed Development would equate to a loss of range use occupancy of:
- 5.7 % for nest site EA_1.2; and
 - 4.1 % for nest site EA_1.3.
- 6.9.70 Under the existing scenario where the Operational Development and Corrimony are present and already constrain territories (i.e., the territories are now effectively smaller), the range use occupancy loss associated with the Proposed Development would be increased slightly to 5.9 % for EA_1.2, and 4.3 % for EA_1.3.
- 6.9.71 As discussed in Whitfield *et al.* (2007), the significance of the potential loss of foraging extent for a golden eagle pair is likely to depend on the level of quality of both the territory and the breeding birds. This would in turn influence a reduction in productivity rate or the probability of territory abandonment.
- 6.9.72 Baseline surveys since 2009 (prior to construction of the Operational Development) have consistently recorded a resident pair within the territory, but there has been no evidence of breeding in any survey year up to 2020. It is not immediately clear why this may be the case, with a number of potentially suitable nest sites identified within the territory, and no adjacent active territories to constrain foraging. Whitfield *et al.* (2008) in their review of the conservation status of golden eagles within each NHZ, identified various pressures on the NHZ 7 population, including deer grazing, persecution and recreational impacts. Because of the relative inaccessibility of the territory, it is unlikely that recreational impacts have played a part in affecting productivity of the pair, and similarly there is no evidence of persecution affecting numbers in the local area (see e.g., Whitfield & Fielding, 2017).
- 6.9.73 A summary assessment of vegetation within the neighbouring Balmacaan Estate (where potential golden eagle nest and roost sites are located) as part of the Glenmoriston Deer Management Group, Deer Management Plan (DMP, 2016 – 2026) stated that the ground is made up of mostly wet heath with a few modest areas of deeper peat/blanket bog. Although no deer count numbers are given in the DMP, it was noted that some areas are displayed as having high herbivore pressure and burning was carried out previously on a more intensive scale. Small red grouse and black grouse populations exist.
- 6.9.74 Habitat management is taking place across the Glenmoriston Estate to improve the black grouse and red grouse populations which would in turn improve the foraging habitat for golden eagle, other birds and improve habitat for mountain hare. The enhancement described in the Habitat

- Management Plan of the Operational Development, including native woodland planting, and provision of medicated grit and adjacent pools for grouse, has been implemented in recent years, although in the case of woodland growth, any benefits may still take some time to be realised.
- 6.9.75 A total deer count of 504 in the Glenmoriston Estate was made in 2016 according to the DMP (with the majority being hinds and calves), equating to a density of around 12.6 per km². The recent estate count in 2021 gave a similar total of 489 deer, and a density of 12.2 per km². Whilst deer may provide a source of food, particularly carrion during winter, the current density is such that localised impacts on open habitats such as wet heath and blanket bogs can become noticeable. The DMP states that across the Glenmoriston Estate “*heather cover is in variable condition with low to moderate grazing impacts on the hill ground, largely historical. Some light trampling is evident across some of the lower parts where feeding of deer takes place but this is localised. No significant blanket bog / peat erosion is present and hagsgs are limited. Burning has recently been reintroduced into the management after many years of absence in order to break up the cover and improve the regeneration of heather*”.
- 6.9.76 Baseline habitat survey results for the Proposed Development (Figures 5.2 and 5.4) show that most of the Site is a combination of wet heath and blanket bog and is therefore representative of much of the eagle territory, as described above. Over broad areas, NVC category M15c *Erica tetralix-Scirpus cespitosus* wet heath occurs and purple moor-grass *Molinia caerulea* is widespread and abundant. In a series of golden eagle range reports, NatureScot have classified *Molinia* habitats as “Constrained Prey Community (CPC): contain virtually no or very little prey for golden eagles”. It may therefore be the case that densities of eagle prey are low in parts of both the Glenmoriston Estate and neighbouring Balmacaan Estate due to the prevalence of lower quality wet heath habitat, and so food availability may in the past have been a limiting factor for the pair. Sheep farming has also ceased on the Balmacaan Estate which may also have indirectly affected prey and carrion availability.
- 6.9.77 Over time, numbers of grouse and hare within the territory may increase due to ongoing habitat management within the estate, which could provide better conditions for successful breeding. Additionally, there has been anecdotal evidence that mountain hare numbers may have increased on the estate in recent years with the Operational Development infrastructure providing opportunities for hares to distribute more easily. However, on balance, it is considered that the risk of continued low productivity, or territory abandonment, would be increased due to the impact of displacement and loss of available foraging habitat, when considering current condition of habitats, and the availability of alternative territories within the NHZ. In a worst-case situation, the loss of one active territory would be the equivalent of around 2% of the NHZ 7 population (49 pairs) although it could be argued that because this pair does not contribute to the overall productivity of the population, the impacts may be lower (particularly if the birds move to another unoccupied territory). Nevertheless, a worst-case low, long-term impact magnitude is predicted.
- 6.9.78 **Significance of Effect:** the unmitigated effects on the golden eagle NHZ 7 population from operational displacement are classified as **minor** adverse and therefore Not Significant in the context of the EIA Regulations.
- Greenshank
- 6.9.79 **Impact:** greenshank may be at risk of displacement from nesting and foraging habitat, thereby impacting on productivity, fitness and survival rates.
- 6.9.80 **Sensitivity:** nature conservation importance of the species is medium, and the NHZ 7 population is in favourable conservation status. Sensitivity is therefore medium.
- 6.9.81 **Magnitude of impact:** baseline survey results in 2019 recorded five greenshank territories within 500m of proposed turbine locations, with three territories in 2020. There is a lack of scientific studies as to how tolerant greenshank may be around operational turbines, although Humphreys *et al.* (2017) report that some unpublished studies for NatureScot have suggested that greenshanks do not show a high level of behavioural displacement around turbines.
- 6.9.82 It is notable that post-construction monitoring of the Operational Development in 2018 recorded three territories within 500m of operational turbines. In 2019 two territory centres were c400-500m

