

11. Ornithology

11.1 Introduction

- 11.1.1 This chapter of the EIA Report assesses the likely significant effects¹ of the Proposed Development with respect to ornithology. The chapter should be read in conjunction with the description of the Proposed Development provided in **Chapter 4: Description of the Proposed Development**. Where common receptors have been considered and where there is an overlap or relationship between the assessments of effects, it should be read with respect to relevant parts of other technical chapters, particularly **Chapter 10: Ecology**.
- 11.1.2 The Chartered Institute of Ecology and Environmental Management (CIEEM, 2022) “*Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (Version 1.2)*” refer to receptors being ‘ecological features’, defined in the guidance as pertaining to habitats, species and ecosystems. However, for the purposes of this EIA Report, for which separate ecology and ornithology chapters have been produced, the term ‘ornithological feature’ is adopted. This is to differentiate terminology and avoid any confusion between the two chapters.
- 11.1.3 This EIA Report chapter and **Appendix 11A: Ornithology Desk Study** and **Appendix 11B: Scope of the Assessment** were produced by WSP, with all bird survey work and its associated figures and modelling upon which this assessment is based being provided by Alan Fielding as presented in the following technical appendices:
- **Appendix 11C: Eredine Ornithology Methods;**
 - **Confidential Appendix 11D: Ornithological Surveys Final Report;**
 - **Confidential Appendix 11E: Collision Risk Modelling Report;**
 - **Confidential Appendix 11F: Golden Eagle Territory (GET) Modelling Report.**
- 11.1.4 **Appendix 11D** and **11F** present data and figures of flight activity, roosting locations or breeding locations associated with sensitive species and are therefore treated as confidential. These two confidential appendices will be provided to relevant consultees and determining authorities only.

11.2 Limitations of this Assessment

- 11.2.1 Field surveys predominantly followed the survey guidance that is widely recognised by NatureScot (2014 and 2017 V.2) (formerly Scottish Natural Heritage (SNH)). However, where deviations occurred due to issues including adverse weather and access restrictions, these are described in the accompanying survey reports (**Appendices 11C-D**). However, it is considered that any such deviations do not affect the robustness of this assessment.

¹ In this Ornithology chapter, the term “potentially significant effects” is used in the sections prior to the “scope of the assessment” (Section 12.7) being determined, as it accords with CIEEM 2022 guidance. The term “likely significant effects” is used once the scope of the assessment has been determined. The use of this term is not to be confused with Likely Significant Effects (LSEs) as used in the context of a Habitats Regulations Assessment.

11.3 Relevant Legislation, Planning Policy, Technical Guidance

Legislative Context

11.3.1 The following legislation has been considered in the assessment of the effects on ornithological features:

- Conservation (Natural Habitats, &c.) Regulations 1994 (as amended);
- Conservation of Habitats and Species Regulations 2017 (these two pieces of legislation are collectively known as “the Habitats Regulations”);
- Wildlife and Countryside Act 1981 (as amended);
- Nature Conservation (Scotland) Act 2004; and
- Wildlife and Natural Environment (Scotland) Act 2011.

Planning Policy Context

11.3.2 The current statutory development plan applicable to the Development Site comprises the Argyll and Bute Council (ABC) Local Development Plan (LDP) 2 adopted in February 2024. A summary of the relevant planning policies is given in **Table 11.1**, with further details on the relevant LDP2 policies presented in **Table 11.2**.

Table 11.1 Planning Policy Issues relevant to Ornithology

Policy reference	Policy issue	Considered in Section
National planning policies		
NPF4: Policy 3 (Biodiversity) and Policy 4 (Natural Places)	Policies 3 and 4 set out detailed policy provisions relating to the protection and enhancement of different types of natural resources and natural heritage assets, as detailed below.	Section 11.7
NPF4: Biodiversity (LDP)	NPF4 requires biodiversity to be protected, conserved, restored and enhanced in line with the mitigation hierarchy through LDPs.	Sections 11.7, 11.8 and 11.19
NPF4: Natural Places (LDP)	NPF4 requires locally, regionally, nationally and internationally important natural assets to be identified and appropriately protected through LDPs.	Sections 11.4-11.7, 11.8, 11.11 and 11.19
NPF4: Biodiversity (Policy 3)	Policy 3 states that: “a) <i>Development proposals will contribute to the enhancement of biodiversity, including where relevant, restoring degraded habitats and building and strengthening nature networks and the connections between them. Proposals should also integrate nature-based solutions, where possible.</i> b) <i>Development proposals for national or major development, or for development that requires an Environmental Impact Assessment will only be supported where it can be demonstrated that the proposal will conserve, restore and enhance biodiversity,</i>	Sections 11.4-11.17 and Appendices 11A-F

Policy reference	Policy issue	Considered in Section
NPF4: Natural Places (Policy 4)	<i>including nature networks so they are in a demonstrably better state than without intervention. This will include future management. To inform this, best practice assessment methods should be used. Proposals within these categories will demonstrate how they have met all of the following criteria:</i> <i>i. the proposal is based on an understanding of the existing characteristics of the site and its local, regional and national ecological context prior to development, including the presence of any irreplaceable habitats;</i> <i>ii. wherever feasible, nature-based solutions have been integrated and made best use of;</i> <i>iii. an assessment of potential negative effects which should be fully mitigated in line with the mitigation hierarchy prior to identifying enhancements;</i> <i>iv. significant biodiversity enhancements are provided, in addition to any proposed mitigation. This should include nature networks, linking to and strengthening habitat connectivity within and beyond the development, secured within a reasonable timescale and with reasonable certainty. Management arrangements for their long-term retention and monitoring should be included, wherever appropriate; and</i> <i>v. local community benefits of the biodiversity and/or nature networks have been considered.</i> <i>c) Proposals for local development will include appropriate measures to conserve, restore and enhance biodiversity, in accordance with national and local guidance. Measures should be proportionate to the nature and scale of development. Applications for individual householder development, or which fall within scope of (b) above, are excluded from this requirement.</i> <i>d) Any potential adverse impacts, including cumulative impacts, of development proposals on biodiversity, nature networks and the natural environment will be minimised through careful planning and design. This will take into account the need to reverse biodiversity loss, safeguard the ecosystem services that the natural environment provides, and build resilience by enhancing nature networks and maximising the potential for restoration”.</i>	Section 11.5, 11.7, 11.8, 11.19 and Appendices 11A-F
	Policy 4(b) states that: “Development proposals that are likely to have a significant effect on an existing or proposed European site (Special Area of Conservation or Special Protection Areas) and are not directly connected with or necessary to their conservation management are required to be subject to an “appropriate assessment” of the implications for the conservation objectives”. Policy 4(f) states that “Development proposals that are likely to have an adverse effect on species protected by legislation will only be supported where the proposal meets the relevant statutory tests. If there is reasonable evidence to suggest that a protected species is present on a site or may be affected by a proposed	

Policy reference	Policy issue	Considered in Section
	<i>development, steps must be taken to establish its presence. The level of protection required by legislation must be factored into the planning and design of development, and potential impacts must be fully considered prior to the determination of any application".</i>	
NPF4: Energy (Policy 11)	Policy 11(e) states that: <i>"In addition, project design and mitigation will demonstrate how the following impacts are addressed: ix. biodiversity including impacts on birds; xiii. cumulative impacts.</i>	Sections 11.8-11.20
Scottish Biodiversity Strategy to 2045	The strategy is <i>"for Scotland to be Nature Positive by 2030. By 2045, Scotland will have restored and regenerated biodiversity across our land, freshwater and seas. Our natural environment, our habitats, ecosystems and species, will be diverse, thriving, resilient and adapting to climate change. Regenerated biodiversity will drive a sustainable economy and support thriving communities, and people will play their part in the stewardship of nature for future generations".</i>	Sections 11.8 and 11.19
Local planning policies		
Argyll and Bute Council (ABC) Local Development Plan 2 LDP2 2024	Policies 30 "The Sustainable Growth of Renewables", 73 "Development Impact on Habitats, Species and Biodiversity", 74 "Development Impact on sites of international importance" and 75 "Development Impact on Sites of Special Scientific Interest (SSSIs) and National Nature Reserves" contain elements relating to ornithology, and are detailed in Table 11.2 .	Sections 11.7, 11.8 and 11.17
Biodiversity policy		
UK Biodiversity Action Plan (UKBAP) / UK Post-2010 Biodiversity Framework / Global Biodiversity Framework (GBF)	The UKBAP, produced in 1994 by the UK Government, was a national strategy for the conservation of biodiversity. The UKBAP was updated in July 2012 with a plan which covers the period 2011-2020. This framework is implemented individually by each of the four UK countries. Within Scotland, the UKBAP is coordinated through the Biodiversity Action Reporting System (BARS), which is an online tool which contains a list of Scottish priority habitats and species (the Scottish Biodiversity List (SBL)). All UKBAP species and habitats are listed in the SBL. In December 2022, the UK became a signatory to the GBF. This framework covers the period to 2050, and is likely to increase protection of SBL species and habitats by implementing a target to bring 30% of land and sea into effective conservation and management for wildlife.	Section 11.7, Appendix 11B
Scottish Biodiversity List (SBL)	The SBL is a list of flora, fauna and habitats considered by the Scottish Ministers to be of principal importance for biodiversity conservation and its publication was a requirement of Section 2(4) of The Nature Conservation (Scotland) Act 2004.	Sections 11.7, 11.10-11.16, Appendix 11B

Policy reference	Policy issue	Considered in Section
Argyll and Bute Local Biodiversity Action Plan (LBAP)	This LBAP is referred to for species action plans relevant to the Proposed Development.	Sections 11.7, 11.10-11.15, Appendix 11A

Development Plan Policies

11.3.3 A summary of the relevant development plan policies is given in **Table 11.2**.

Table 11.2 Development Plan Policy Issues Considered within the Assessment of Ornithology

Policy reference	Policy issue	Considered in Section
ABC LDP2		
Policy 30 “The Sustainable Growth of Renewables”	<i>“The Council will support renewable energy developments where these are consistent with the principles of sustainable development and it can be adequately demonstrated that there would be no unacceptable environmental effects, whether individual or cumulative, on local communities, natural and historic environments, landscape character and visual amenity, and that the proposals would be compatible with adjacent land uses. Proposals for new wind turbine developments over 50meters high should be sited in appropriate locations in accordance with the Spatial Framework which shows in line with Scottish Planning Policy:</i> <i>• Areas where wind farms will not be acceptable.</i> <i>• Areas of significant protection.</i> <i>• Areas which may have potential for wind farm development.</i> <i>Applications for all wind turbine developments will be assessed against the following criteria:</i> <i>• [...] Effects on the natural heritage, including birds.</i> <i>• [...] Cumulative impacts arising from all of the considerations above.</i> <i>In assessing any application the Council will additionally have regard to the opportunities for energy storage, local energy networks, and long term environmental management of the site.”</i>	Sections 11.10-11.18
Policy 73 “Development Impact on Habitats, Species and Biodiversity”	<i>“a) When considering development proposals Argyll and Bute Council will give full consideration to the legislation, policies and conservation objectives, contained within the following:</i> <i>i) Wildlife and Countryside Act 1981; (and as amended by the Nature Conservation (Scotland) Act 2004); Species listed on Schedules 1, 5, 7, 8, 9 and 14;</i> <i>ii) Wildlife and Natural Environment (Scotland) Act 2011 [...].</i> <i>b) When considering development proposals the Council will also seek to contribute to the delivery of the objectives and targets set by the Local Biodiversity Action Plan (LBAP) and the Scottish Biodiversity Strategy. Development proposals</i>	Sections 11.5, 11.7, 11.10-11.16, Appendices 11B-E

Policy reference	Policy issue	Considered in Section
	<i>will be encouraged to incorporate and safeguard the existing site biodiversity wherever possible. Applications for new developments may be required to complete a biodiversity checklist related to the scale, nature and location of the development (see LDP2 TN04 Technical Note: Biodiversity Checklist).</i> <i>c) Where there is evidence to suggest that a habitat or species of international, national and/or local importance exists on a proposed development site or would be affected by the proposed development, the Council will require the applicant, at his/her own expense, to submit a specialist survey of the site's natural environment, and if necessary a mitigation plan, with the planning application.</i> <i>d) Development proposals which are likely to have an adverse effect on protected species and habitats will only be permitted where it can be justified in accordance with the relevant protected species legislation."</i>	
Policy 74 "Development Impact on sites of international importance"	<i>"Development not directly connected with or necessary to the conservation management of a site covered by the Conservation (Natural Habitats, etc) Regulations 1994 (as amended) and which is likely to have a significant effect on the site (either individually or in combination with other plans or projects) will be subject to an Appropriate Assessment. Where it cannot be ascertained that the development would not adversely affect the integrity of the site it will not be supported unless:</i> <i>i) There is no alternative solution; AND,</i> <i>ii) There are imperative reasons of over-riding public interest that may, for sites not hosting a priority habitat type and/or priority species, be of a social or economic nature.</i> <i>Where the site hosts a priority habitat type and/or a priority species, the reasons referred to at ii) must relate to human health, public safety or beneficial consequences of primary importance to the environment, or other reasons which in the opinion of Scottish Ministers are imperative reasons of overriding public interest."</i>	Sections 11.4, 11.5, 11.7, Appendices 11A and 11B
Policy 75 "Development Impact on Sites of Special Scientific Interest (SSSIs) and National Nature Reserves"	<i>"Development which would affect Sites of Special Scientific Interest and National Nature Reserves will only be permitted where it can be adequately demonstrated that either:</i> <i>i) The proposed development will not compromise the natural feature or conservation objectives, or adversely affect the integrity of the site; OR,</i> <i>ii) There is a proven public interest and benefit where social, economic, environmental or safety considerations of national importance outweigh the ecological interest of the site and the need for the development cannot be met in other less ecologically damaging locations or by reasonable alternative means."</i>	Sections 11.4, 11.7 and Appendix 11A

Technical Guidance

Overarching guidance

- 11.3.4 The Chartered Institute of Ecology and Environmental Management (CIEEM) has produced relevant general guidance on impact assessment in ecology and ornithology: *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.2.* (CIEEM 2022) This has been used to guide the assessment presented in this chapter.

Guidance specific to wind farms

- 11.3.5 NatureScot have also published a technical guidance series covering bird surveys and assessment for wind farms:
- Recommended bird survey methods to inform impact assessment of onshore wind farms (NatureScot, 2017 V.2);
 - Assessing significance of impacts from Onshore Wind Farms outwith Designated Areas (NatureScot, 2018a);
 - Assessing Connectivity with Special Protection Areas (SPAs) (NatureScot, 2016a);
 - Assessing the cumulative impacts of onshore wind farms on birds (NatureScot, 2018b);
 - Dealing with construction and birds (NatureScot, 2016b);
 - Natural Heritage Zones Bird Population Estimates (Scottish Wind Farm Bird Steering Group, Wilson *et al.*, 2015);
 - Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283. (Goodship and Furness (MacArthur Green), 2022); and
 - Guidance – Good Practice during Wind Farm Construction (4th Edition) (NatureScot, 2019).
- 11.3.6 This technical guidance has been used to define the survey methods and to inform this assessment.

11.4 Data-gathering Methodology

Study Area

- 11.4.1 Desk-based and field data was gathered to inform the assessment presented in this chapter. Due to the presence of multiple ornithological features and many potential effects, the area over which data is collected varies for different receptors and according to the nature of the study. The “study area” in this case comprises:
- The Development Site (as defined in **Chapter 4: Description of the Proposed Development** and illustrated on **Figure 1.1**);
 - The desk study area for statutory and non-statutory ornithological sites (**Figure 11.1**);
 - The desk study area for legally protected and notable ornithological features (**Figure 11.2**); and,

- The field survey areas (**Figures 11.3 A and B**).

11.4.2 The extent of the desk study areas and field survey areas (see **Table 11.5**) were determined based on best practice guidance noted in **Section 11.3** and a high-level overview of the types of ornithological features present, and the potential effects that could occur. The study area was defined on a precautionary basis to ensure that, as a minimum, the Zone of Influence (“ZoI”)² relevant to all ornithological features (see **Table 11.6** and **Section 11.7**) were covered during baseline data collection activities. NatureScot and the Royal Society for the Protection of Birds (RSPB) confirmed that the field survey areas are appropriate (see **Table 11.7**).

Desk Study

11.4.3 A desk-based data-gathering exercise was undertaken to obtain existing information relating to relevant ornithological features; these are statutory and non-statutory biodiversity sites, species of principal importance³, legally protected species and other conservation-notable species that have been recorded since 2013. **Table 11.3** lists the ornithological features considered and the extent of the study areas considered (as shown on **Figure 11.1** and **Figure 11.2**).

Table 11.3 Information Relevant to the Desk Study

Ornithological Feature	Description	Desk Study Areas
Statutory sites designated under international conventions or European Directives	Wetlands of International Importance (also known as Ramsar sites) and SPAs.	The Development Site and 20km buffer.
Statutory sites designated under national legislation	SSSIs, National Nature Reserves (NNRs) and Local Nature Reserves (LNRs) with ornithological qualifying features.	The Development Site and 10km buffer.
Locally designated sites	Often termed as Local Wildlife Sites (LWS), County Wildlife Sites (CWS), Sites of Interest for Nature Conservation (SINC).	The Development Site and 2km buffer.
Scottish Biodiversity List; Red-listed species⁴; Legally protected species	Bird species of principal importance for the conservation of biodiversity in Scotland. Red-listed Birds of Conservation Concern (<i>Stanbury et al.</i> , 2021). Legally protected bird species include those listed on Schedule 1 of the <i>Wildlife and Countryside Act 1981</i> (as amended in Scotland).	The Development Site and 2km buffer (6km buffer for eagle species).

² The ZoI in this context is the area over which an individual ornithological feature may be subject to a potentially significant effect resulting from changes in the baseline environment due to the Proposed Development.

³ Species of Principal Importance are referred to in this chapter as SPI respectively.

⁴ Red-listed species for the purposes of this assessment refer to those who, following a review of the status of birds in the UK, Channel Islands and Isle of Man using standardised criteria, were assessed and assigned to the Red list of Birds of Conservation Concern (BoCC). The assessment criteria include conservation status at global and European levels and, within the UK, historical decline, trends in population and range, rarity, localised distribution and international importance (*Stanbury et al.*, 2021).

- 11.4.4 **Table 11.4** lists the organisations and other sources of desk study data, together with the nature of that data.

Table 11.4 Sources of Desk Study Data

Source	Summary of information provided
Magic.gov.uk	Locations of statutory and non-statutory designated sites.
NatureScot interactive map facility at (https://sitelink.nature.scot/home)	Access to data and information on key protected areas across Scotland.
RSPB	All protected and notable bird species nest/roost/lek data within 2km of the Development Site, and eagle species nest/roost data out to 6km.
Scottish Raptor Study Group	All Annex 1 and Schedule 1 raptor/owl species nest/roost data within 2km of the Development Site, and eagle species nest/roost data out to 6km. Annual publications detailing population and productivity estimates based on monitored populations for raptor species at the national and regional level.
An Suidhe Wind Farm <i>Planning Condition No. 19, Bird Surveys 2020, Bird Surveys 2021 and Bird Surveys 2022 reports</i>	Breeding bird surveys undertaken to monitor the adjacent An Suidhe Wind Farm, together with contextual material regarding this consented wind farm.

Survey Work

- 11.4.5 NatureScot (2017) guidance recommends that field surveys should be focussed on ‘target species,’ which will generally be limited to those which are afforded a higher level of legislative protection, though some other species may also be considered as target species (for example as a result of their behaviour where this makes them more likely to be affected by wind farms). There are three overarching species lists from which target species are generally derived:
- Species for which Special Protection Areas (SPA) are designated and those listed under Annex 1;
 - Species listed under Schedule 1; and,
 - Red listed Birds of Conservation Concern (BoCC) (with reference to Stanbury et al., 2023).
- 11.4.6 In addition, consideration should be given to species identified within the SBL and LBAP, though target species are limited to those likely to be affected by wind farms. As research indicates that most passerine species are not significantly affected by wind farms, many species included on the LBAPs and BoCC are not considered to be target species.
- 11.4.7 Considering these factors, the following species/groups were defined as the relevant ‘target species’:

- geese, swans, and ducks (except common and widespread species, e.g., Canada goose, mallard and mute swan);
 - diver species;
 - Schedule 1 and Annex 1 raptors and owls (e.g., golden eagle, goshawk, hen harrier, merlin, osprey, peregrine, red kite, short-eared owl, and white-tailed eagle);
 - Schedule 1 and Annex 1 wader species (e.g., dunlin, greenshank, and golden plover); and
 - other notable species (e.g. black grouse).
- 11.4.8 Additionally, 'secondary species', typically being more common and/or subject to less strict protection than target species, were identified as potentially occurring on the Development Site. These include raptors such as buzzard, sparrow hawk and kestrel, waders such as common sandpiper, curlew, oystercatcher and snipe and gulls such as great and lesser black-backed gull and herring gull.
- 11.4.9 A list of the ornithological field surveys carried out to inform the preparation of this chapter is provided in **Table 11.5**. The methodologies for these surveys can be found in **Appendix 11C** and **Confidential Appendix 11D** (following NatureScot guidance (NatureScot, 2016c), this presents data of flight activity, roosting and/or breeding locations associated with sensitive species.
- 11.4.10 **Table 11.5** lists the data compiled within the field survey area(s), as detailed in **Appendix 11C** and **Confidential Appendix 11D**.

Table 11.5 Summary of Ornithological Surveys

Survey	Relevant guidance	Field survey area	Survey period
Vantage Point (VP) survey	NatureScot (2017 V.2) Recommended bird survey methods to inform impact assessment of onshore wind farms.	Proposed Development	26/03/2019-01/04/2022
Moorland Breeding Bird Survey	NatureScot (2017 V.2) Recommended bird survey methods to inform impact assessment of onshore wind farms.	Development Site and 500m buffer	17/04/2019-19/07/2019 17/04/2020-23/07/2020
Breeding raptor survey	NatureScot (2017 V.2) Recommended bird survey methods to inform impact assessment of onshore wind farms.	Development Site and 2km buffer (6km buffer for eagle species)	26/03/2019-22/08/2019 27/03/2020-18/08/2020
Lekking black grouse survey	NatureScot (2017 V.2) Recommended bird survey methods to inform impact assessment of onshore wind farms.	Development Site and 1.5km buffer	28/03/2019-24/05/2019 24/03/2020-07/05/2020
Breeding diver survey	NatureScot (2017 V.2) Recommended bird survey	Development Site and 2km buffer	17/04/2019-22/08/2019

Survey	Relevant guidance	Field survey area	Survey period
(including diver focal watches)	methods to inform impact assessment of onshore wind farms.		23/04/2020-19/08/2020 27/04/2021-13/08/2021

- 11.4.11 Golden eagle satellite tag data was also purchased. This covered two range-holding adults, one from 2017 to 2022 and one from 2018 to 2022. Further details can be found in **Confidential Appendix 11F**.

11.5 Overall Baseline

- 11.5.1 A summary of the ornithological baseline as determined through desk study and field survey is provided below. Further species-specific baseline details are provided in **Section 11.10**, and additional details are provided in **Confidential Appendices 11D** and **11F**.

Current Baseline

Site Context and Surrounding Habitats

- 11.5.2 The Development Site is positioned on land managed by Forestry and Land Scotland (FLS), located approximately 4.5km west of Inveraray and approximately 17km to the north-east of Lochgilphead in Argyll and Bute (centred at coordinates (E)199418, (N) 704212). It is proposed to access the Development Site via the existing An Suidhe Wind Farm to the east, then via an access track through forestry.
- 11.5.3 The Development Site is situated within an area of land positioned between two large bodies of open water; Loch Awe to the north-west, and Loch Fyne to the south-east. Numerous freshwater lochans and ponds are present within the Development Site, which are drained by a network of watercourses.
- 11.5.4 Habitats within the Development Site are comprised primarily of coniferous plantation woodland, with open upland moorland habitat within the north-west and southern parts of it.

Statutory Nature Conservation Sites (International/European)

- 11.5.5 **Figure 11.1** illustrates the locations of the statutory nature conservation sites designated under international conventions or via European Directives. These comprise:
- Glen Fyne and Glen Etive SPA (~10 km north-east of the Proposed Development), which is designated for golden eagle (19 active territories); and
 - Knapdale Lochs SPA (~18 km south-west of the Proposed Development), which is designated for black-throated diver (four breeding pairs).

Statutory Nature Conservation Sites (National)

- 11.5.6 No statutory nature conservation sites designated for ornithology under national conventions were recorded within the study area.

Non-Statutory Nature Conservation Sites

- 11.5.7 No non-statutory nature conservation sites designated for ornithology were recorded within the study area.

Species

- 11.5.8 **Table 11.6** provides a brief summary of all target and selected secondary species recorded during bird surveys. A detailed summary of the species recorded across the Development Site is presented in **Confidential Appendix 11D**, following NatureScot guidance (NatureScot, 2016c) associated with sensitive species.
- 11.5.9 **Table 11.6** indicates whether the bird is a qualifying feature of Glen Fyne and Glen Etive SPA or Knapdale Lochs SPA, is listed on Annex 1 of the Birds Directive, Schedule 1 of the Wildlife and Countryside Act (as amended) (WCA), or is a species of principal importance on the SBL. The species status on the fifth edition of the Birds of Conservation Concern List (BoCC5) is displayed as green, amber or red (Stanbury *et al.*, 2021). For convenience, species have been arranged alphabetically as opposed to taxonomically.

Table 11.6 Summary of Ornithological Survey Results March 2019 – April 2022

Species	Status	No. of pairs / territories / lek sites in Development Site	Summary
Black grouse	SBL, BoCC5 Red List	5	In 2019, six incidental records of single birds on the ground within the Development Site, and five within 1.5km. Five lek sites. Three records of black grouse in flight, one (two females) being within the Development Site. In 2020, single displaying males were seen in four locations. Eight records of single birds on the ground, six within the Development Site. One record of two black grouse males in flight within the 1.5km survey area.
Black-throated diver	Knapdale Lochs SPA, Annex 1, Schedule 1, SBL, BOCC5 Amber List	1	Three flights of one to two birds during VP surveys between 2019 and 2020. One bird was found incubating on a loch within the Development Site during May 2019, but with no signs of chicks during follow up surveys. In 2020, a pair attempted to breed on the same waterbody but failed at the late egg/early chick stage. In 2021, a pair fledged one chick on the same loch. In August 2021 two adults and a juvenile were seen on an adjacent off-site loch. It is assumed these were the same birds.
Common sandpiper	BoCC5 Amber List	1	Most frequently recorded wader during surveys. However, only one territory recorded within the Development Site.
Golden eagle	Glen Fyne and Glen Etive SPA, Annex 1, Schedule 1/1A,	1	106 flights during VP surveys. Golden eagles were seen across the Development Site but were predominantly present between March and May.

Species	Status	No. of pairs / territories / lek sites in Development Site	Summary
	SBL, BoCC5 Green List		Two golden eagle territories were identified within 6km of the Development Site. One breeding attempt was made in 2019, and two in 2020.
Golden plover	Annex 1, SBL, BoCC5 Green List	0	One flight (comprising two birds) was recorded during VP surveys.
Goshawk	Schedule 1, BoCC5 Green List	0	One flight by a single bird recorded during VP surveys.
Greenshank	Schedule 1, BoCC5 Amber List	0	A single record in 2019.
Hen harrier	Annex 1, Schedule 1/1A, SBL, BoCC5 Red List	0	Twelve flights were recorded during VP surveys. All but one were of single birds, with one flight of two birds.
Lapwing	SBL, BoCC5 Red List	0	One flight of 28 birds recorded during a VP survey in February 2021.
Osprey	Annex 1, Schedule 1, SBL, BoCC5 Amber List	0	22 flights by a single bird and one flight by two birds recorded during VP surveys.
Peregrine	Annex 1, Schedule 1, SBL, BoCC5 Green List	0	Recorded incidentally in 2019 and 2020.
Red-throated diver	Annex 1, Schedule 1, SBL, BoCC5 Green List	3	Seen on eight lochans and incubating on three of these within the Development Site in 2019 and 2020. Bred successfully on one lochan within the Development Site in 2019, 2020 and possibly also 2021. A total of 94 flights were recorded during VP surveys and focal diver watches.
Snipe	BoCC5 Amber List	0	Four flights by a single bird recorded during VP surveys.
White-tailed eagle	Annex 1, Schedule 1/1A, SBL, BoCC5 Amber List	0	38 flights were recorded during VP surveys from 2019 to 2021. One flight comprised a pair of adults transiting the VP6 viewshed. One incidental flight of a single bird during a diver survey.
Whooper swan	Annex 1, Schedule 1,	0	In March, April and May 2019, whooper swans were seen on three lochans. Three flights of between one and nine birds were recorded

Species	Status	No. of pairs / territories / lek sites in Development Site	Summary
	SBL, BoCC5 Amber List		between October 2020 and May 2021. In June 2020, a single bird was seen feeding close to Loch Dubh-ghlas.

Future Baseline

- 11.5.10 Determining a future baseline draws upon information about the likely future use and management of the Development Site in the absence of the Proposed Development, known population trends (for species), climate change and any other proposed developments (consented or otherwise) that may act cumulatively with the Proposed Development to affect ornithological features.
- 11.5.11 Land use/management is currently anticipated to remain largely unchanged in the absence of the Proposed Development. However, with the maturation of the forestry within the Development Site and in the local area, the numbers of certain tree-nesting birds of prey may increase due to an increase in potential nest sites e.g. for golden eagle, osprey and white-tailed eagle.
- 11.5.12 Climate change may lead to warmer, wetter and windier weather during the breeding season period, and this may affect productivity.
- 11.5.13 Highly Pathogenic Avian Influenza (HPAI) may also continue to affect the populations, distribution and productivity of some species including seabirds, waterbirds and raptors.
- 11.5.14 Although it is likely that the general bird assemblage would remain relatively constant, there are several factors that would act over the short and long-term to modify distribution and abundance of species. However, in the absence of empirical data on long-term population trends, it is considered that the current baseline is equally likely, or even more likely, to persist over the anticipated lifespan of the Proposed Development rather than there being a fundamental change. It is therefore considered appropriate to use the current baseline for the purpose of this assessment.

11.6 Consultation

- 11.6.1 **Table 11.7** provides a summary of consultee comments about the Proposed Development and the responses given.