from operational turbines, with one a similar distance away in 2020. The Lochluichart Extension II Wind Farm EIA Report references evidence in from post-construction monitoring for Lochluichart Extension which suggests that birds were not displaced by the presence of operational turbines, with four to five territories in the area around the Lochluichart wind farms and Corriemoillie Wind Farm. Displacement impacts, if they occur, are therefore likely to be at distances of under 500m. During the Public Inquiry for the Achany Wind Farm where greenshank was identified as an issue, a 200m zone of potential displacement was proposed, based on scientific evidence provided by Professor Des Thompson in his principal precognition (SNH, 2007). Based on this distance, and 2019 and 2020 results, up to three territories may be within 200m of operational turbines. If it is assumed as a worst-case that the pairs are lost to the NHZ 7 breeding population (at least 148 pairs) this would represent a loss of 2.0% of the population. With inter-annual variation in territory locations across the wider study area evident, it is however more likely that birds would move to other lochs in the local area to breed, rather than be lost to the population. A low, long-term impact magnitude at worst is therefore predicted.

- 6.9.83 **Significance of Effect:** the unmitigated effects on the greenshank NHZ 7 population from operational displacement are classified as **minor** adverse and therefore Not Significant in the context of the EIA Regulations.

Golden Plover

- 6.9.84 **Impact:** golden plover may be at risk of displacement from nesting and foraging habitat, thereby impacting on productivity, fitness and survival rates.
- 6.9.85 **Sensitivity:** nature conservation importance of the species is medium, and the NHZ 7 population is in favourable conservation status. Sensitivity is therefore medium.
- 6.9.86 **Magnitude of impact:** in 2019 and 2020 only single golden plover territories were recorded in the Site (and up to two within the 500m study area buffer), with larger numbers to the north and east, outside of the 500m study area. Up to six territories were recorded within the Site in previous years (2015 breeding season).
- 6.9.87 The post-construction monitoring of the Operational Development in 2018 recorded four golden plover territories within c.200m of operational turbines (Figure 6.10), suggesting that complete displacement within 500m of proposed turbines is unlikely. This is broadly consistent with findings at other wind farm sites.
- 6.9.88 Pearce-Higgins *et al.* (2012) found population densities of golden plover were not affected by the presence of wind farms, and years since construction and the relative overlap between the survey area and the wind farm were unrelated to golden plover densities. A lack of displacement effects for breeding golden plovers has also been reported from operational monitoring at Beinn Tharsuinn Wind Farm (Douglas *et al.* 2011) and Farr Wind Farm (Fielding & Haworth 2013). Sansom *et al.* (2016) did show in their study that breeding golden plover abundance may be reduced by 79% up to 400m away from operational turbines, although hatching and fledging success were not affected by proximity to turbine locations.
- 6.9.89 Thus, as a precautionary approach, it is possible that a small number of existing golden plover territories within c.400m of turbines may be affected, although suitable habitat does not appear to be a limiting factor on Site, and a small displacement within the study area is a more likely consequence than a loss to the breeding population. Nevertheless, even in a worst-case scenario, the loss of up to three pairs would equate to 0.1% of the NHZ 7 population (3,009 pairs), and therefore a negligible, long-term impact.
- 6.9.90 **Significance of Effect:** the unmitigated effects on the golden plover NHZ 7 population from operational displacement are classified as at most, **minor** adverse and therefore Not Significant in the context of the EIA Regulations.

Potential Effects: Collision Risk

- 6.9.91 Birds that utilise the airspace within the Site at potential collision heights would be at risk of collision with wind turbines. For the CRM methods used see Appendix 6.1.

Red-throated Diver, Black Grouse, Greenshank and Golden Plover

- 6.9.92 **Impact:** birds flying within the Site may be subject to a collision risk with wind turbines, thereby increasing the annual mortality rate of the population above background levels.
- 6.9.93 **Sensitivity:** medium or medium high.
- 6.9.94 **Magnitude of impact:** as shown in Table 6.8, the CRM predicts very low or zero collision rates for these species based on 2018-2020 flight activity surveys data (one collision every 226 years for red-throated diver, one every 170 years for greenshank and zero for black grouse and golden plover). From these predictions, it can be reasonably concluded that the magnitude of impact for these IOFs is negligible, long-term.
- 6.9.95 **Significance of Effect:** the unmitigated effects on these IOFs from collision risk are classified as **negligible** and therefore Not Significant in the context of the EIA Regulations.