Table 11.7 Summary of Consultee Comments Regarding Ornithology

Consultee(s)	Comment	Response and how considered in this chapter	Section reference
Energy Consents Unit (ECU)	<u>Survey Methods</u> “It is recommended by the Scottish Ministers that decisions on bird surveys – species, methodology, vantage points, viewsheds and duration – site specific and cumulative – should be made following discussion between the Company, Argyll and Bute Council, NatureScot and RSPB Scotland.”	Bird survey methods followed NatureScot bird survey guidance for onshore wind farm developments (2017). Comments from NatureScot and RSPB Scotland indicate they are satisfied with the surveys undertaken.	Section 11.4, Appendix 11C
	<u>EIA Report</u> “The EIA report should provide a baseline survey of the animals [...] present on-site. It needs to be categorically established which species are present on the site, and where, before a future application is submitted.”	This chapter reports the ornithological baseline quantitatively and spatially, including tables and figures of survey results.	Section 11.5, Confidential Appendix 11D
	<u>Mitigation Measures</u> “The Scottish Ministers are required to make a reasoned conclusion on the significant effects of the proposed Development on the environment as identified in the environmental impact assessment. The mitigation measures suggested for any significant environmental impacts identified should be presented as a conclusion to each chapter. Applicants are also asked to provide a consolidated schedule of all mitigation measures proposed in the environmental assessment, provided in tabular form, where that mitigation is relied upon in relation to reported conclusions of likelihood or significance of impacts.”	Mitigation and other environmental measures are presented in Table 11.18 .	Section 11.13
NatureScot	<u>Survey Methods</u> “The original ornithology survey work was undertaken between 2019 and 2022 and we note that the Applicant intends to rely on this information to inform the EIA for the Proposal. We provided post-scoping advice in March 2021 with regards to the survey methodology and locations of vantage points (VP). We do not believe further survey work is required at this stage.”	It is noted that NatureScot are satisfied with the survey effort undertaken.	N/A

Consultee(s)	Comment	Response and how considered in this chapter	Section reference
	“The Golden eagle satellite tag data will be essential to help validate the VP survey work and the Golden Eagle Territory (GET) model ⁵ , and will help to assess potential displacement and/or territory loss.	Golden eagle satellite tag data has been used to validate the VP surveys and GET model, and assess potential golden eagle displacement and territory loss.	Section 11.10, Confidential Appendix 11F
	EIA Report “We consider that the key issues of interest to NatureScot to be addressed in detail as part of the Environmental Impact Assessment (EIA) process to include [...] Ornithological impacts, including direct impacts on golden eagle territories and various other Schedule 1 bird species.”	This chapter evaluates effects predicted to arise as a result of the Proposed Development, assesses the significance of these, and recommends mitigation and/or compensation measures as is necessary and appropriate, as requested by NatureScot. This includes a consideration of golden eagle territories and other Schedule 1 birds.	Sections 11.10
Argyll and Bute Council (ABC)	“Birds observed from 2019/ 2020 and 2021- Golden Eagle- unsuccessful breeding, Black-Throated Divers, Black Grouse- records of displaying male in four locations and two male in flight, Red-Throated Divers – the LBO [Local Biodiversity Officer] notes the details of occupation of nests, breeding attempts and some successes with Red and Black-Throated Diver species and that winter walkovers covered the Development Site plus a 500m buffer and included sampling both dawn and dusk. No key findings were recorded. The LBO notes that further surveys are to be undertaken with[in] 2022 [...]”	Surveys were continued into 2022, with results now having been presented in full.	Sections 11.4, 11.5, Confidential Appendix 11D
RSPB	“RSPB Scotland again advise that this proposal has potential to impact on several bird species of conservation concern; notably Golden eagle <i>Aquila chrysaetos</i> and other raptors, Red throated diver <i>Gavia stellata</i> and Black-throated diver <i>Gavia arctica</i> (listed in Annex	Potential impacts affecting golden eagle, other raptors, red-throated diver, black-throated diver and black grouse have been considered within the chapter.	Section 11.10, Confidential Appendix 11E

⁵ Since August 2021, NatureScot recommend that in cases where modelling is necessary for the assessment of the impacts of forestry or wind farm proposals on golden eagles, GET model assessment should be used to support EIA Reports, noting that PAT model assessment will only be relevant to its considerations in a very limited number of legacy cases

Consultee(s)	Comment	Response and how considered in this chapter	Section reference
	1 of the EU Birds Directive), and Black grouse <i>Lyrurus tetrix</i> (a Red Listed UK Biodiversity Action Plan species). “It is disappointing to see that despite concerns raised by RSPB Scotland and NatureScot in response to the original 2020 Scoping exercise, no amendment has been made to the proposed siting of turbines on sensitive open ground habitat [...]. As previously recommended, the layout of turbines and associated infrastructure should avoid planted deep peat and open ground habitats; including lochans and areas of unplanted deep peat. Siting turbines and associated infrastructure within commercial plantation forest will minimise biodiversity impacts.”	Four turbines have since been removed from open ground habitat. The site layout was also amended to take into account updated peat survey data, with turbines and infrastructure located on as shallow peat as possible whilst taking into account all other constraints on the site.	and Confidential Appendix 11F
	<u>Survey Methods</u> “RSPB Scotland notes that the recommended two-years of survey data have now been collected, and that access routes are also confirmed as being surveyed. We advise that monitoring for key species should ideally be continued up to and throughout the application process - with data made available up to the nearest breeding season to inform the EIA Report. All survey work should apply/follow the latest guidance from NatureScot as a minimum requirement.”	VP surveys continued for a third year, with the final results coming from the early part of the last full breeding season (2022) available before the preparation of the chapter. It is noted that NatureScot have accepted the survey effort undertaken.	Section 11.4
	<u>Golden Eagles</u> “Although the site is largely commercial plantation forest, the importance of the open ground habitat in the east of the site needs to be ascertained. It is noted that satellite tag data have been purchased by the Applicant, and that these will be used to inform the ornithology assessment. Satellite tag data from the G/LAE3 pair will assist in a robust assessment of site usage by these birds; however, the area’s importance to sub-adults/non-breeders/un-tagged birds must also be established. This applies particularly to any potential impacts on eyrie usage relating to the proposal. Having a buffer distance of at least 1000m between turbines and these nest sites is a minimum recommendation to try and reduce impacts. Ideally, data should include breeding use for the G/LAE1B pair from more than one season. Although inaccuracies may exist in the Predicting Aquila Territories (PAT) model, it would still be useful to apply it; not all	It is noted that the RSPB confirm that satellite tag data will assist in performing a robust assessment. NatureScot have accepted the proposed use of the GET (rather than PAT) model. VP surveys have assisted in quantifying the importance of open ground habitat in the east of the Development Site. All golden eagle nest sites will be buffered from turbines by at least 1km.	Sections 11.6 and 11.10, Confidential Appendix 11D, Appendix 11F

Consultee(s)	Comment	Response and how considered in this chapter	Section reference
	territorial birds are tagged, and this is the model which remains most used and most easily interpreted.”		
	<u>Other Raptors</u> “Regarding Hen harrier (12 flights recorded), we advise that the potential future use of the restructured forestry and open ground around turbines requires careful consideration. Draw-in of birds to these areas, with concurrent heightened collision risk, are distinct possibilities. Osprey use the area relatively frequently (32 [sic] flights⁶ recorded) and obviously nest in the area. White-tailed eagle records appear to have increased since submission of the original Scoping request (32 flights recorded), and it remains possible that the birds have established/may establish an eyrie in a new location.”	Hen harrier, osprey and white-tailed eagle have all been considered within the chapter.	Sections 11.10
	<u>Black- and Red-throated Diver</u> “Both diver species use lochs/lochans within this area for pre-breeding social gatherings and breeding. 3 breeding attempts (both successful and unsuccessful) have been recorded during each survey season for Red-throated diver; plus 1 (presumed unsuccessful) breeding attempt per survey season for Black-throated diver. “Safeguarding these sites, which represent good productivity in an Argyll context, is therefore of high importance. Any proposal should be designed to avoid impacts with turbines through large setback distances from used lochs/lochans and open flight corridors (42 Red-throated diver flights were recorded during vantage point surveys, plus a further 30 flights during focal watches). We advise 500m as a minimum set-back distance. Assessment of cumulative impacts from land use conversion to renewable energy production and commercial forestry is strongly advised; plus, wider safeguarding measures for Argyll diver populations (i.e., positive management through monitoring, raft deployment and predator control).”	Both diver species have been assessed fully within the chapter. The increased number of red-throated diver flights assessed in this report is due to the conducting of additional work since the original data submitted to consultees. As requested, an assessment of cumulative impacts has been undertaken for these species. New nest platforms will be provided (see Technical Appendix 10H to the Ecology chapter).	Sections 11.10, 11.11 and 11.14

⁶ 22 flights by a single osprey and one flight by two individuals were recorded during VP surveys as noted in Table 11.6.

Consultee(s)	Comment	Response and how considered in this chapter	Section reference
	<u>Black Grouse</u> “In the UK, the Black grouse is a Red Listed species and the subject of a Biodiversity Action Plan (UKBAP). This bird has undergone significant declines in south-west Scotland, with Argyll remaining an important area for them. Positive management actions to enhance and create habitat for this species would therefore be welcome. “Our data indicate that the site boundary of the Proposed Development takes in 2 leks of Highest Regional Priority, 6 leks of High Regional Priority and 1 lek of Regional Priority; with a further 1 lek of Highest Regional Priority, 2 leks of High Regional Priority and 1 of Regional Priority located ≤ 1.5km from the A39 Proposed Development. These leks are concentrated on the open ground habitat that cuts through the Proposed Development from the south-west to the north-east. The Proposed Development therefore sits within core breeding/brood-rearing range for this threatened species, and well within the estimated 5km (conservative) adult dispersal zone for all 12 regionally important leks. Data collected by the Applicant during 2019 and 2020 surveys confirm the continued importance of this area for Black grouse. “Historically, these leks were well attended. A decline in numbers may have resulted from land use conversion to renewable energy developments and commercial forestry in this area. RSPB Scotland therefore advise that the Proposed Development’s Habitat Management Plan (HMP) will provide significant and important opportunities to improve local management for this UKBAP species - ideally through retention and positive management of open ground habitat, and the planting of low density (< 200 stems/ha) native shrub and woodland species of appropriate local provenance. Turbines should not be located within 500m of a lek site. Assessment of cumulative impacts from land use conversion to renewable energy production and commercial forestry is strongly advised. Detailed follow-up surveys may be required if the work undertaken highlights issues that merit further investigation/consideration.”	New shelter and foraging habitat will be provided (e.g., low density native broadleaf planting along watercourses and non-riparian forestry edges) and managed appropriately (see Technical Appendix 10H). Lek sites will be buffered appropriately in space and/or (where turbines occur within 500m of a lek) in time from construction works. As requested, an assessment of cumulative impacts has been undertaken for this species	Sections 11.10 and 11.11

Consultee(s)	Comment	Response and how considered in this chapter	Section reference
	“RSPB Scotland continue to recommend that all turbines are placed c. 500m into the commercial plantation forest, avoiding sensitive open ground habitats and reducing potential displacement of/impact on key species such as Golden eagle. RSPB Scotland note that landowner FLS will not support removal of large areas of commercial plantation, and that NatureScot share our view that the siting of turbines on Class 2 peat is inappropriate when alternative locations are available. It must therefore be considered whether the design as proposed is appropriate to the constraints of this sensitive site.”	This chapter assesses the potential impacts from the Proposed Development on ornithological features, in accordance with NatureScot and CIEEM 2022 guidance. Development on peat is considered separately in Chapter 6: Renewable Energy Policy, Carbon Balance and Peat. The Proposed Development will be assessed on its overall merits using the relevant statutory planning instruments.	Sections 11.10- and 11.11
	<u>Cumulative Impacts</u> “An assessment of cumulative bird impacts in relation to other consented project or developments in the planning system within this Natural Heritage Zone (NHZ) should be undertaken (in accordance with SNH [now NatureScot] guidance ‘Assessing the cumulative impacts of onshore wind farms on birds 2018).”	As requested, an assessment of cumulative impacts in accordance with SNH/NatureScot guidance has been undertaken.	Section 11.11
	“Given the clear upsurge in renewable energy developments and associated Overhead Line upgrades/substation infrastructure across Argyll, RSPB Scotland strongly advise that a holistic landscape scale management plan is established between energy developers and landowners. A coordinated approach would: 1. better evaluate and mitigate the cumulative impact of energy developments; 2. make the most efficient and impactful use of available land/resources to support coordinated (and ideally, networked) Habitat Management Plans - increasing habitat availability and landscape permeability for protected species; and 3. show a willingness between developers in the onshore renewables and wider energy sector to fully commit to meeting requirements for net biodiversity gain (as set out in NPF4).”	This is beyond the remit of the Chapter.	N/A

11.7 Scope of the Assessment

- 11.7.1 With the exception of **Chapter 10: Ecology**, the method for determining the scope of the assessment within this chapter differs from that used in other technical chapters within this EIA Report in order to correspond with topic-specific guidance (i.e. CIEEM 2022). However, the relevant receptors (i.e. ornithological features), the spatial and the temporal scope are all defined in this section. The method has multiple stages, enabling the scope of the assessment to be refined progressively.

Ornithological Features

Scoping - Determining Importance

- 11.7.2 The first stage in determining the scope of the assessment is to identify which ornithological features identified through the desk study and field surveys (see **Section 11.4**) are 'important'⁷ in the context of the Proposed Development. Following CIEEM 2022 guidance, the importance of ornithological features is first determined with reference to UK legislation and policy, then with regard to the habitat extent or population size that may be affected by the Proposed Development.
- 11.7.3 As the importance of ornithological features is determined with regard to the extent of habitat or size of population that may be affected by the Proposed Development, each status can differ from that which would be conferred by legislative protection or identification as a conservation notable species. For example, skylark is important at a national level because it is an SBL species and it features on the BoCC5 Red List. However, a small population that could be affected by a development would be assessed as being of less than national importance due to the large, albeit declining, UK-wide population (of around 1.5 million pairs).
- 11.7.4 Similarly, the level of use of the Development Site is also taken into account. For example, black-throated diver may be considered to be of international importance as a designated feature of Knapdale Lochs SPA, though if only one flight was recorded, the importance assigned to it as an ornithological feature within the context of the Development Site would be much reduced.
- 11.7.5 To inform the categorisation of importance described in **Table 11.8**, information regarding the extent and population size, population trends and distribution of the ornithological features has been used wherever possible. Where detailed criteria or contextual data are not available, professional judgement was used to determine importance.
- 11.7.6 An explanation of all determinations of importance of scoped-in ornithological features is provided in this section. **Appendix 11B** provides a summary of assessed importance for all ornithological features, i.e. those scoped in and out, to ensure transparency.

⁷ Importance relates to the quality and extent of designated sites and habitats, habitat/species rarity and their rate of decline. Ornithological features that are not considered to be important are those that are sufficiently widespread, unthreatened and resilient and with populations that will remain viable and sustainable irrespective of the Proposed Development.

Table 11.8 Geographic Importance of Ornithological Features

Geographic context of importance	Example / Description
International or European⁸	1. Sites including SPAs, SACs, candidate SACs, Ramsar sites and Sites of Community Importance (SCI), potential SPA (pSPA) possible SAC (pSAC). 2. Areas of habitat or populations of species⁹ which meet the published selection criteria for designation as an SPA or Ramsar site, but which are not themselves currently designated at this level.
National	1. A nationally designated site including SSSIs and NNRs. 2. Areas (and the populations of species that inhabit them) which meet the published selection criteria guidelines for selection of biological SSSIs, but which are not themselves designated based on field data collected, and in agreement with NatureScot. 3. SBL habitats and species, Red-listed and legally protected species that are not addressed directly in Part 2 of the "Guidelines for Selection of Biological SSSIs" but can be determined to be of national importance using the principles described in Part 1 of the guidance¹⁰.
Regional	1. SBL habitats and species, Red-listed and legally protected species considered to be of regional importance in the context of population size and distribution.
County	1. LNRs and Non-statutory designated sites. 2. Areas which, based on field data collected to inform the EIA, meet the published selection criteria for those sites listed above (for habitats or species, including those listed in relevant LBAPs) but which are not themselves designated.
Local	1. SBL habitats and species, Red-listed and legally protected species that, based on their extent, population size, quality etc., are determined to be at a lesser level of importance than the geographic contexts above. 2. Common and widespread native species occurring within the Study Area in numbers greater than may be expected in the local context.
Negligible	1. Common and widespread species that do not occur in levels elevated above those of the surrounding area.

11.7.7 All ornithological features that were determined to be of negligible importance have been scoped out of the assessment at this stage. Further, ornithological features of local importance were also scoped out at this stage where there was a specific technical justification to do so. This is because effects on them would not influence the decision-making about whether or not consent should be granted for the Proposed Development

⁸ Following the UK's exit from the European Union in January 2020, SACs and SPAs in the UK no longer form part of the EU's Natura 2000 ecological network. The legislation giving effect to these changes includes the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 in England and Wales and the Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019 in Scotland (the "**2019 Regulations**"). The 2019 Regulations refer to a national/UK site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national/UK site network includes pre-existing SACs and SPAs as well as new SACs and SPAs designated under the Habitats Regulations as amended.

⁹ This includes habitats and species listed under Annex I and Annex II of the Habitats Directive.

¹⁰ In international and UK bird conservation, it has become a well-established practice to regard 1% of a species' total population in the range under consideration (e.g. national, international, flyway, global) as a significant threshold when assessing whether sites should be designated.

(i.e. a significant effect in EIA terms would not occur). This approach is consistent with that described in CIEEM 2022. Specific justification for exclusion of each of these ecological features is provided in **Appendix 11B (Tables 11B.1-2)**.

- 11.7.8 All ornithological features that are of sufficient importance were then taken through to the next stage of the assessment.

Spatial Scope

- 11.7.9 The construction, operation and decommissioning phases of the Proposed Development may result in a number of direct and indirect environmental changes that could significantly affect ornithological features/receptors:
- Direct habitat loss: the construction of wind turbine bases, tracks and ancillary structures will remove areas of natural habitat. This will reduce the amount of breeding, foraging and/or roosting habitat available for certain bird species. This change will last throughout the duration of the Proposed Development.
 - Construction and decommissioning disturbance: Activities including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli and potentially leading to disturbance or temporary displacement of breeding and foraging birds. Potential effects are likely to be greatest during the breeding season (mainly between March and August, depending on species) and behavioural sensitivity to the impacts will vary between species. Spatial scope will vary from a matter of metres to as far as 1km from the areas where plant and workforce are present.
 - Operational disturbance: The operation of turbines and associated human activities for maintenance purposes has the potential to cause disturbance and displace birds from the Proposed Development, although it is recognised that disturbance effects during the operational phase will be less than during the construction phase (Pearce-Higgins *et al.*, 2012). The spatial scope of this will be less than or equal to that of construction and decommissioning disturbance.
 - Operational displacement leading to barrier effects: Individual turbines, or the wind farm as a whole, may present a barrier to the movement of birds, restricting or displacing birds from much larger areas. The effect this would have on a population is subtle, and difficult to predict with any great certainty. If birds regularly have to fly over or around obstacles or are forced into suboptimal habitats, this may result in reduced feeding efficiency and greater energy expenditure. By implication, this will reduce the efficiency with which they accumulate energy reserves, potentially affecting breeding success; and
 - Collision risk: Collision with a turbine rotor is almost certain to result in the death of the bird. It should be noted that operational disturbance and collision risk effects are mutually exclusive in a spatial sense: i.e., a bird that avoids the wind farm area due to disturbance cannot be at risk of collision with the turbine rotors at the same time. However, they may not be mutually exclusive in a temporal sense. Should a bird initially avoid the wind farm, but later habituate to it and return, it would then be at risk of collision. The spatial scope of this element is reduced in comparison to those environmental changes outlined above, as it comprises only the areas of rotor sweep.
- 11.7.10 The determination of a ZOI for each important ornithological feature identified is key to establishing which environmental changes may result in likely significant effects. ZOIs differ depending on the type of environmental change (i.e. the change from the existing baseline) as a result of the Proposed Development and the ornithological feature being considered.

- 11.7.11 The most straightforward Zol to define is the area affected by land-take and direct land-cover changes associated with the Proposed Development. This Zol is the same for all affected ornithological features.
- 11.7.12 By contrast, for each environmental change that can extend beyond the area affected by land-take and land-cover change (e.g. increased noise associated with construction activities), the Zol may vary between ecological features, dependent upon their sensitivity to the change and the precise nature of the change. For example, a water vole might only be disturbed by noise generated close to its burrow, while nesting goshawk might be disturbed by noise generated at a much greater distance, and other species (e.g. many invertebrates) may be unaffected by changes in noise. In view of these complexities, the definition of the Zol that extends beyond the land-take area was based upon professional judgement informed as far as possible by a review of published evidence (e.g. disturbance criteria for various species) and discussions with the technical specialists who are working on other technical chapters of the EIA Report.
- 11.7.13 It should be noted that the avoidance of potentially significant effects through the design process are implicitly taken into account through the consideration of each Zol, as are standard construction practices that are commonplace. When scoping ornithological features in or out from further assessment, environmental measures (see **Section 11.8**) that are described within the Code of Practice for planning and development (BSI, 2013) and Good Practice during Wind Farm Construction (NatureScot, 2019) (e.g. appropriately scheduled vegetation removal) have been taken into account and referenced in **Appendix 11B** where applicable.

Temporal Scope

- 11.7.14 The temporal scope of this assessment is consistent with the period over which the Proposed Development would be carried out. It therefore covers construction, operation and decommissioning periods (as outlined in **Chapter 4: Description of the Proposed Development**):
- Construction of the Proposed Development would be completed over a period of approximately 24 months. Construction activities have been assumed to take place between 07:00 to 19:00 hours on weekdays (Monday to Friday). For Saturdays, assumed hours are 07:00 to 17:00 hours during summer months and 07:00-17:00 in winter months. Work outside these hours is not usual, although it may be required to meet specific demands (e.g. during foundation pours, tower erection and highly weather dependent activities);
 - Operation of the Proposed Development is anticipated to be 35 years; and
 - For the purposes of the EIA, it is assumed that above-ground structures (wind turbines, kiosks, and the control building/sub-station) will be removed, and below-ground infrastructure (e.g. transmission cables) will be left *in situ*. As with below-ground infrastructure, the removal and disposal of access track and crane hardstanding materials would have much a greater environmental effect than leaving them in place, and it is therefore assumed these will be left *in situ* for use by the landowner. On this basis, decommissioning is anticipated to take around 12 months.
- 11.7.15 The effects of the environmental changes are considered with respect to their duration, frequency, timing and reversibility.

- 11.7.16 Ornithological features that are scoped into the assessment from **Appendix 11B** (i.e. those of sufficient importance occurring within a relevant Zol) are summarised in **Table 11.9**, along with a summary of the justification for inclusion. **Table 11.9** notes both the level of importance of an ornithological feature in the context of legislation and policy and the level of importance of the feature in the context of the Development Site.
- 11.7.17 For each ornithological feature presented in **Table 11.9**, the potential environmental changes and potentially significant effects resulting from the Proposed Development are provided. The full assessment for each scoped in ornithological feature can be found in **Section 11.10**.

Table 11.9 Likely Effects, Zols and Justification for Ornithological Features Scoped In

Ornithological Feature	Importance – legislation and policy	Importance – field survey area	Environmental changes and potentially significant effects	Zone of Influence	Relevant assessment criteria and scoped in justification
Black grouse	Regional	Regional	Direct habitat loss.	Proposed Development.	Access tracks cross areas of suitable black grouse foraging habitat.
			Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and movement of construction vehicles resulting in temporary disturbance or displacement of breeding and foraging black grouse.	Within 500-750m of the Proposed Development (based on disturbance distances as described by Goodship and Furness, 2022).	Three turbines are proposed within 500m of leks recorded.
			Potential disturbance and displacement of black grouse due to the operation of turbines and associated human activities for maintenance purposes.	Within 500-750m of the Proposed Development (based on disturbance distances as described by Goodship and Furness, 2022).	Although effects during the operational phase will be less than that expected during the construction phase, black grouse may still be disturbed during this phase.
Black-throated diver	International	Regional	Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and vibration, and movement of construction vehicles resulting in temporary disturbance or displacement of breeding and foraging black-throated divers.	Within 500-750m of the Proposed Development (based on disturbance distances as described by Goodship and Furness, 2022).	Proposed access track occurs within 500m of an identified nest site.
			Potential disturbance and displacement to birds due to the operation of turbines and associated human activities for maintenance purposes. Includes barrier effects.	Within 500-750m of the Proposed Development (based on disturbance distances as described by Goodship and Furness, 2022).	Although effects during the operational phase will be less than that experienced during construction, divers may still be disturbed or displaced during this phase.

Ornithological Feature	Importance – legislation and policy	Importance – field survey area	Environmental changes and potentially significant effects	Zone of Influence	Relevant assessment criteria and scoped in justification
Golden eagle	International	Regional	Direct habitat loss.	Proposed Development.	Satellite data and GET modelling suggest some higher-quality golden eagle habitat will be lost.
			Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and vibration, and movement of construction vehicles resulting in temporary disturbance or displacement of breeding and foraging golden eagles.	Within 750m-1km of the Proposed Development (based on disturbance distances as described by Goodship and Furness, 2022).	Proposed access track/crane pad occurs within 1km of a historic nest site.
			Potential collision with operational turbines.	Within 500m of the Proposed Development boundary (based on guidance in NatureScot 2017 V.2).	Flight activity indicates that there is potential for collisions to occur.
Osprey	International	Regional	Potential collision with operational turbines.	Within 500m of the Proposed Development boundary (based on guidance in NatureScot 2017 V.2).	Flight activity indicates that there is potential for collisions to occur.
Red-throated diver	International	Regional	Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and vibration, and movement of construction vehicles resulting in temporary disturbance or displacement of breeding and foraging red-throated divers.	Within 500-750m of the Proposed Development (based on disturbance distances as described by Goodship and Furness, 2022).	Proposed access track occurs within 500m of identified nest sites.
			Potential disturbance and displacement to birds due to the operation of turbines and associated human activities for	Within 500-750m of the Proposed Development (based on disturbance distances as described	Although effects during the operational phase will be less than that experienced during the construction phase,

Ornithological Feature	Importance – legislation and policy	Importance – field survey area	Environmental changes and potentially significant effects	Zone of Influence	Relevant assessment criteria and scoped in justification
			maintenance purposes. Includes barrier effects. Potential collision with operational turbines.	by Goodship and Furness, 2022). Within 500m of the Proposed Development boundary (based on guidance in NatureScot 2017 V.2).	divers may still be disturbed or displaced during this phase. Flight activity indicates that there is potential for collisions to occur.
White-tailed eagle	International	Regional	Potential collision with operational turbines.	Within 500m of the Proposed Development boundary (based on guidance in NatureScot 2017 V.2).	Flight activity indicates that there is potential for collisions to occur.
Whooper swan	International	Regional	Construction activity including use of plant and the presence of workforce resulting in an increase in aural and visual stimuli due to noise and vibration, and movement of construction vehicles resulting in temporary disturbance or displacement of migrating, wintering and foraging whooper swans. Potential disturbance and displacement to birds due to the operation of turbines and associated human activities for maintenance purposes. Includes barrier effects.	Within 200-600m of the Proposed Development (based on disturbance distances as described by Goodship and Furness, 2022). Within 200-600m of the Proposed Development (based on disturbance distances as described by Goodship and Furness, 2022).	Proposed access track, borrow pit search areas and turbines occur within 600m of waterbodies used by whooper swans. Although effects during the operational phase will be less than that experienced during the construction phase, whooper swans may still be disturbed or displaced during this phase.

11.8 Environmental Measures

- 11.8.1 A range of environmental measures have been embedded into the Proposed Development, as outlined in **Chapter 4: Description of the Proposed Development**. **Table 11.10** outlines how these embedded measures will influence the ornithology assessment.

Table 11.10 Summary of the Embedded Environmental Measures and how these Influence the Assessment

Ornithological Feature	Changes and Effects	Embedded measures and influence on assessment
Breeding/roosting birds	Construction and decommissioning disturbance	The presence of initial diver nests and a diver flight corridor were fed into an ecology constraints plan that informed the Proposed Development design. Turbine locations have been kept outside the flight corridor and 500m buffer zones around these nests (although an additional nest was then recorded at a later date). This minimises disturbance to red-throated and black-throated divers. Two turbines (T8 - layout 1, and T24 - layout 2) were specifically removed from sensitive areas at design stage to minimise impacts on ornithology receptors including golden eagles. The removal of the other two turbines, although not removed specifically for ornithological reasons, will inherently reduce collision risk to all collision-sensitive species present, including eagles. The constraints plan will also be used to inform the implementation of the following measures incorporated into the Proposed Development to minimise effects on birds: 1. As part of an overarching Construction Environmental Management Plan ("CEMP"), a Bird Protection Plan ("BPP") would be developed in consultation with the relevant consultees in advance of construction works commencing. Species-specific buffers detailed in the BPP would be implemented between construction areas and active nests/'winter' roosts, or method statements developed outlining solutions to allow works to continue within buffer areas where appropriate. Construction Method Statements (CMSs) would also be developed to detail the mitigation approach for all ornithological features. 2. Site supervision would be provided by a suitably experienced Ecological Clerk of Works ("ECOW"), who would be responsible for ensuring the successful implementation of embedded measures. An ornithologist may be required to monitor the nesting birds during the working phase in certain areas and halt any significantly disturbing activities in consultation with the ECOW. 3. Pre-construction check surveys would be undertaken for all protected bird species where potential significant effects or legal breaches could occur otherwise. 4. Construction activities in confirmed black grouse lekking areas would avoid the dawn and dusk periods during April

Ornithological Feature	Changes and Effects	Embedded measures and influence on assessment
		and May to avoid disturbance, and vehicle speed limits would be imposed within the ZoI.
	Habitat Loss	An Outline Habitat Management Plan (oHMP) (Technical Appendix 10H) will be implemented and this includes aims specifically directed at benefitting black grouse and divers (see Section 11.12). The oHMP will be submitted pursuant to a condition of the deemed planning permission, following consultation with NatureScot and Scottish Environment Protection Agency (SEPA).
	Operational disturbance	Mitigation would be expected to be of a similar nature to that implemented during construction. However, as the potential for disturbance is much reduced during this period, mitigation measures would be proportionally reduced in scale.
	Changes to surface hydrology	A construction area stand-off of at least 50m has been applied to watercourses and water bodies (except for watercourse crossings) as far as was reasonably practicable. All watercourse crossings would be designed in accordance with the SEPA Good Practice Guide for the Construction of River Crossings (2010) and, where culverts are required, will be designed in accordance with the CIRIA Culvert Design and Operation Guide (2010).
	Pollution incidents	A Pollution Prevention Plan ("PPP") and Pollution Incident Response Plan ("PIRP") would be prepared. This would be subject to consultation with SEPA and NatureScot in advance of any construction activities, and implemented as part of the overall CEMP. It would set out site management and working practices, and draw heavily upon SEPA's Pollution Prevention and Control Guidelines ("PPGs").
	Potential collision with turbines	Turbine locations have been kept outside the diver flight corridor and nesting buffer zones. This minimises collision risk to red-throated and black-throated divers. The removal of four turbines at design stage also reduces collision risk to all collision-sensitive species present, including eagles.

11.9 Assessment Methodology

Introduction

- 11.9.1 The generic project-wide approach to the assessment methodology is set out in **Chapter 2: EIA Approach**, and specifically in **Section 2.5**. However, whilst this has informed the approach that has been used in this ornithology assessment, it is necessary to align with the standard industry guidance provided by CIEEM 2022.
- 11.9.2 The assessment has been based in part upon the results of the desk study and field surveys. However, it has also drawn upon relevant published information (for example on the status, distribution, sensitivity to environmental changes and ecology of the ornithological features scoped into the assessment, where this information is available) and professional knowledge of ecological processes and functions.