Slavonian Grebe

- 6.9.96 **Impact:** birds flying between breeding lochs or on migration may be subject to a collision risk with wind turbines, thereby increasing the annual mortality rate of the population above background levels.
- 6.9.97 **Sensitivity:** high.
- 6.9.98 **Magnitude of impact:** no Slavonian grebe flights were recorded during any surveys for the Proposed Development or the Operational Development, and consequently no CRM has been undertaken for this species. With the closest breeding loch likely to be around 650m from the nearest proposed turbine location, it is considered very unlikely that a collision risk exists for birds on short daily feeding flights to and from the nest. As suggested by consultees, any risk of collisions is likely to be restricted to when birds undertake longer flights either on migration to and from wintering areas, or at the start of the breeding season when birds may move between lochs prior to nesting. Although no flights were recorded during baseline surveys, this is not unexpected because movements are more likely to take place during hours of darkness, and coupled with the small size of birds, observations are unlikely. The risk of collisions must therefore be considered on a qualitative basis due to these survey limitations.
- 6.9.99 As discussed earlier, the Site lies at the western end of a part of the Highlands, around the Great Glen, which is a stronghold for the species, encompassing designated sites for the species such as Loch Knockie and Nearby Lochs SPA and North Inverness Lochs SPA. Confidential Figure 6.2.4 shows that since 1970 there are only three known lochs to the west of the Site where birds have previously been recorded during surveys, one most recently in 2014, with the other two most recently occupied in 1985 (the closest being 10km away from the occupied loch SZ_1 in 2019 and 2020). This suggests that the frequency of early season flights between lochs that would cross the Site is likely to be very low, or zero.
- 6.9.100 Little is known about the migratory movements of the Slavonian grebe arcticus sub-species which breeds in northern Scotland (e.g. Wright *et al.* 2012) although the large majority of ringing recoveries in Scotland have been local to where most birds were ringed (Robinson *et al.* 2020). The BTO Bird Atlas [<https://app.bto.org/mapstore>] shows a winter distribution around much of Scotland's coastline but the BTO's Wetlands Bird Survey Report (Frost *et al.* 2020) shows relatively high numbers in the Moray, Beaully and Cromarty Firths to the east of the Site, and it more likely the case that birds breeding within the Great Glen area move to these areas at least on the first stage of their migration route during winter, rather than heading west. If so, then the likelihood of migratory flights across the Site is low, with local birds also more likely to follow natural features such as river valleys and Loch Ness, rather than crossing more mountainous areas such as the Site.
- 6.9.101 Evidence therefore suggests that the annual frequency of flights through the Site is very low, if any do occur at all. If such flights did take place, scientific studies have shown that despite occurring in hours of darkness, the probability of collision is likely to be small because of the behaviour of the species in flight. A scientific expert review for the Druim Ba Wind Farm Environmental Statement (ES) suggested that Slavonian grebe flights are typically of low altitude, and it was shown that

reported fatalities of grebes and morphologically similar species due to wind farms in Europe and North America were relatively rare.

- 6.9.102 The Druim Ba Wind Farm lies within 2km of the North Inverness Lochs SPA, and centrally within the core breeding distribution of the Scottish Slavonian grebe population (Confidential Figure 6.2.4), rather than at the edge where the Proposed Development would be situated. As part of the Druim Ba Wind Farm ES, theoretical collision risk modelling undertaken specifically in relation to Slavonian grebes predicted that under the existing situation (in 2010) there would be no flights through the wind farm, and consequently the collision rate would be zero. A worst-case model, based on historic distribution, and an assumption that birds do not fly at random within the airspace, predicted at most one collision every 140 years.
- 6.9.103 Because the Proposed Development Site lies in an area more sparsely populated by breeding Slavonian grebe than around Druim Ba Wind Farm, it can be reasonably concluded, that taking the results of the theoretical collision modelling for that project as a basis for understanding risks associated with the Proposed Development, it is very unlikely that there would be a collision during the lifespan of the wind farm. Overall, the risk of collision is therefore considered to be of negligible, long-term magnitude.
- 6.9.104 **Significance of Effect:** the unmitigated effects on Slavonian grebe from collision risk are classified as **negligible** and therefore Not Significant in the context of the EIA Regulations. This includes all SSSIs and Ramsar sites where Slavonian grebe is a qualifying feature.
- 6.9.105 For an assessment of effects on Natura sites where Slavonian grebe is a qualifying feature, see Appendix 6.4.

Golden Eagle

- 6.9.106 **Impact:** golden eagles flying within the Site may be subject to a collision risk with turbines, thereby increasing the annual mortality rate of the population above background levels.
- 6.9.107 **Sensitivity:** nature conservation importance of the species is medium, and the NHZ 7 population is in unfavourable conservation status. Sensitivity is therefore medium-high.
- 6.9.108 **Magnitude of impact:** the CRM for golden eagle predicted a mean annual collision rate of 0.180 birds, or one collision every 5.6 years (Table 6.8). Birds were present all year, although the mean breeding season collision rate was higher than that for the non-breeding season. Most observed flight activity comprised adult birds, although wandering sub-adults were recorded on occasion.
- 6.9.109 To date, no golden eagle collisions have been reported for the Operational Development. However, if it is assumed as a worst-case, that collision rates are correct and that estimated mortality would be related to adult (potentially) breeding birds, this would represent an increase in baseline mortality over existing background rates within the current NHZ 7 population (49 pairs in 2019) by 3.8 % (assuming an adult survival rate of 0.9512, as per BTO BirdFacts). This value is precautionary because of the presence of some sub-adults recorded during baseline surveys, and likely presence of non-breeders in the NHZ 7 population.
- 6.9.110 The significance of the predicted level of additional annual mortality depends on the effect it would have on the NHZ 7 population, in this case whether it would affect the ability to attain favourable conservation status of the population over the long-term, based on the current gradual growth in occupied territories. This can be investigated by modelling population trends with a Golden Eagle Population Model (GEPM), an approach which has been applied by Whitfield *et al.* (2008) among others, to determine effects on golden eagle populations in Scotland. The methods and input parameters (survival and productivity rates, population size) used in the GEPM are presented in Appendix 6.3.
- 6.9.111 The main factor influencing NHZ 7 growth rates in the past has likely been the relatively low territory occupancy rate, as concluded by Whitfield *et al.* (2008) when assessing 2003 national survey data. The authors identified a variety of pressures acting on the NHZ 7 population, namely deer grazing, persecution, recreation and afforestation. During communication with the Highland Raptor Study Group for the Proposed Development, it was remarked that the recent increase in golden eagles, and general favourable conservation status across the Highlands has not occurred to a similar extent

in NHZ 7. There were again low occupancy rates within parts of the NHZ during the most recent national survey in 2015, although mean productivity rates in 2015-2019 would meet the threshold required for favourable conservation status (a mean of c.0.5 fledged chicks per territorial pair).