- 11.9.3 For the scoped-in ornithological features (black grouse, black-throated diver, golden eagle, osprey, red-throated diver, white-tailed eagle and whooper swan), effects during construction, operation and decommissioning were assessed against the current baseline conditions.
- 11.9.4 The initial results of the assessment regarding potentially significant effects were used to inform whether additional baseline data collection is required, together with the identification of environmental measures that should be embedded into the Proposed Development to avoid or reduce adverse effects or to deliver enhancements (see **Section 11.8**). The results of the assessment, as set out in **Section 11.10**, therefore reflect the final scheme design (i.e. incorporating the environmental measures described in **Section 11.8** and **Table 11.10**).
- 11.9.5 The spatial extent of the assessment (see **Table 11.9**) reflects the area occupied by the ornithological features that are being assessed and, as a minimum, the ZoI of the changes that are likely to affect these.
- 11.9.6 For species that occur within the ZoI, the assessment has considered the total area that is used by the affected individuals or the local population of the species (e.g. for foraging or as breeding territories).

Significance of Effects Evaluation Methodology

Overview

- 11.9.7 CIEEM 2022 defines a significant effect as one “that either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or for biodiversity in general”.
- 11.9.8 When considering potentially significant effects on ornithological features, whether these be adverse or beneficial, the following characteristics of environmental change are taken into account¹¹:
- Extent – the spatial or geographical area over which the environmental change may occur;
 - Magnitude – the size, amount, intensity or volume of the environmental change;
 - Duration – the length of time over which the environmental change may occur;
 - Frequency – the number of times the environmental change may occur;
 - Timing – the periods of the day/year etc. during which an environmental change may occur; and,
 - Reversibility – whether the environmental change can be reversed through restoration actions.

Magnitude of Change

- 11.9.9 Although the characteristics described above are all important in assessing effects by using information about the way in which habitats and species are likely to be affected, a scale for the magnitude of the environmental change as a result of the Proposed Development has been described in **Table 11.11**. This is to provide an understanding of the relative change from the baseline position, be that an adverse or beneficial change.

¹¹ The definitions of the characteristics of environmental change are based on the descriptions provided in CIEEM 2022. Other technical chapters in this EIA Report may use some of the same terms albeit with a different definition.

Table 11.11 Guidelines for the Assessment of the Scale of Magnitude

Scale of change	Criteria and resultant effect
High	The change permanently (or over the long-term) affects the conservation status of a habitat/species, reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource/species population, a large area of habitat or large proportion of the wider species population is affected. For designated sites, integrity is compromised. There may be a change in the level of importance of the ornithological feature in the context of the project.
Medium	Relative to the wider habitat resource/species population, a small-medium area of habitat or small-medium proportion of the wider species population is affected. There may be a change in the level of importance of this ornithological feature in the context of the project.
Low	The quality or extent of designated sites or habitats or the sizes of species' populations, experience some small-scale reduction or increase. These changes are likely to be within the range of natural variability and they are not expected to result in any permanent change in the conservation status of the species/habitat or integrity of the designated site. The change is unlikely to modify the evaluation of the ornithological feature in terms of its importance.
Very Low	Although there may be some effects on individuals or parts of a habitat area or designated site, the quality or extent of sites and habitats, or the size of species populations, means that they would experience little or no change. Any changes are also likely to be within the range of natural variability and there would be no short-term or long-term change to conservation status of ornithological features or the integrity of designated sites.
Neutral	A change to habitats or the size of species' populations, the level of which is so low, that it is not discernible.

Determining Significance of Effects – Adverse and Beneficial

- 11.9.10 Adverse effects are assessed as being significant if the favourable conservation status of an ecological feature would be lost as a result of the Proposed Development. Beneficial effects are assessed as those where a resulting change from baseline improves the quality of the environment (e.g. increases species diversity, increases the extent of a particular habitat etc., or halts or slows down an existing decline). For a beneficial effect to be considered significant, the conservation status would need to positively increase in line with a magnitude of change of “high” as described in **Table 11.11**. While varying from the overall approach set out in **Chapter 2: EIA Approach**, this is necessary to align with CIEEM 2022 guidance.
- 11.9.11 Conservation status is defined as follows (as per CIEEM 2022):
- *“For habitats, conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and typical species within a given geographical area;*
 - *For species, conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area”.*
- 11.9.12 NatureScot (2018a) details that a species' conservation status is favourable when:
- Population dynamics indicate that the species is maintaining itself on a long-term basis and is therefore likely to persist in the habitat it occupies;

- The natural range of the species is not being reduced, nor is it likely to be reduced for the foreseeable future; and
 - There is (and will likely continue to be) a sufficiently large habitat to maintain its populations on a long-term basis.
- 11.9.13 NatureScot (2018a) recommends that the concept of maintaining a 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. This is a test which maintains compatibility with the aims of UK legislation and Government policy noted in **Section 11.3**.
- 11.9.14 Nonetheless, developments should be assessed, alone or in combination, at a regional (or analogous scale) for their impacts on a species population size, trend and range. An adverse impact on a species at a regional scale (e.g. Argyll and Bute) may adversely affect its national (Scotland) conservation status, for example where a specific region holds the majority of the national population.
- 11.9.15 For wind farms that do not have an impact on designated sites, NatureScot (2018a) highlights the relevance of the Natural Heritage Zone (“NHZ”) as the basis for the geographical range selection, the boundaries of which have been drawn to reflect biogeographical differences between different zones, with a high level of environmental coherence within each zone. The Proposed Development is within NHZ14 (Argyll West and Islands) and population estimates for a number of breeding bird populations and a number of key wintering waterfowl populations are available for this NHZ level (Wilson *et al.*, 2015).
- 11.9.16 In some cases, such as wintering goose and swan populations that are highly mobile, it may be necessary to undertake assessment at a much broader scale, such as that of the entire Scottish population. Passage migrants and some wintering populations may show high levels of movement within the non-breeding season and for these, it can be difficult to define coherent regional populations with any confidence. This would be especially true where there is substantial site-based turnover in species’ populations.
- 11.9.17 Alternative geographical areas to NHZs may be acceptable as the basis for assessment where there are definable regional or biogeographical populations that do not conform to NHZ boundaries (for example, the distinct regional populations of red kites in Scotland). For some migratory species, patterns of migration may determine the spatial scale at which impacts should be considered, e.g. corncrakes migrate up the west coast of Ireland and Scotland and any impacts during migration would likely affect the population as a whole. In considering a species’ distribution, it can be important to consider its distribution across its entire range.
- 11.9.18 Regional populations may be of particular importance to a species’ conservation status at a national or international population because:
- They are core or ‘stronghold’ areas and the overall viability of the population is dependent on the maintenance of such areas; or
 - They are ‘edge of range’ populations, which may (over time) be important in maintaining range as well as providing the potential for expansion or range shift.
- 11.9.19 For example, the Scottish golden eagle population encompasses areas that can be considered to be core and edge populations. The ‘golden eagle framework’ indicates the variation in vulnerability of the golden eagle in both core and edge of range areas to additional impacts, such as those from wind farms, across Scotland.

- 11.9.20 The decision as to whether the conservation status of an ornithological feature would alter has been made using professional judgement, drawing upon the information produced through the desk study, field survey and assessment of how each assessed feature is likely to be affected by the Proposed Development, by:
- Preventing a recovering species from reaching favourable conservation status, at a national or international level; or
 - Changing a species' status from favourable to unfavourable; or
 - For a species that is already in decline, the assessment should focus on whether the proposal would undermine the potential for halting its decline and allowing it to recover to favourable conservation status.
- 11.9.21 A similar approach is used where designated sites may be affected by the Proposed Development, except that the focus is on the effects on the integrity of each site. This is defined as:
- *“The coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated.”*
- 11.9.22 The assessment of effects on integrity draws upon the assessment of effects on the conservation status of the features for which the site has been designated. Where these features are not clearly defined, which is often the case for non-statutory biodiversity sites, it is necessary to use professional judgement to identify the interest features or obtain additional information about these from NatureScot, Scottish Wildlife Trust or the Council responsible for identifying these sites, so that sufficient information on which to base an assessment is available.
- 11.9.23 The EIA Report should set out the consequences for the integrity of the species' population in terms of its size, trend, distribution (where known) and the area of suitable habitat.

11.10 Assessment of Effects

- 11.10.1 This section considers the potential impacts and associated effects on ornithological features as a result of the construction, operation and decommissioning phases of the Proposed Development.
- 11.10.2 An individual assessment is presented for each scoped-in ornithological feature (**Table 11.9**) in the following sections. The baseline conditions in respect of each of the ornithological features assessed is provided in the species-specific section below, with further details provided in **Appendix 11A** and **Confidential Appendix 11D**.

Black Grouse

Baseline Conditions

Desk Study

- 11.10.3 Black grouse is included on the SBL and is a BoCC5 red-listed species (Stanbury *et al.*, 2021). It is also included in the Argyll and Bute LBAP.
- 11.10.4 The Scottish breeding population (measured by the number of displaying males) is 3,344, of which the NHZ14 accounts for 67 males (Wilson *et al.*, 2015).

- 11.10.5 The RSPB provided 41 black grouse records within a 2km search area of the Development Site. These included breeding records from the Development Site. An Suidhe Wind Farm reports also noted the presence of the species in the area (1 record).

Field Surveys

- 11.10.6 There were a total of 14 black grouse records during species-specific surveys undertaken between March and May 2019. Single males were recorded lekking in four different locations (three in the ZOI).
- 11.10.7 During the species-specific survey in 2020, there were eight records of single birds on the ground and one record of two male black grouse in flight. Single males were recorded lekking in six locations (five in the ZOI) that were different to those where lekking individuals were recorded in 2019.
- 11.10.8 The locations of the lekking males in 2019 and 2020 are shown on **Figure 11.4**.

Future Baseline

- 11.10.9 Climate change may lead to wetter and windier weather during the breeding season period, which may negatively affect productivity. However, black grouse is well adapted for life in wet landscapes, so any negative effect from climate change is likely to be very **minor**. In the absence of development, the black grouse breeding population in the region is reasonably expected to remain stable in the medium term.

Predicted Effects and their Significance

- 11.10.10 Three and five black grouse leks fell within the ZOI (up to 750m) in 2019 and 2020 respectively, these being in different locations each year (albeit single male was recorded lekking in a similar location to the southeast of turbine 16 both years). Based on the observations during the surveys and taking the location and timing of surveys into account, it is considered that there were up to 6 males present within the ZOI. Six males equates to approximately 9% of the NHZ 14 population, 0.18% of the national population (Wilson *et al.*, 2015), and 0.12% of the estimated UK population of 4,850 males (BTO, 2023).
- 11.10.11 At less than 1% of the national population, six lekking males are not considered to be of national importance, though at 9% of the NHZ 14 population, the Development Site is considered to be of regional importance for black grouse.

Direct Habitat Loss

- 11.10.12 The Development Site extends to approximately 4,268ha, with the wind farm infrastructure occupying 87ha, and there will be no direct loss of the lek sites recorded in 2019 and 2020.
- 11.10.13 Black grouse nest on open ground and forage among grasses and shrubs, especially in forest edge habitat. While only ~2% of the Development Site will be permanently lost, some suitable nesting and foraging habitat will be removed. However, extensive areas of suitable habitat will remain within the Development Site. Furthermore, it is proposed under the oHMP increase native woodland coverage and undertake low density non-riparian broadleaf planting to specifically benefit black grouse.

- 11.10.14 On this basis, the magnitude of change in respect of direct habitat loss is predicted to be very low. The resultant adverse effect on the conservation status of this regionally important ornithological feature is **not significant**.

Construction and Decommissioning Disturbance

- 11.10.15 Single males were recorded lekking within the Zol (up to 750m of infrastructure) as shown on **Figure 11.4**, with approximate distances from infrastructure of the Proposed Development in 2019 and 2020 as follows:
- 2019
 - ▶ 544m from Turbine 16;
 - ▶ 565m south of the new access track east of Turbine 1; and
 - ▶ 415m west of the existing access track from the public highway.
 - 2020
 - ▶ 147m from Turbine 20 (and 55m from the proposed access track);
 - ▶ 370m from Turbine 20;
 - ▶ 317m from Turbine 11;
 - ▶ 407m from Turbine 1; and
 - ▶ 524m from Turbine 16.
- 11.10.16 Construction and decommissioning-related disturbance/displacement of black grouse is therefore possible. However, impacts will be temporary and sporadic as works within 750m of the leks will only occur for a minority of the construction and decommissioning periods. Furthermore, a substantial extent of available habitat within the local area will remain undisturbed during construction and decommissioning and this would provide alternative habitats to any prospective breeders. While black grouse lek sites are typically communal, it is noted that observations were generally of singletons in different locations, both during each year of survey and between years. This indicates that even if an individual male underwent enough disturbance to move lek site, there are several other suitable lek sites available in relatively close proximity.
- 11.10.17 These considerations aside, the embedded measures detailed in **Table 11.10** include the agreement and implementation of a BPP and CMS and these will include a restriction on the timing of works to reduce the likelihood of disturbing lekking black grouse. To this end, pre-construction surveys will be carried out to update the baseline position on black grouse lek locations; and where there is visibility between work areas and leks, the Applicant is willing to accept a condition that there will be no work within 750m of an active black grouse lek for two hours after sunrise during April and May. Vehicle speed limits will also be imposed within the Zol to minimise noise and vibration disturbance.
- 11.10.18 In light of this, the magnitude of change with regards to disturbance of black grouse during construction/decommissioning is considered to be low and the adverse effect on the species' conservation status is **not significant**.

Operational Disturbance and Displacement

- 11.10.19 Maintenance activities during the operational phase will be temporary and sporadic, leading to a very low magnitude of change which would result in **no significant** effects.

- 11.10.20 The proposed wind turbines are expected to be operational most of the time (85% of the time assumed for the purposes of collision risk modelling presented in **Confidential Appendix 11E**), leading to potential disturbance of black grouse lekking in the Zol.
- 11.10.21 Zwart et al (2015) notes that the construction of wind turbines at the sites that informed that study had no detectable effect on the abundance of lekking black grouse, but that leks within 500m of turbines moved locally during operation, i.e. they were not lost from the population. While there was local movement in leks, the study found that the abundance of black grouse did not change in the areas around the wind farms. The study authors hypothesise that the maintenance of black grouse abundance could be due to habitat enhancement mitigation aimed to benefit this species at the majority of the sites included in the study (though also note that black grouse persisted even where no mitigation occurred).
- 11.10.22 Furthermore, other studies have also shown the black grouse lek within relatively close proximity to operational turbines. For example, a study at the 14-turbine Drumderg Wind Farm in Perthshire recorded four lekking males within the development area in 2007 prior to construction, two in 2008 during construction, seven in 2009 and 16 in 2010 during operation (Stolte, 2010 & 2011). Lek sites shifted further away from the wind farm during construction but moved back towards it during the operational period. The increase in the population suggests that males were being recruited to the local population within the development area. In addition, in 2010, a lek of 6-8 males regularly displayed within 200m of a turbine. While it is acknowledged that the Perthshire population may differ from that in Argyll and Bute, for example in terms of the robustness of the regional population which can act as a source for recolonisation of areas from which birds have been displaced, it nevertheless provides a relevant UK example of how this species can coexist with operational turbines.
- 11.10.23 This suggests black grouse would, at worst, be displaced locally as a result of the operation of the Proposed Development (if they are displaced at all), with enhancements under the oHMP benefitting this species in the longer term. Of the eight lek sites within the ZOI, four are within 500m of a turbine and it is therefore considered likely that males will use other known lekking locations preferentially if disturbed or, given the use of different lek sites observed to date, will adopt new lekking areas within the Development Site.
- 11.10.24 In light of this, and the embedded measures outlined in **Table 11.10**, operational disturbance and potential displacement impacts on black grouse within the Zol would be of low magnitude. Therefore, the effect on the favourable conservation status of black grouse as a result of operational disturbance and potential displacement is considered to be **not significant**.

Black-throated Diver

Baseline Conditions

Desk Study

- 11.10.25 Black-throated diver is included listed on Annex 1, Schedule 1, the SBL and the BOCC5 amber list (Stanbury *et al.*, 2021). It is also an Argyll and Bute LBAP species. The Scottish breeding population is 217 breeding pairs (Eaton *et al.*, 2023), of which NHZ14 accounts for nine breeding pairs (Wilson *et al.*, 2015).
- 11.10.26 Desk study data indicated a single black-throated diver breeding site within a 2km search area of the Development Site.

Field Surveys

- 11.10.27 Field surveys were carried out from April 2019 to April 2022, with a summary of the results as follows:
- In May 2019, a black-throated diver was found incubating on a loch within the field survey area. However, no chicks were recorded during subsequent surveys;
 - In 2020, a pair of black-throated divers attempted to breed at the same site as used in 2019 but failed at the late egg/early chick stage;
 - In 2021, a pair fledged one chick from the same site used in 2019 and 2020. Two adults and a juvenile were recorded on an adjacent loch in August and were considered to be the family from the field survey area; and
 - No black-throated divers were recorded in April 2022.
- 11.10.28 **Table 11.12** presents a summary of flight activity recorded within the Collision Risk Zone ("CRZ"¹²) during VP surveys.

Table 11.12 Black-throated Diver: VP Flight Activity Data

Season	Total Number Flights	Total Seconds Below PCH*	Total Seconds at PCH	Total Seconds Above PCH
Breeding (April to August 2019)	1	9	15	0
Breeding (April to August 2020)	2	128	78	0
Breeding (April to August 2020)	0	n/a	n/a	n/a
Breeding (April to August 2021)	0	n/a	n/a	n/a
Breeding (April 2022)	0	n/a	n/a	n/a

* PCH refers to Potential Collision Height – this was measured at 40-200m.

- 11.10.29 The black-throated diver flightlines are shown on **Figure 11.5**.

Future Baseline

- 11.10.30 In the absence of development, the black-throated diver breeding population in the region is reasonably expected to remain stable, or to decline slightly as a result of more erratic weather induced by long-term climate change, which could lead to nest failures due to water-level rises or droughts.

¹² The collision risk zone (CRZ) is defined as the wind farm polygon, taken as the perimeter of the Development Site Boundary plus a 500m buffer. NatureScot guidance currently recommends a 500m buffer to allow for observer inaccuracies when mapping flights during surveys (NatureScot, 2017b).

Predicted Effects and their Significance

- 11.10.31 One black-throated diver territory falls within the ZoI (up to 750m). This is equivalent to 11.1% of the NHZ 14 breeding population (Wilson *et al.*, 2015) and 0.46% of the estimated national population of 217 pairs (Eaton *et al.*, 2022).
- 11.10.32 At less than 1% of the national population, but more than 1% of the NHZ14 population, one black-throated diver breeding territory is considered to be of regional importance for the purpose of this assessment.

Construction and Decommissioning Disturbance

- 11.10.33 The waterbody on which black-throated divers were observed nesting lies 425m and 260m from the closest turbine and section of access track respectively. The nesting location itself lies 540m from the closest turbine and 395m from the closest section of track.
- 11.10.34 Construction and decommissioning-related disturbance/displacement effects on black-throated diver within the ZoI would be short-term and sporadic. Furthermore, the embedded measures outlined in **Table 11.10**, in particular the implementation of the BPP, will result in the avoidance of disturbance of breeding black-throated divers.
- 11.10.35 As such, the magnitude of change in respect of disturbance of black-throated diver is considered to be very low. The resultant adverse effect with respect to the conservation status of this regionally important species is **not significant**.

Operational Disturbance and Displacement

- 11.10.36 In light of the embedded measures outlined in **Table 11.10** (specifically design buffers and the BPP), the magnitude of change on black-throated diver within the ZoI through operational disturbance and displacement effects would be low. While divers can be displaced several km by offshore wind schemes (JNCC, 2022), there is evidence that displacement from inshore lochs due to onshore wind development is absent or minimal (Dewar & Lawrence, 2023). The magnitude of change to the NHZ14 population is therefore considered to be very low. The resultant adverse effect on the species' conservation status is **not significant**. The effect would be temporary in nature.

Golden Eagle

Baseline Conditions

Desk Study

- 11.10.37 Golden eagle is listed on Annex 1 and Schedule 1/1A. It is also an SBL and Argyll and Bute LBAP species.
- 11.10.38 The Scottish population of golden eagle was estimated to be 508 breeding pairs in 2015 during the latest national survey (Hayhow *et al.*, 2017), with NHZ14 supporting 44 pairs (Wilson *et al.*, 2015).
- 11.10.39 Argyll Raptor Study Group (RSG) noted that two golden eagle ranges occur within a 6km search area of the Development Site. Both include satellite-tagged individuals. An Suidhe Wind Farm reports also note the presence of golden eagle in the area. The RSPB provided no golden eagle records within a 6km search area of the Development Site.

Field Surveys

11.10.40 Field surveys were carried out from March 2019 to April 2022, with a summary of results as follows:

- A single pair of golden eagles was observed nesting during raptor surveys, towards the outer edge of the 6km survey area during the 2019 breeding season. However, this nest failed by late May of 2019. Twenty-four flights were recorded during the VP surveys between March and August 2019. All involved single birds, including one of the satellite-tagged individuals;
- Eighteen golden eagle flights were recorded during the VP surveys between September 2019 and January 2020. Four different birds appear to have been involved: a female, a satellite-tagged male, a non-tagged male and a sub-adult bird. Most flights involved solo birds, though three flights recorded two golden eagles together;
- Twenty-two golden eagle flights were recorded during the VP surveys undertaken in the 2020 breeding season. All involved single birds, except for one flight of two birds in late June. Two nesting attempts were also recorded within the field survey area 1.5km-5km from the Proposed Development, with each producing a single chick (although one died around seven weeks old). It could not be determined whether the other chick fledged;
- Thirteen golden eagle flights were recorded during the VP surveys between September 2020 and January 2021. Most flights involved single birds, though three flights were of an adult pair. Two to four individuals appear to have been present across the season;
- Twenty-four golden eagle flights were recorded during the VP surveys carried out during the 2021 breeding season. Flights were recorded from February to July and mostly involved single adults. However, an adult pair were seen together twice, and a second-year immature was recorded on 16 March 2021. Again, four individuals appear to have been involved: an adult pair, a separate satellite-tagged adult, and a second-year bird;
- A single golden eagle flight was recorded during surveys carried out between September 2021 and January 2022; and
- The final surveys between February and April 2022 coincided with the early part of the breeding season, though none were recorded during this period.

11.10.41 **Table 11.13** presents a summary of the golden eagle flight activity recorded during VP surveys¹³.

Table 11.13 Golden Eagle: VP Flight Activity

Season	Total Number Flights	Total Seconds Below PCH*	Total Seconds at PCH	Total Seconds Above PCH
Breeding (March to August 2019)	24	301	3,660	0
Non-breeding (September 2019 to January 2020)	18	477	2,134	2,976

¹³ Please note that the calculations in Confidential Appendix 11E are based on an area of 500m around turbines only, i.e., only those flights relevant to Collision Risk Modelling.

Season	Total Number Flights	Total Seconds Below PCH*	Total Seconds at PCH	Total Seconds Above PCH
Breeding (February to August 2020)	22	234.5	1,108.5	3,296
Non-breeding (September 2020 to January 2021)	13	1,434.5	4,602.5	4,109
Breeding (February to August 2021)	24	975	2,877.5	2,636.5
Non-breeding (September 2021 to January 2022)	1	0	0	507
Breeding (February to April 2022)	0	n/a	n/a	n/a

* PCH refers to Potential Collision Height – this was measured at 40-200m.

11.10.42 The golden eagle flightlines are shown on **Figure 11.6**.

Future Baseline

11.10.43 In the absence of development, the golden eagle breeding population in the region is reasonably expected to continue to increase in the short term, before plateauing. Avian influenza may delay this increase in the immediate term.

Predicted Effects and their Significance

11.10.44 Two golden eagle territories fall within the ZoI (1km). This is equivalent to 4.5% of the NHZ 14 population (Wilson *et al.*, 2015) or 0.39% of the estimated national population (Hayhow *et al.*, 2017).

11.10.45 At less than 1% of the national population, two territories are not considered to be of national importance. However, at 4.5% of the NHZ population, golden eagles are assessed as being of regional importance for the purpose of this assessment.

Direct Habitat Loss

11.10.46 Golden eagle home ranges can vary greatly in size. The two ranges overlapping the Development Site are estimated to be 5,860ha and 4,202ha respectively. In comparison, the maximum footprint of the Proposed Development will be 87ha, ~1.5% and ~2% of these respectively. Furthermore, land-take will largely fall outside either of the ranges and much of the habitat that will be lost (plantation forestry) is of limited value to this species. **Confidential Appendix 11F** provides further details of the modelling undertaken to support this assessment, the conclusion of which is that the Proposed Development is expected to have **no significant** impact on either of the two adjacent golden eagle home ranges as neither the estimated losses of range habitat, nor the proportions of the records of satellite tagged birds within a 300m turbine exclusion buffer, are above 5%.

11.10.47 Furthermore, because of the existence of the ranges and the limited extent of good eagle habitat, there is likely to be **no significant** impact on habitat used by dispersing golden eagles.

11.10.48 In light of this, the magnitude of change with respect to direct habitat loss is considered very low and the adverse effect on the species' conservation status is **not significant**.

Construction and Decommissioning Disturbance

- 11.10.49 The territory centres of the two golden eagle ranges lie several kilometres from the proposed turbine locations (see **Confidential Appendix 11F**) and are not expected to be disturbed by construction/decommissioning activities. Furthermore, the embedded measures outlined in **Table 11.10** essentially mean that works within the ZOI will be prohibited (or robustly shielded from any nest) at all times when golden eagles are breeding. Therefore, in the event that a golden eagle pair began to nest within the ZOI (which would be unlikely), the magnitude of change would be **negligible** and effects **not significant**.
- 11.10.50 Occasional night roosting was observed within the Development Site. One tagged eagle roosted within 300m of a proposed turbine location on 0.81% of nights, while the other tagged bird always roosted further away. Construction-related disturbance/displacement effects on golden eagle within the ZOI is expected to be confined to daylight hours, i.e. would be unlikely to affect night roosts and would be short-term and sporadic. Furthermore, should disturbance occur around sunrise or sunset, potential roost habitat for golden eagle is widespread within the Development Site and surrounding areas. The very low proportion of nights on which roosting was recorded close to the Proposed Development suggests any effect would be **negligible**.
- 11.10.51 In light of these considerations, the magnitude of change with respect to potential disturbance during construction/decommissioning is considered to be **negligible** and the effect on the conservation status of golden eagle would be **not significant**.

Operational Disturbance and Displacement

- 11.10.52 Indirect loss to golden eagle habitat often occurs through displacement from areas within 300m of a turbine tower (**Confidential Appendix 11F**). The GET modelling performed for the Proposed Development estimates that 0.6%-1.9% of one range and 2.2%-3% of the second range would effectively be lost for its proposed 35-year lifetime.
- 11.10.53 There is an almost entirely forested gap between the range boundaries, marked by the Abhainn a' Bheallaich up to Loch Leacann. This gap coincides with the majority of the Proposed Development and a large area of ground that is topographically unsuitable for golden eagles. The combination of trees, habitat and range boundaries mean that very few flights cross this area and therefore any disturbance/displacement as a result of the Proposed Development is unlikely to have any discernible effect. This is likely to hold true for dispersing young birds as well as the adults currently present (see **Confidential Appendix 11F**). Furthermore, given its positioning relative to range boundaries and comparatively limited flight activity in this location, the Proposed Development will not create a barrier to golden eagle movement.
- 11.10.54 This information should be considered together with the embedded measures outlined in **Table 11.10**. It is also noteworthy that subsequent to Allt Dearg Wind Farm becoming operational, golden eagles have occupied a territory which includes the wind farm and this was not occupied pre-construction. Overall, the magnitude of change resulting from the operation of the Proposed Development be very low. The resultant adverse effect on the species' conservation status is **not significant**.

Potential Collision with Operational Turbines

- 11.10.55 The Collision Risk Model (CRM) (**Confidential Appendix 11E**) calculated an annual collision estimate of 0.098 birds. This represents 0.11% of the NHZ population of 44 pairs. Assuming an operational life of 35 years, this would result in 3.4 collisions over this period (or one collision every 10.2 years).

- 11.10.56 The adult survival rate for golden eagles is 0.95 (BTO, 2023). Background mortality for this species (considering adult survival) is therefore 4.4 individuals per year within respect to the NHZ14 population. The additional 0.098 deaths per year would constitute a rise in mortality of around 2.2% compared to the background rate.
- 11.10.57 The magnitude of change with respect to potential collision risk is considered low in relation to the regional golden eagle population. It is therefore anticipated that there will be **no significant** adverse effects on the NHZ population with respect to potential collision with operational turbines.

Osprey

Baseline Conditions

Desk Study

- 11.10.58 Osprey is listed in Annex 1 and Schedule 1. It is an SBL, Argyll and Bute LBAP and BoCC5 amber listed species (Stanbury *et al.*, 2021).
- 11.10.59 The breeding population of osprey within Scotland is estimated at 229 breeding pairs (Eaton *et al.*, 2023); of which NHZ14 supports 16 pairs (Wilson *et al.*, 2015). The UK population estimate is 271 pairs (Eaton *et al.*, 2023).
- 11.10.60 The RSG provided records of three osprey sites within a 2km search area of the Development Site. An Suidhe Wind Farm reports also mentioned the presence of the species in the area. The RSPB provided no osprey records within a 2km search area of the Development Site.

Field Surveys

- 11.10.61 Field surveys were carried out from March 2019 to April 2022. Further details are provided in **Confidential Appendix 11D**. and are summarised below:
- Osprey was observed during raptor surveys in 2019. However, there was no evidence of nesting. A total of 12 osprey flights were recorded during the VP surveys, all between 23 May and 21 August. All involved single birds.
 - Osprey was observed during the raptor surveys undertaken in 2020. However, no evidence of nesting was recorded. A total of 12 osprey flights were recorded during VP surveys, all between 02 June and 20 August. All involved a single bird, except for one record of two birds flying together on 18 August 2020; and
 - While no specific raptor surveys were carried out in 2021, no incidental evidence of osprey nesting was recorded. Furthermore, no ospreys were recorded during VP surveys in the 2021 breeding season.
- 11.10.62 **Table 11.14** presents a summary of flight activity recorded within the Collision Risk Zone ("CRZ"¹⁴) during VP surveys.

¹⁴ Please note that the calculations in Confidential Appendix 11E are based on an area of 500m around turbines only, i.e., only those flights relevant to Collision Risk Modelling.

Table 11.14 Osprey: VP Flight Activity Data

Season	Total Number Flights	Total Seconds Below PCH*	Total Seconds at PCH	Total Seconds Above PCH
Breeding (April to August 2019)	12	385.5	804.5	0
Non-breeding (September 2019 to March 2020)	0	n/a	n/a	n/a
Breeding (April to August 2020)	12	397.5	2,365.5	165
Non-breeding (September 2020 to March 2021)	0	n/a	n/a	n/a
Breeding (April to August 2021)	0	n/a	n/a	n/a
Non-breeding (September 2021 to March 2022)	0	n/a	n/a	n/a
Breeding (April 2022)	0	n/a	n/a	n/a

* PCH refers to Potential Collision Height – this was measured at 40 – 200m.

11.10.63 Note that the figures presented in **Table 11.14** relate to the species-specific breeding season defined in Hardey *et al.* (2013). This varies from species to species, with resident eagle species typically breeding earlier than most other raptors (including osprey).

11.10.64 The black-osprey flight lines are shown on **Figure 11.7**.

Future Baseline

11.10.65 In the absence of development, the osprey breeding population in the region is reasonably expected to remain stable.