- 6.9.112 Taking the current constraints into consideration, the modelling of the potential impacts of additional annual mortality due to collisions on the NHZ 7 population suggests that:
- Under a baseline scenario (zero additional collisions from the Proposed Development), based on a continuation of the observed slow growth from 2003 to 2019 and best fit of demographic parameters, an annual growth rate of around 1.012 (1.2%) is predicted, and the 66% occupancy rate required for favourable conservation status would be met around 23 years from now. Population after 25 years from now would be 61.8 occupied territories.
 - With additional mortality due to predicted collisions with turbines at the Proposed Development (0.180 per year) is taken into consideration, population growth would decline slightly from 1.2% to 1.1%. This would delay the 66% occupancy rate being reached by around three years (with an estimated 59.6 occupied territories at year 25).
- 6.9.113 The results of the GEPM therefore suggest that without the additional mortality, the NHZ 7 population would reach a 66% occupancy rate and favourable conservation status around 23 years from now. This would be delayed until around year 26 if the additional collision mortality is included. As the progression towards favourable conservation status would be slightly delayed, the additional mortality is considered to be of low, long-term magnitude for the NHZ 7 population.
- 6.9.114 **Significance of Effect:** the unmitigated effects on golden eagle from collision risk are classified as **minor** adverse and therefore Not Significant in the context of the EIA Regulations.

Decommissioning

- 6.9.115 Decommissioning effects for the Proposed Development are difficult to predict with any confidence because of the long timeframe until their occurrence. Decommissioning impacts are considered for the purpose of this chapter to be similar in nature to those of construction impacts but are likely to be of shorter duration. The significance of effects predicted in the *Construction Effects* section are therefore considered appropriately precautionary for assessing decommissioning effects on IOFs.

6.10 Additional Mitigation and Enhancement

- 6.10.1 The only identified effect that was considered to be potentially significant for any IOF, was disturbance during the construction phase (and decommissioning phase) to lekking black grouse (**moderate** adverse). No other significant unmitigated effects were predicted for any IOF, and therefore no specific mitigation other than the standard mitigation outlined in section 6.8 (BBPP, ECoW and pre-construction surveys) is required. Enhancement measures are however planned, and these are summarised below.

Black Grouse

- 6.10.2 To avoid a significant disturbance effect occurring during construction, the BBPP will also extend to protection of black grouse leks (as well as nest sites). If pre-construction surveys do record lekking black grouse within a potential disturbance zone (up to 750m of any proposed works), all potentially disturbing construction activities would be prohibited until a risk assessment is undertaken. The risk assessment would consider the likelihood and possible implications of the associated construction activities on the lek and set out necessary measures to ensure that no disturbance occurs. Restrictions to construction activity would likely be within two hours of dawn during core lekking period of March to May, but the exact timing and/or distance of any disturbance-free zone would be agreed with NatureScot, within which any construction activity that is considered to be potentially disturbing would be prohibited in that area until the core lekking period has passed.
- 6.10.3 The seasonal No Stopping / No Parking restrictions along the part of the access track closest to Lek 1, as implemented for the Operational Development (paragraph 6.9.21), would continue to be followed during the operational period of the Proposed Development.

Divers

- 6.10.4 As identified in the *Potential Effects: Displacement* in section 6.9, the location of Proposed Development turbines alongside the Operational Development may cause a displacement/barrier effect for red-throated divers trying to use some lochs within the Site. Although no significant effects on the NHZ 7 population are predicted, to help breeding divers a small number of lochs within the estate would be selected for the construction of an artificial nesting raft.
- 6.10.5 There have been few breeding attempts recorded in the local area despite a number of lochs being used by red-throated divers, and also black-throated divers. This may be due to the unsuitability of lochs for natural nest sites, risk of flooding, or risk of predation. The artificial rafts would therefore help combat these risks and provide a more secure nesting site, for one or both diver species depending on the loch selected.
- 6.10.6 To ensure the best chance of breeding success, the rafts would be monitored and maintained on an annual basis, and kept free from any competition, e.g. by nesting gulls, geese, etc.
- 6.10.7 Further information is presented in the Outline Habitat Management Plan for the Proposed Development in Appendix 5.7.

Golden Eagle

Habitat Management Plan

- 6.10.8 The Outline Habitat Management Plan for the Proposed Development is presented in Appendix 5.7. This contains details relating to the planting of low-density native woodland and/or montane scrub within the south-eastern part of the estate between Carn Mor and Meall Doire Bhrath.
- 6.10.9 This would benefit eagles by improving habitats for their prey, including grouse and hares, as well as providing a more natural landscape and enhanced biodiversity. The planting would be in an area predicted to have relatively high usage/suitability within the territory, according to the golden eagle GET model, but importantly not too close to potential nest sites to restrict access. Hill slopes would be selected for planting, but around crags would be left unplanted for perching/roosting purposes. Management may also be required to encourage dwarf shrub coverage on the open ground for grouse and other species.

Monitoring

- 6.10.10 Investigations would take place to determine whether monitoring work could be done in support of the SSE funded research as part of the Regional Eagle Conservation Management Plan within the neighbouring Central Highlands NHZ 10.