Predicted Effects and their Significance

11.10.66 No osprey territories fall within the relevant ZoI (up to 500m). A peak count of two birds was recorded during surveys and while there is no evidence these birds were breeding, this could still account for 6.25% of the NHZ population (Wilson *et al.*, 2015), 0.43% of the national population and 0.37% of the estimated UK population (Eaton *et al.*, 2023).

11.10.67 At less than 1% of the national population, two birds are not considered to be of national importance, though due to the occasional presence of 6.25% of the NHZ population, ospreys are assessed as being of regional importance for the purpose of this assessment.

Potential Collision with Operational Turbines

11.10.68 The CRM (**Confidential Appendix 11E**) calculated an annual collision estimate of 0.078 ospreys. This represents 0.24% of the NHZ population of 16 pairs. Assuming an operational life of 35 years, this would result in 2.7 collisions over this period (or one collision every 12.8 years).

- 12.1.1 The adult survival rate for ospreys is 0.85 (BTO, 2023) and background mortality for this species (considering adult survival) is therefore 4.8 individuals per year within respect to the NHZ14 population. The additional 0.078 deaths per year would constitute a rise in mortality of around 1.6% compared to the background rate. This would decrease if juveniles were included, as they have a lower survival rate of 0.6 (BTO, 2023).
- 12.1.2 In this context, the magnitude of change in respect of potential collision mortality is low and there will be **no significant** adverse effects on the NHZ population.

Red-throated Diver

Baseline Conditions

Desk Study

- 11.10.69 Red-throated diver is listed on Annex 1, Schedule 1 and the SBL. It is also an Argyll and Bute LBAP species. It is on the BOCC5 green list (Stanbury *et al.*, 2021).
- 11.10.70 The species' UK breeding population has been estimated at 1,255 breeding pairs, all of which breed in Scotland (Eaton *et al.*, 2023). NHZ14 accounts for 83 pairs (Wilson *et al.*, 2015).
- 11.10.71 Desk study data indicated three red-throated diver breeding sites within a 2km search area of the Development Site.

Field Surveys

- 11.10.72 Field surveys were carried out from March 2019 to April 2022 with a summary of results as follows:
- Three pairs of red-throated divers bred within the field survey area in 2019. Two pairs failed but one pair successfully fledged a single chick. A total of 44 red-throated diver flights were observed during the VP surveys, plus a further 11 flights during diver focal watch surveys. Most of these occurred as lone foraging flights, although two birds were seen flying together on 16 occasions;
 - Three pairs of red-throated divers bred within the field survey area in 2020. Two pairs failed but one pair successfully fledged a single chick (from the same loch where a successful breeding attempt was recorded in 2019). A total of 13 red-throated diver flights were observed during the VP surveys, with a further 21 flights recorded during diver focal watches. Most occurred as lone foraging flights, although on five occasions two birds were seen flying together;
 - In 2021, a pair successfully fledged one chick from the same loch as the two previous years. However, no further nesting attempts were recorded during surveys. A total of 57 red-throated diver flights were observed during VP surveys, with a further 37 flights recorded during diver focal watches; and
 - No red-throated diver activity was recorded during surveys carried out between March and April 2022.
- 11.10.73 Red-throated diver flight activity recorded within 500m of the final turbine positions amounted to 2,624 seconds at collision risk height across all years. Due to the complexity of the surveys and large number of flights recorded, further details are presented in **Confidential Appendix 11E**.

11.10.74 The red-throated diver flightlines are shown on **Figure 11.5**.

Future Baseline

11.10.75 In the absence of development, the red-throated diver breeding population in the region is reasonably expected to remain stable, or to decline slightly as a result of more erratic weather induced by long-term climate change, which could lead to nest failures due to water-level rises or droughts.

Predicted Effects and their Significance

- 11.10.76 Three red-throated diver nests fell within the ZoI (up to 750m). This is equivalent to 3.6% of the NHZ population (Wilson *et al.*, 2015), and 0.23% of the national population (Eaton *et al.*, 2023).
- 11.10.77 At less than 1% of the national population, the population within the ZoI is not considered to be of national importance. However, at 3.6% of the NHZ population, red-throated divers are assessed as being of regional importance for the purpose of this assessment.

Construction and Decommissioning Disturbance

- 11.10.78 One waterbody on which red-throated divers nested lies 457m from the closest turbine and 344m from the section of access track. The second waterbody lies 665m from a turbine and 380m from a potential borrow pit. The third lies 399m from the nearest turbine and 130m from the closest section of access track.
- 11.10.79 The closest nesting location lies over 240m from a track and circa 470m from the nearest turbine.
- 11.10.80 Disturbance/displacement effects on red-throated diver within the ZoI would be short-term and sporadic. Furthermore, the embedded measures outlined in **Table 11.10**, particularly the BPP, mean that works within the ZoI will be prohibited (or robustly shielded from the relevant waterbodies) when red-throated divers are established to be breeding.
- 11.10.81 Considering this, the magnitude of change with regards to potential disturbance of red-throated diver is predicted to be low. The resultant adverse effect on the species' conservation status is **not significant**.

Operational Disturbance and Displacement

- 11.10.82 The presence of diver nests was fed into an ecology constraints plan that informed the Proposed Development design and a 500m buffer zones around these nests was applied to minimise disturbance to red-throated divers. While red-throated divers can be displaced several km by offshore wind schemes (JNCC, 2022), there is evidence that displacement from inshore lochs due to onshore wind development is absent or minimal (Dewar & Lawrence, 2023). Although the breeding lochs overlap the ZoI to some degree, parts of these lochs also fall beyond the ZoI, and several other lochs of similar sizes are present outside the ZoI. In view of this embedded measure as outlined in **Table 11.10**, the magnitude of change with respect to operational disturbance and displacement would be low. The resultant adverse effect on the species' conservation status is **not significant**.

Potential Collision with Operational Turbines

- 11.10.83 The presence a diver flight corridor was fed into an ecology constraints plan that informed the Proposed Development design. The CRM (**Confidential Appendix 11E**; considering

flights outside the main corridor) calculated an annual collision estimate of 0.051 birds. This represents 0.03% of the NHZ population of 83 pairs. Assuming an operational life of 35 years, this would result in 1.8 collisions over this period (or one collision every 19.5 years).

- 11.10.84 The magnitude of change with respect to potential collision risk is therefore considered to be low. Therefore, it is anticipated that there will be **no significant** adverse effects on the NHZ population with respect to potential collision with operational turbines.

White-tailed Eagle

Baseline Conditions

Desk Study

- 11.10.85 White-tailed eagle is listed on Annex 1, Schedule 1/1A), the SBL, and the BOCC5 amber list (Stanbury *et al.*, 2021). It is also an Argyll and Bute LBAP species.
- 11.10.86 The Scottish breeding population of this species is 150 pairs (Eaton *et al.*, 2023) of which NHZ14 supports 20 breeding pairs (NatureScot, 2023).
- 11.10.87 The RSG reported one home range (but no known nests) within a 6km search area of the Development Site. The RSPB provided a single white-tailed eagle record (a non-breeding pair) within a 6km search area of the Development Site. An Suidhe Wind Farm reports did not mention the presence of the species.

Field Surveys

- 11.10.88 Field surveys were carried out from March 2019 to April 2022, the results of which are summarised as follows:
- White-tailed eagle was observed in the Field Study Area during raptor surveys in 2019. However, no evidence of nesting was recorded. Three flights by a single white-tailed eagle were recorded during the VP surveys. These occurred between 18 April and 22 May;
 - Two white-tailed eagles were seen in flight together during a VP survey outside the breeding season (19 November). The species was not recorded again during the 2019/20 non-breeding season;
 - White-tailed eagle was recorded during the 2020 raptor surveys, but without any evidence of nesting. Ten white-tailed eagle flights were recorded during VP surveys. All were solitary flights, but multiple individuals may have been involved across the season. A sub-adult bird was recorded on 11 February. Birds in flight between 11 February and 4 June were not aged, but flights from 5 June to 19 August related to an immature bird;
 - Nine white-tailed eagle flights relating to three individuals were recorded during the 2020/21 non-breeding season survey period. Flights occurred between 09 September and 08 October, and all but one involved either an immature or an adult bird (the final record on 08 October involved two immatures in flight together);
 - Twelve white-tailed eagle flights were recorded during the 2021 breeding season VP surveys. Three birds were involved, including an adult pair and an immature. While no specific raptor surveys were carried out in 2021, no incidental evidence of white-tailed eagle nesting was noted either;

- An adult female and an immature were recorded together in flight during 2021 non-breeding period (on 06 October 2021 and at 996 seconds, this flight was the longest recorded by the species). No other white-tailed eagles were recorded during the 2021 non-breeding period; and
- No white-tailed eagles were recorded within the field survey area during the final survey period of February to April 2022.

11.10.89 **Table 11.15** presents a summary of flight activity recorded during VP surveys¹⁵.

Table 11.15 White-tailed Eagle: VP Flight Activity Data

Season	Total Number Flights	Total Seconds Below PCH*	Total Seconds at PCH	Total Seconds Above PCH
Breeding (March to August 2019)	3	37.5	2,111.5	0
Non-breeding (September to December 2019)	1	0	285	39
Breeding (January to August 2020)	10	268	902	846
Non-breeding (September to December 2020)	9	95	2089	606
Breeding (January to August 2021)	12	0	1,023.5	2,549.5
Non-breeding (September to December 2021)	1	0	157.5	1,834.5
Breeding (January to April 2022)	0	n/a	n/a	n/a

* PCH refers to Potential Collision Height – this was measured at 40-200m.

11.10.90 The white-tailed eagle flightlines shown on **Figure 11.8**.

Future Baseline

11.10.91 In the absence of development, the white-tailed eagle breeding population in the region is reasonably expected to continue to increase in the short term, before plateauing at an increased population.

Predicted Effects and their Significance

11.10.92 No white-tailed eagle territories fall within the relevant disturbance or displacement Zol (250-500m). A peak count of two adults was recorded. While no evidence of nesting was recorded within the field survey area, the occasional presence of two adults accounts for 5% of the NHZ population and 0.67% of the Scottish population.

¹⁵ Please note that the calculations in Confidential Appendix 11E are based on an area of 500m around turbines only, i.e., only those flights relevant to Collision Risk Modelling.

- 11.10.93 At less than 1% of the Scottish population, two adults are not considered to be of UK importance. However, at 5% of the NHZ population, white-tailed eagle is assessed as being of regional importance for the purpose of this assessment.

Potential Collision with Operational Turbines

- 11.10.94 The CRM (**Confidential Appendix 11E**) calculated an annual collision risk of 0.109. This represents up to 0.27% of the NHZ population, which is at least 20 pairs¹⁶. Assuming an operational life of 35 years, this would result in 3.8 collisions over this period (or one collision every 9.2 years).
- 11.10.95 The annual survival rate for adult white-tailed eagles is **0.936** (BTO, 2023). Background mortality for this species (considering adult survival) is therefore 19.2 birds per year nationally and 1.48 per year within the NHZ.
- 11.10.96 An additional 0.109 adult deaths per year would constitute rises in mortality of 0.57% (nationally) and 7.36% (regionally) compared to the background rate. The most recent productivity estimates for white-tailed eagles show one bird successfully fledged per pair per year in mainland Argyll, and 0.9 birds per pair year nationally (Challis *et al.*, 2022). The eagle population is therefore growing, with immatures forming an increasingly large proportion of this. Indeed, ten of the flights recorded at PCH in the field survey area are known to have been made by immature birds. This contrasts with only three such flights where the bird was identified as an adult (the remaining flights at PCH were of unaged individuals). The lower survival rate for birds aged 0-3 years (BTO, 2023) suggests that background mortality would increase less if these young birds were factored in.
- 11.10.97 The magnitude of this change with regards to potential collision risk is considered to be low. Therefore, it is anticipated that there will be **no significant** adverse effects on the NHZ population with respect to potential collision with operational turbines.

Whooper Swan

Baseline Conditions

Desk Study

- 11.10.98 Whooper swan is listed on Annex 1, Schedule 1, the SBL and the BOCC5 amber list (Stanbury *et al.*, 2021).
- 11.10.99 The Scottish population of whooper swan is estimated at 3,784 individuals (Hall *et al.*, 2016). The NHZ population is estimated at 135 wintering birds (Wilson *et al.*, 2015). The UK wintering population is estimated at 19,500 birds (Woodward *et al.*, 2022).
- 11.10.100 The RSPB provided no whooper swan records within a 2km search area of the Development Site. An Suidhe Wind Farm reports did not mention the presence of the whooper swans.

Field Surveys

- 11.10.101 Field surveys were carried out from March 2019 to April 2022 and a summary of the results are as follows:

¹⁶ Likely to be less than 0.27%, due to the use of a 40-200m PCH (rather than 45-200m) during collision risk calculations.

- In March, April and May 2019, whooper swan was recorded on three lochans within the field survey area. A single incidental flight of seven birds was observed on 28 March, but this was outside the Development Site. These birds are likely to represent migrating individuals;
- No whooper swans were recorded during the 2019/20 wintering period;
- A single whooper swan was seen feeding close to Loch Dubh-ghlas in June 2020. This may potentially have been an injured bird delayed on migration. No nesting evidence was observed. No other whooper swans were recorded during this period;
- A flight of nine whooper swans was recorded during a winter 2020/21 VP survey (on 6 October). Three whooper swans were also recorded 19 January 2021;
- A single whooper swan was recorded in flight on 25 May 2021. This is likely to relate to a late bird on spring migration; and
- No whooper swans were recorded during the survey undertaken between September 2021 and April 2022.

Future Baseline

- 11.10.102 In the absence of development, the whooper swan passage/wintering population in the region is reasonably expected to remain stable.

Predicted Effects and their Significance

- 11.10.103 There were no records of whooper swan breeding within the field survey area nor regular records of this species roosting within the Development Site. However, the peak count of nine birds observed in October 2020 could be interpreted to represent passage by 6.7% of the NHZ14 population (Wilson *et al.*, 2015). This is equivalent to 0.24% of the national population (Hall *et al.*, 2016) and 0.05% of the estimated UK population (Woodward *et al.*, 2022).
- 11.10.104 At less than 1% of the national population, this feature is not considered to be of national importance within the field survey area. However, at 6.7% of the NHZ14 population, whooper swan is assessed as being of regional importance for the purpose of this assessment.

Construction, Operational and Decommissioning Disturbance

- 11.10.105 At its closest point, the proposed access track passes within 135m of a loch where whooper swan presence was recorded. The closest turbine lies approximately 405m from this waterbody. Construction and operation-related disturbance/displacement effects on whooper swan are therefore possible.
- 11.10.106 However, there is relatively little use of the Development Site with low numbers of whooper swans, suggesting that it is not an important area for this species. Furthermore, the potential disturbance of whooper swan within the ZoI would be short-term and sporadic, with other suitable water bodies available at greater distances from construction areas should disturbance occur. As such, the magnitude of change with regards to potential disturbance is considered to be very low. The resultant adverse effect on the species conservation status is **not significant**.

Potential Collision with Operational Turbines

- 11.10.107 Insufficient flights were observed to warrant undertaking collision risk modelling. Given the low level of flight activity, collisions with turbines are unlikely and **no significant** effects on the conservation status of whooper swan are likely.

Assessment Summary

- 11.10.108 A summary of the assessment is provided in **Table 11.16**. This deals, in an integrated way, with the effects of all phases of the Proposed Development. Potential effects are considered together as the assessment focuses on the favourable conservation status of species scoped in and, as such, are assessed throughout the lifespan of the Proposed Development. Often, changes to a feature would occur during several stages of the Proposed Development, but the resultant effect may reverse during different phases. For example, during construction a local population may decline as a result of disturbance. However, this effect may be reversed during operation.