6.11 Residual Effects

- 6.11.1 The specific mitigation during the construction and decommissioning phases for lekking black grouse, as outlined above would reduce the magnitude of disturbance impact and resulting level of significance to no more than **minor** adverse, and therefore not significant in EIA terms.
- 6.11.2 As there is no further mitigation required, and with proposed enhancement measures, the level of significance and therefore residual effects are unchanged or reduced for all other IOFs (**negligible** or **minor** adverse, and therefore not significant in EIA terms).

6.12 Cumulative Assessment

- 6.12.1 This section presents information about the potential cumulative effects of the Proposed Development combined with other operational, consented or proposed wind farm projects that are located within NHZ 7.

Methods

- 6.12.2 SNH (2018b) has provided guidance on assessing the cumulative effects on birds. This assessment follows the principles set out in that guidance.

- 6.12.3 Cumulative effects may include cumulative disturbance-displacement, collision mortality, habitat loss or barrier effects. Some cumulative impacts, such as collision risk, may be summed quantitatively, but according to NatureScot *“In practice, however, some effects such as disturbance or barrier effects may need considerable additional research work to assess impacts quantitatively. A more qualitative process may have to be applied until quantitative information becomes available for developments in the area, e.g. from post-construction monitoring or research”* (SNH, 2018b).
- 6.12.4 The main projects likely to cause similar effects to those associated with the Proposed Development are other Operational Developments, or those under construction, consented, or in the planning process within NHZ 7 (Table 6.13).
- 6.12.5 Wind farm projects at scoping stage have been scoped out of the cumulative assessment because either they do not have sufficient information on potential effects to be included; because the baseline survey period is ongoing; or as results have not been published. Projects that have been refused (and no longer capable of appeal) or withdrawn have also been scoped out of the cumulative assessment.
- 6.12.6 Small wind farm projects with three or fewer turbines have also been scoped out from the cumulative assessment as often these projects are not subject to the same level of detail of ornithological assessment, and so there are no directly comparable data. Because of the small scale of such projects, effects are likely to be negligible on the IOFs assessed here. No other renewable or non-renewable projects within NHZ 7 were identified that could have a cumulative effect on the IOFs.
- 6.12.7 Table 6.13 identifies the wind farm projects in NHZ 7 that have been considered in the cumulative assessment. This information was obtained from Highland Council’s website [https://www.highland.gov.uk/downloads/file/12505/wind_turbine_list] which contains a database on wind farms in the region (updated January 2021). The database was filtered by size (only projects with >3 turbines were included) and status: all expired, refused, withdrawn or scoping/screening stage projects were not included.

Table 6.13 – Other NHZ 7 Wind Farm Projects

Wind Farm	No. Turbines	Status	Info Available
Bhlaraidh	32	Constructed	Environmental Statement, pre- and post-construction monitoring
Novar	34	Constructed	Non-technical Summary
Novar Extension	16	Constructed	No information available
Millennium	26	Constructed	Environmental Statement
Beinn Tharsuinn	17	Constructed	No information available
Fairburn	20	Constructed	Non-technical summary, information from proposed Fairburn Extension, post-construction monitoring reports.
Lochluichart	17	Constructed	Information from Lochluichart Extension and Extension II
Lochluichart Extension	6	Constructed	Environmental Statement

Wind Farm	No. Turbines	Status	Info Available
Corrimony	5	Constructed	Environmental Statement
Beinneun	25	Constructed	Environmental Statement
Beinneun Extension	7	Constructed	Environmental Statement
Coire na Cloiche	13	Constructed	Environmental Statement
Corriemoillie	17	Constructed	Environmental Statement
Millenium South	10	Approved	Environmental Statement
Lochluichart Extension II	5	Approved	Environmental Statement
Kirkan	17	In Planning (Highland Council objection)	EIA Report
Strathrory	7	In Planning	EIA Report
Meall Buidhe	9	In Planning	EIA Report non-technical summary (ornithology chapter not available on planning portal)

Scope of Assessment

6.12.8 Based on the conclusions of the assessment presented in section 6.9, and the committed mitigation outlined in sections 6.8 and 6.10, the following IOFs have been scoped out of the cumulative assessment:

- Red-throated diver: no breeding pairs affected and very low collision risk due to the Proposed Development alone;
- Slavonian grebe: no breeding pairs affected and very low theoretical collision risk due to the Proposed Development alone;
- Black grouse: no leks affected by presence of turbines and construction effects mitigated by implementation of BBPP and specific mitigation; and
- Golden plover: worst-case negligible magnitude of impacts within an NHZ 7 population context, during construction and operational period due to Proposed Development alone.

6.12.9 The remaining IOFs (golden eagle and greenshank) are therefore considered in the cumulative assessment, which addresses the following effects:

- Cumulative disturbance-displacement effects during construction and operation (golden eagle and greenshank); and
- Cumulative collision risk effects during operation (golden eagle).

- 6.12.10 A cumulative collision risk assessment for greenshank has been scoped out due to the very low predicted collision rates (1 every 170 years) for the Proposed Development alone.

Golden Eagle

Construction Disturbance

- 6.12.11 Within NHZ 7, most wind farm projects on The Highland Council’s database that have been filtered for inclusion in the cumulative assessment are already operational (Table 6.14), and so there is limited scope for an overlap in construction periods with the Proposed Development and other projects. Of the two projects that are consented (Millennium South and Lochluichart Extension II), neither are within an area important for golden eagle, and so no cumulative construction effects are predicted. For those three projects at application stage and more likely to overlap, two (Kirkan and Meall Buidhe) are within golden eagle territories and when including the Proposed Development there may be three out of the 49 NHZ 7 territories temporarily subject to disturbance. Whilst this may affect breeding productivity or success during a particular year or years, it is unlikely to be of a scale that would result in territory abandonment, and so a cumulative low, short-term impact magnitude is predicted.
- 6.12.12 The predicted cumulative effect for construction disturbance on the NHZ 7 population is predicted to be **minor** adverse (unchanged from the Project Development alone).

Table 6.14 – Predicted Cumulative Effects within NHZ 7 Relating to Golden Eagle

Project	Disturbance-displacement	Collision Mortality	# CRM
Proposed Development	Active territory overlaps with Site, although no evidence of breeding during baseline surveys. Some loss of foraging habitat likely.	Mean of 0.180 collisions per year.	0.180
Constructed			
Bhlaraidh	Occasional flight activity but no breeding evidence within at least 2km – active territory same as for Proposed Development.	A range of annual collision rates were presented: year 1 (0.01858) and Year 2 (0.06367).	0.064
Novar	No breeding golden eagle recorded.	CRM results not reported, but rates likely to be very low if anything, for golden eagle.	-
Novar Extension	Likely to be similar to Novar.	Likely to be similar to Novar.	-
Millennium	No golden eagle territories within 10km (of Millennium South) and few flights recorded.	0.009 per year given in Millennium South ES.	0.009
Beinn Tharsuinn	No information available.	No information available.	-

Project	Disturbance-displacement	Collision Mortality	# CRM
Fairburn	No golden eagle territories recorded within 6km (2012). Occasional flight activity recorded around site. Habitat management for golden eagle.	No information available – few flights recorded during post-construction monitoring and no collisions reported over first 10 years of operation.	-
Lochluichart	Likely to be similarly low presence as recorded for extension (below).	Likely very low/no collisions as per extension (below).	0.00
Lochluichart Extension	Golden eagle observations recorded during 2015-2016 field surveys comprised three flights all of single birds during the 2015 breeding season.	CRM not run, no collisions predicted.	0.00
Corrimony	No breeding within at least 5km. Regular flights but associated with non-breeding individuals.	0.021 collisions per year at 99% avoidance rate. Most attributed to immatures.	0.021
Beinneun	Site is used by non-breeding sub-adults, but no breeding within 10km.	0.124 collisions per year at 99% avoidance rate (sub-adults).	0.124
Beinneun Extension	No breeding within at least 6km. Sub-adult birds were regularly recorded foraging or over-flying the site.	0.09 collisions per year at 99% avoidance rate (sub-adults).	0.09
Coire na Cloiche	Small number of flights recorded. No breeding activity.	0.0075 collisions per year at 99% avoidance.	0.0075
Corriemoillie	No breeding within 5km and little or no suitable habitat within the site boundary. Small number of flights recorded during surveys.	CRM is based on the revised ES in 2016 with an increase in turbine blade width and reduction in hub height. Collision rate of 0.003 per year.	0.003
Approved			
Millenium South	No golden eagle territories within 10km and few flights recorded.	0.007 collisions per year	0.007
Lochluichart Extension II	Golden eagle observations recorded during 2015-2016 field surveys comprised three flights all of single	CRM not run, no collisions predicted.	0.00

Project	Disturbance-displacement	Collision Mortality	# CRM
	birds during the 2015 breeding season.		
In Planning			
Kirkan	Active breeding territory within 6km, with a total of 32 flights recorded during baseline surveys. Site appears to be of relatively low importance to pair.	Eight at-risk flights, resulting in an annual collision rate of 0.014 to 0.070 (mean of 0.042).	0.042
Strathrory	No birds recorded.	No CRM undertaken.	0.00
Meall Buidhe	PAT model predicts that one territory overlaps with the site. Site is primarily located within an area of low or very low predicted ranging probability and is generally of low value within this breeding pair's territory.	No results available	-
Total Cumulative Annual Collision Rate			0.547

Operational Displacement

- 6.12.13 In addition to the Proposed Development and the Operational Development overlapping with an active territory, only the further two projects in planning already mentioned (Kirkan and Meall Buidhe) may also overlap with territories, meaning that up to three pairs, representing 6.1% of the NHZ 7 breeding population, may be affected by the presence of operational turbines. In other cases, non-breeding individuals occasionally present within wind farm sites may be subject to some displacement around turbines, but as they are not as constrained in their ranging ability compared to nesting birds, a significant impact on their fitness and survival is unlikely.
- 6.12.14 For the eagle pair in proximity to the Proposed Development, PAT modelling has shown that a combined loss of range use occupancy of approximately 6.7% would occur when including both the Proposed Development and Operational Development footprints (Corrimony is at the very edge of the 6km territory range and overlap is near zero), based on nesting at site EA_1.2, and 5.1% based on nesting at site EA_1.3. The slightly greater extent of potential loss of foraging habitat (up by around 1% in each case) increases the likelihood of territory abandonment compared to the Proposed Development alone, but as the same pair is affected by both projects, the magnitude of impact on the NHZ 7 population does not increase. Adverse effects of displacement would be addressed at least in part by the proposed habitat management which would benefit golden eagle, as outlined in Outline Habitat Management Plan, Appendix 5.7
- 6.12.15 For the other two projects with separate overlapping territories, both stated that their sites are likely to be of relatively low importance to the breeding pairs, which suggests that territory abandonment is unlikely, although a drop in mean productivity or breeding success may occur over the long-term. At an NHZ 7 population level, the overall cumulative effects on the three territories are considered to result in a low, long-term impact magnitude.
- 6.12.16 The predicted cumulative effect for operational displacement is predicted to be **minor** adverse (unchanged from the Project Development alone).

Collision Risk

- 6.12.17 In addition to the Proposed Development, a total of nine other projects has available collision risk modelling results (Table 6.14). In some cases, too few flights were recorded to allow modelling to be undertaken and so the collision rate is likely to be zero or very low for these projects. Where no data were available, evidence suggests that it is unlikely that the projects pose a material risk of collisions sufficient to increase the magnitude of cumulative impact.
- 6.12.18 A total cumulative minimum annual collision rate of 0.547 is predicted, which equates to one collision every 1.8 years should, as a worst-case, all projects become fully operational at the same time. It is the case however that, based on the baseline survey results for a number other projects presented in Table 6.14, with no occupied territories nearby, much of the golden eagle collision risk would not be attributable to NHZ breeding birds, and so this also should be seen as a worst-case estimate on the breeding population.
- 6.12.19 The GEPM in Appendix 6.3, as outlined above, also considers this cumulative collision impact within an NHZ 7 context, assuming all losses are to NHZ 7 breeding birds and all projects within the NHZ will become operational with a full rollout of the proposed number of turbines. The conclusions from running the model with this additional mortality were as follows:
- The GEPM predicts continued growth in the majority of modelled scenarios, with the exception of the most precautionary combinations of fledging rates and S1 (sub-adult) survival rates.
 - Using input parameters that fit NHZ 7 population trends from 2003 to 2019, and mean fledging rate of 0.498 (based on mean of 2015-19 monitoring), the annual growth rate would be 1.008 (0.8%) which has reduced from 1.2% under the baseline scenario, and 1.1% when considering collision risk associated with the Proposed Development alone. When considering collisions associated with all other projects, excluding the Proposed Development, annual growth rate would be 0.9%.
 - The cumulative collision rate of 0.547 results in a prediction that the NHZ 7 breeding population would be 55.2 occupied territories after 25 years, which is a reduction from 61.8 occupied territories under the baseline scenario and 59.6 occupied territories when considering the Proposed Development alone. This means that the period of time required to attain favourable conservation status via a 66% occupancy rate would increase (likely beyond 30 years, up from c.26 years for the Proposed Development collision rate alone). When all other projects, excluding the Proposed Development are considered, the population at year 25 would be 57.4 pairs.
- 6.12.20 Overall, the results of the GEPM therefore suggest that the NHZ 7 golden eagle population is likely to be able to continue to grow at a gradual rate, despite the additional mortality predicted to be associated with collisions at wind farm projects within NHZ 7, should all become operational. The main historical limiting factor of the expansion of the NHZ 7 population, occupancy rates, is likely to be helped by habitat management plans associated with wind farms and other projects, including those for the Proposed Development and Operational Development, and post-construction monitoring associated with wind farms across NHZ 7.
- 6.12.21 The overall significance of the cumulative collision effect on the NHZ 7 population is therefore considered to be **minor** adverse and therefore Not Significant in the context of the EIA Regulations (unchanged from the Project Development alone).

Greenshank

Construction Disturbance

- 6.12.22 Of the other projects within NHZ 7 that are approved or at planning stage, only one (Kirkan) recorded a greenshank territory within 500m (Table 6.15, exact distance to nearest turbine unknown), which may be within potential disturbance range. If construction periods with the Proposed Development overlapped this would result in up to four territories potentially being

temporarily affected, which equates to up to 2.7% of the NHZ 7 breeding population (a minimum of 148 pairs). It is unlikely that all territories would be affected simultaneously by construction activities – however as a worst-case, this temporary disturbance would result in a low, short-term impact.

- 6.12.23 The overall significance of the cumulative construction disturbance effect on the NHZ 7 greenshank population is therefore considered to be **minor** adverse and therefore Not Significant in the context of the EIA Regulations (unchanged from the Project Development alone).

Operational Displacement

- 6.12.24 Only a small number of other projects within NHZ 7 recorded breeding greenshank within the vicinity of planned infrastructure, during baseline surveys. This includes one territory within the Operational Development site in 2011 (although post-construction monitoring suggests that numbers have been unaffected by operational turbines), and perhaps four to five territories in the area around the Lochluichart wind farms and Corriemoillie Wind Farm. Evidence from post-construction monitoring for Lochluichart Extension again suggests that birds were not displaced by the presence of operational turbines. Thus, although up to six pairs are within potential displacement range (4% of the NHZ 7 population), at least some are likely to remain during operation, with displacement distances likely to be relatively small. Overall a low, long-term impact magnitude is predicted.

- 6.12.25 The overall significance of the cumulative operational displacement effect on the NHZ 7 greenshank population is therefore considered to be **minor** adverse and therefore Not Significant in the context of the EIA Regulations (unchanged from the Project Development alone).

Table 6.15 – Predicted Cumulative Effects within NHZ 7 Relating to Greenshank

Project	Disturbance-displacement	No. Territories affected
Proposed Development	Up to three territories within 200m of turbines may be affected.	3
Constructed		
Bhlaraidh	One pair within 500m in 2011. None in 2009-2010. Post-construction monitoring in 2018 recorded three territories within 500m of operational turbines. In 2019 two territories were c.400m-500m from operational turbines, with one a similar distance away in 2020.	1
Novar	NTS suggests that greenshank is not present on site.	0
Novar Extension	Likely to be similar to Novar.	0
Millennium	Likely to be similar to Millennium South (none recorded).	0
Beinn Tharsuinn	No information available, but no suitable habitat on site.	0
Fairburn	No information available, but no suitable habitat on site and no records during post-construction monitoring in wider area.	0

Project	Disturbance-displacement	No. Territories affected
Lochluichart	No information available, but one pair within 500m of site recorded during Lochluichart Extension baseline surveys in 2010, prior to operation of Lochluichart. This is likely to be included in Corriemoillie assessment.	0
Lochluichart Extension	Three breeding pairs recorded in 2010, one within 500m of site, inside Corriemoillie site. Two of these territories were also recorded as part of Lochluichart Extension II surveys. Post construction monitoring surveys undertaken for Lochluichart Extension recorded activity at this closest territory in 2015, 2016 and 2017 (info from Lochluichart Extension II EIA Report), suggesting no displacement.	0
Corrimony	One territory in proximity to access route (impacts during construction only).	0
Beinneun	A pair of greenshank was recorded breeding in the survey area in 2010 and two pairs in 2011. Closest was c.500m from turbine (impacts during construction only).	0
Beinneun Extension	No territories were located within 500m of proposed extension turbines in 2010 or 2011 with one territory within 500m of a turbine (but >200m away) in 2014 (impacts during construction only).	0
Coire na Cloiche	No records.	0
Corriemoillie	Four territories identified during breeding bird surveys in 2009. Two of these were within the application site boundary (at least one likely to be same as recorded during Lochluichart Extension and Extension II surveys).	2
Approved		
Millenium South	No records.	0
Lochluichart Extension II	Two territories recorded in 2015, one around 300m from infrastructure, the other within Corriemoillie site. Both of these were recorded as part of Lochluichart Extension.	0
In Planning		
Kirkan	One territory within 500m of turbine location.	1

Project	Disturbance-displacement	No. Territories affected
Strathrory	No records.	0
Meall Buidhe	Present, but NTS states for breeding species, including greenshank " <i>Given the separation distances between the proposed wind turbines and their breeding locations, no significant effects are predicted to occur as a result of disturbance to these species.</i> "	0

6.13 Summary

- 6.13.1 Table 6.16 provides a summary of the effects detailed within this chapter for the Proposed Development alone, with cumulative effects presented in Table 6.17.
- 6.13.2 For all IOFs, predicted effects were considered to be negligible or minor adverse and therefore not significant, when mitigation measures are applied. This includes any predicted effects on scoped-in nationally designated sites with Slavonian grebe as a qualifying interest, specifically Knockie Lochs SSSI, Dubh Lochs SSSI, Balnagrantach SSSI, Glendoe Lochans SSSI, and Loch Ruthven SSSI and Ramsar site.
- 6.13.3 Information to inform an Appropriate Assessment on Slavonian grebe as part of the HRA process is presented separately in Appendix 6.4, and it is concluded that there is no potential of the Proposed Development to adversely affect the integrity of any SPA, either alone or in-combination with other projects.

Table 6.16 – Summary of Effects

Description of Effect	Significance of Likely Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Construction and Decommissioning					
Red-throated diver	Minor and not significant.	Adverse	Pre-construction surveys. Implementation of BBPP.	Minor and not significant.	Adverse
Slavonian grebe	Minor and not significant.	Adverse	Pre-construction surveys. Implementation of BBPP.	Minor and not significant.	Adverse
Black grouse	Moderate and potentially significant.	Adverse	Pre-construction surveys. Implementation of BBPP, including measures to avoid lek site disturbance.	Minor and not significant.	Adverse
Golden eagle	Minor and not significant.	Adverse	Pre-construction surveys. Implementation of BBPP.	Minor and not significant.	Adverse
Greenshank	Minor and not significant.	Adverse	Pre-construction surveys. Implementation of BBPP.	Minor and not significant.	Adverse
Golden plover	Minor and not significant.	Adverse	Pre-construction surveys. Implementation of BBPP.	Minor and not significant.	Adverse

Description of Effect	Significance of Likely Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Operation: displacement					
Red-throated diver	Minor and not significant.	Adverse	Artificial nest rafts.	Minor and not significant.	Adverse
Slavonian grebe	Minor and not significant.	Adverse	None required.	Minor and not significant.	Adverse
Black grouse	Minor and not significant.	Adverse	Habitat Management Plan enhancement (native woodland/scrub planting).	Minor and not significant.	Adverse
Golden eagle	Minor and not significant.	Adverse	Habitat Management Plan (native woodland/scrub planting). Monitoring programme.	Minor and not significant.	Adverse
Greenshank	Minor and not significant.	Adverse	HMP.	Minor and not significant.	Adverse
Golden plover	Minor and not significant.	Adverse	HMP.	Minor and not significant.	Adverse
Operation: collision risk					
Red-throated diver	Negligible and not significant	Adverse	None required.	Negligible and not significant	Adverse

Description of Effect	Significance of Likely Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Slavonian grebe	Negligible and not significant	Adverse	None required.	Negligible and not significant	Adverse
Black grouse	Negligible and not significant	Adverse	None required.	Negligible and not significant	Adverse
Golden eagle	Minor and not significant.	Adverse	None required.	Minor and not significant.	Adverse
Greenshank	Negligible and not significant	Adverse	None required.	Negligible and not significant	Adverse
Golden plover	Negligible and not significant	Adverse	None required.	Negligible and not significant	Adverse

Table 6.17 – Summary of Cumulative Effects

Feature	Effect	Cumulative Developments	Significance of Cumulative Effect	
			Significance	Beneficial/ Adverse
Golden eagle	Construction disturbance	All NHZ 7 wind farms in planning or approved	Minor	adverse
	Operational displacement	All NHZ 7 wind farms constructed, approved or in planning	Minor	adverse
	Collision risk	All NHZ 7 wind farms constructed, approved or in planning	Minor	adverse
Greenshank	Construction disturbance	All NHZ 7 wind farms in planning or approved	Minor	adverse
	Operational displacement	All NHZ 7 wind farms constructed, approved or in planning	Minor	adverse
	Collision risk	All NHZ 7 wind farms constructed, approved or in planning	Minor	adverse
All other IOFs	All effects	All NHZ 7 wind farms constructed, approved or in planning	Unchanged (negligible or minor)	adverse

6.14 References

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