Table 11.16 Summary of Significance of Adverse Effects

Ornithological feature	Summary of predicted effects	Importance of Ornithological Feature ¹	Magnitude of change ²	Significance ³	Summary rationale
Black grouse: breeding	Direct habitat loss	Regional	Very low	Not significant	The Development Site extends to approximately 4,247 ha, with the wind farm infrastructure occupying 27 ha. Extensive areas of suitable nesting and foraging habitat will remain within the Development Site and areas will be enhanced for black grouse under the oHMP.
	Construction and decommissioning disturbance	Regional	Low	Not significant	Embedded measures will be implemented to avoid the disturbance of lekking black grouse. Additionally, the extent of available habitat within the local area that will remain undisturbed during construction and decommissioning would also offer alternative habitats to any potential prospective breeders.
	Operational disturbance and displacement	Regional	Low	Not significant	Displacement of leks within 500m of turbines may occur, but there are enough lekking sites available beyond this distance to accommodate the four males within the Development Site.
Black-throated diver: breeding	Construction and decommissioning disturbance	Regional	Very low	Not significant	One black-throated diver territory falls within the ZoI. The embedded measures, in particular the BPP, will result in the avoidance of disturbance of breeding black-throated divers.
	Operational disturbance and displacement	Regional	Very low	Not significant	Disturbance and displacement effects during the operational phase are generally considered to be less than those experienced during the construction phase.
Golden eagle: breeding/wintering	Direct habitat loss	Regional	Very low	Not significant	Two golden eagle territories fall within the ZoI (up to 1km). Land-take will fall largely outside the two known territories, and will cover significantly less than 1% of either territory.
	Construction and decommissioning disturbance	Regional	Negligible	Not significant	The territory centres of the two golden eagle ranges lie several kilometres from the proposed turbine locations and are not expected to be disturbed by construction/decommissioning activities. Disturbance/displacement effects are expected be confined to

Ornithological feature	Summary of predicted effects	Importance of Ornithological Feature ¹	Magnitude of change ²	Significance ³	Summary rationale
					daylight hours so would not affect any roosts. Furthermore, should disturbance occur around sunrise or sunset, potential roost habitat for golden eagle is widespread within the Development Site and surrounding areas.
	Operational disturbance	Regional	Very low	Not significant	There is an almost entirely forested gap between the two range boundaries which coincides with the majority of the Proposed Development and a large area of ground that is topographically unsuitable for golden eagles. The combination of trees, habitat and range boundaries mean that very few flights cross this area and therefore any and disturbance/displacement as a result of the Proposed Development is unlikely to have any discernible effect.
	Potential collision with operational turbines	Regional	Low	Not significant	The probability of a collision is very low (CRM calculated an annual theoretical collision risk of 0.098 birds). This represents 0.11% of the NHZ14 population of 44 pairs.
Osprey: breeding	Potential collision with operational turbines	Regional	Low	Not significant	A peak count of two birds was recorded during surveys. The probability of a collision is very low (CRM calculated an annual theoretical collision estimate of 0.078 birds). This represents 0.24% of the NHZ14 population of 16 pairs.
Red-throated diver: breeding	Construction and decommissioning disturbance	Regional	Low	Not significant	Three red-throated diver nests fall within the ZoI, equivalent to 3.6% of the NHZ14 population. The embedded measures, in particular the BPP, will result in the avoidance of disturbance of breeding red-throated divers.
	Operational disturbance and displacement	Regional	Low	Not significant	Disturbance and displacement effects during the operational phase are generally considered to be less than those experienced during the construction phase.
	Potential collision with operational turbines	Regional	Low	Not significant	The probability of a collision is very low (the CRM calculated an annual theoretical collision estimate of 0.051 birds). This represents 0.03% of the NHZ14 population.

Ornithological feature	Summary of predicted effects	Importance of Ornithological Feature ¹	Magnitude of change ²	Significance ³	Summary rationale
White-tailed eagle: breeding	Potential collision with operational turbines	Regional	Low	Not significant	No white-tailed eagle territories fall within the relevant disturbance or displacement Zol (up to 1km), though there was the occasional presence of two adults. The probability of a collision is very low (the CRM calculated an annual theoretical collision risk of 0.109 birds).
Whooper swan: passage/ wintering	Construction, Operation and decommissioning disturbance	Regional	Very low	Not significant	There is relatively little use of the Development Site by low numbers of whooper swans, suggesting that it is not an important area for this species. Furthermore, the potential disturbance of whooper swan within the Zol would be short-term and sporadic, with other suitable water bodies available at greater distances from construction areas should disturbance occur.

1. The importance of the feature is defined as per **Table 11.9, Section 11.7**, using the criteria set out in **Table 11.8** and the method in **Section 11.7**.

2. The magnitude of change on an ornithological feature resulting from activities relating to the development is defined using the criteria set out in **Section 11.9** and **Table 11.11**, and is defined as neutral, very low, low, medium, or high.

3. The significance of an environmental effect is either 'significant' or 'not significant,' subject to the evaluation methodology outlined in **Section 11.9**.

11.11 Assessment of Cumulative Effects

- 11.11.1 As outlined in **Section 4.8**, consideration has been given as to whether any of the ornithological features that have been taken forward for assessment in this chapter are likely to be subject to cumulative effects in combination with other developments.
- 11.11.2 Significant effects may not occur when considering the Proposed Development in isolation but, in combination with other developments, cumulative effects may be significant. The context in which cumulative effects are considered depends upon the ecology of the species or habitat in question.
- 11.11.3 Specific guidance has also been provided for assessment of cumulative impacts of onshore wind farms on bird populations (NatureScot, 2018b). Projects to be included in such an assessment must include existing projects as well as those consented but not yet built¹⁷.
- 11.11.4 In order to undertake a cumulative impact assessment, it is necessary to define:
- The ornithological features affected by the Proposed Development that may be subject to significant cumulative effects in combination with other projects; and
 - The relevant projects for which cumulative effects must be considered.
- 11.11.5 Upon defining these, a cumulative impact assessment is undertaken by drawing on the assessment of effects for ornithological features affected by the Proposed Development that are also considered in the EIA of other projects. This cumulative assessment considers all wind farms in NHZ14 that are operational, consented but not yet built or at the application stage.
- 11.11.6 The purpose of the cumulative impact assessment is to determine whether effects are likely to affect the Favourable Conservation Status of an ornithological feature. Where the species is associated with an SPA or other designated site, effects are assessed in context with this population or area. Where species are not associated with an SPA, effects are assessed in a regional context, this being NHZ14 in the case of the Proposed Development.
- 11.11.7 At least one impact as a result of the Proposed Development has the potential for cumulative effects for five of the seven species assessed. Therefore, the NHZ populations of these species (black-throated diver, golden eagle, osprey, red-throated diver and white-tailed eagle) were taken forward for cumulative assessment. Black grouse was also considered, as requested by consultees.
- 11.11.8 **Table 11.17** presents cumulative assessment information for the wind farms within NHZ14 that are operational, or consented but not yet built, and those that are still at the application stage. Where a cumulative collision risk effect exists, theoretical collision rates per year are presented.

¹⁷ Sites in Scoping are not included.

Table 11.17 Cumulative Assessment

Wind Farm	Status	No. of turbines	Black grouse	Black-throated diver	Golden eagle	Osprey	Red-throated diver	White-tailed eagle
A'Chruach	Operational	21	Low -magnitude disturbance at site level only	Negligible effects	Low -level local effects are not material at regional scale	Occasionally reported, but no material effects	Low -magnitude effects via collision risk, but not material at the regional scale. Effects negligible otherwise.	Not recorded during surveys
A'Chruach Phase 2	Consented	2	Negligible effects	No effects	Negligible effects	No effects	Negligible effects	Negligible effects
Allt Dearg	Operational	12	No information	No information	Minor displacement effect on sub-adults. 0.071 collision-related deaths per year.	No information	No information	No information
An Suidhe	Operational	23	Present locally – no information on effects	Annual monitoring occurs – no information on effects	Present locally – no information on effects	Present locally – no information on effects	Annual monitoring occurs – no information on effects	No information
Barran Caltunn	Operational	2	Limited informational available – no apparent concerns for these species					
Beinn Ghlas	Operational	14	No information	No information	0.170 annual collision-related deaths	No information	No information	No information
Blarghour	Consented	17	No residual effects	No effects	Negligible to minor effects during construction and	Negligible effects during	Negligible residual effects	Negligible to minor effects during

Wind Farm	Status	No. of turbines	Black grouse	Black-throated diver	Golden eagle	Osprey	Red-throated diver	White-tailed eagle
					operation. 0.069 annual collision-related deaths.	construction and operation		construction and operation
Blarghour Farm	Operational	2	SNH (now NatureScot) registered no ornithological concerns					
Carraig Gheal	Operational	20	No information	No information	0.015 annual collision-related deaths	No information	No information	No information
Clachan Flats (Ardkinglass)	Operational	9	No ornithological concerns					
Creag Dhubh	Consented	9	Low-magnitude minor adverse displacement effect during construction	No effects	Minor adverse displacement effects during all phases. 0.015 annual collision-related deaths predicted during operation.	No effects	No effects	No effects
Cruach Mhor	Operational	35	Neutral to negligible effects	No effects	Neutral to negligible effects	No effects	No effects	No effects
Sròndoire	Operational	3	Species recorded, but no adverse effects predicted	Species recorded, but no adverse effects predicted	Minor effects via construction disturbance and habitat loss/operational displacement. 0.021 collision-related deaths per year.	No effects	Minor, low-magnitude disturbance effect during construction	No effects

Wind Farm	Status	No. of turbines	Black grouse	Black-throated diver	Golden eagle	Osprey	Red-throated diver	White-tailed eagle
Sub-total / summary			Neutral to minor adverse effects at four wind farms	Negligible effects at one wind farm	0.34 collision-related deaths per year. Other neutral to minor adverse effects at seven wind farms.	Negligible to “no material” effects at two wind farms	Negligible to minor adverse effects at four wind farms	Negligible to minor adverse effects at two wind farms
An Càrr Dubh	Application	13	No potential for likely significant effects	No potential for likely significant effects	Medium -magnitude range loss effect assessed as of minor significance, though NatureScot state a high risk of abandonment of one territory. Minor, low -magnitude effect on dispersing young due to habitat loss. Up to 0.063 annual collision-related deaths.	No potential for likely significant effects. Collision mortality risk assessed as negligible but queried by NatureScot.	No potential for likely significant effects. Negligible collision mortality risk.	1.228 collision-related deaths per year. No potential for other likely significant effects.
Blarghour (variation)	Application	14	Limited informational available – no likely significant residual effects on biodiversity					
Glasvaar	Application	8	Negligible effects after mitigation	Negligible effects	Negligible effects due to construction. Low-magnitude operational disturbance or displacement effects. NatureScot express concern that displacement risk and territory loss need further	Negligible effects	Assessed as of local importance, with no effects predicted	Negligible effects due to construction. Low-magnitude operational disturbance or displacement effects. 0.045 annual collision-related deaths.

Wind Farm	Status	No. of turbines	Black grouse	Black-throated diver	Golden eagle	Osprey	Red-throated diver	White-tailed eagle
					assessment. 0.024 annual collision-related deaths.			
Ladyfield	Application	14	Minor adverse construction disturbance and operational displacement effects after mitigation	Not recorded during surveys	Minor adverse habitat loss, construction disturbance and operational displacement effects. 0.072 annual collision-related deaths.	No effects	Not recorded during surveys	0.017 annual collision-related deaths
Total / summary			Neutral to minor adverse effects at six wind farms	Negligible effects at two wind farms	Up to 0.499 collision-related deaths per year. Other neutral to minor adverse effects at ten wind farms.	Negligible to “no material” effects at four wind farms	Negligible to minor adverse effects at five wind farms	1.29 collision-related deaths per year. Other negligible to minor adverse effects at three wind farms.

Cumulative Effects on Black Grouse

- 11.11.9 **Neutral to minor** adverse effects on black grouse were predicted at two operational, two consented and two application stage wind farms. The main effect predicted was disturbance during construction. It is unlikely that all remaining construction would occur at the same time as the Proposed Development. However, even if it did, the effect would be spread out across different individuals and leks. It is considered likely that **no significant** cumulative effects would arise on black grouse from these cumulative projects.
- 11.11.10 The RSPB specifically requested that cumulative effects on black grouse are also considered in light of land conversion to commercial forestry. It is noted that Argyll and Bute Council's (ABC) Woodland and Forestry Strategy (2011) states an aim to increase woodland and forestry cover over the coming decades. The net increase could be as large as "up to 1000ha per annum".
- 11.11.11 However, the Woodland and Forestry Strategy outlines various actions to protect black grouse already taking place or being promoted by ABC. These include woodland restructuring, protection/enhancement of woodland edge habitats and bilberry understorey, and removing or adapting significant lengths of deer fencing. A number of model woodland planting projects exist, and the ABC encourages future afforestation proposals to follow these.
- 11.11.12 The Proposed Development would also deliver enhancements for black grouse via a Habitat Management Plan. The oHMP (**Appendix 10H**) details shelter and foraging habitat provision such as low density native broadleaf planting along watercourses and non-riparian forestry edges. Combining this information with the wider Argyll and Bute context, no significant adverse effect on the regional population is foreseen.
- 11.11.13 In summary, the Proposed Development will likely result in **no significant** adverse cumulative effects on black grouse in combination with other schemes.

Cumulative Effects on Black-throated Diver

- 11.11.14 **Negligible** effects on black-throated diver were predicted at one operational and one application stage wind farm. There is no potential for the Proposed Development to have significant cumulative effects in conjunction with the above schemes.
- 11.11.15 The RSPB specifically requested that cumulative effects on black-throated diver are considered in light of land conversion to commercial forestry. It is considered that the most likely effects on divers would be related to increased management and timber harvesting as forest cover increases. However, any significant increase in felling/harvesting is unlikely to be overlap with the Proposed Development. This is because the primary timber crop in Argyll is Sitka spruce, which takes around 40 years to mature to harvestable age (Fuentes-Utrilla *et al.*, 2017). By contrast, the lifespan of the Proposed Development is only 35 years. An increase in management operations is considered likely to lead to **no significant** cumulative effects. Minor disturbances are likely largely to be shielded from lochs used by divers by the presence of trees, which form an effective barrier to noise, visual disturbance and many pollutants.
- 11.11.16 In summary, the Proposed Development will likely result in **no significant** adverse cumulative effects on the NHZ14 black-throated diver population in combination with other schemes.

Cumulative Effects on Golden Eagle

- 11.11.17 The cumulative number of annual theoretical collisions for golden eagle is 0.34 individuals based on operational and consented schemes. The figure, which constitutes 0.39% of the NHZ population is a minimum number given the lack of information from some sites. If all four application stage schemes were also built, an additional 0.159 deaths would result per year. Background mortality for this species within NHZ14 is 4.4 individuals per year (considering adult survival¹⁸). In this context, it is considered that the resultant adverse cumulative effect on the favourable conservation status of the golden eagle NHZ population would be **not significant**.
- 11.11.18 Other **neutral** to **minor** adverse effects on golden eagle were predicted at four operational, three consented and three application wind farms. Overall, these appear to present a low risk for significant cumulative effects. The most contentious of these for golden eagle are An Càrr Dubh and Glasvaar Wind Farms. NatureScot considers that the An Càrr Dubh Wind Farm proposal could lead to the abandonment of one golden eagle territory, and that additional work is needed to assess displacement and territory loss at Glasvaar Wind Farm. However, the Proposed Development is predicted to have neutral to very low habitat loss and disturbance effects. There is little potential for any significant overlap in effects that would lead to a decline in the regional population.
- 11.11.19 In summary, there are likely **no significant** adverse cumulative effects on the NHZ14 population in combination with the above schemes.

Cumulative Effects on Osprey

- 11.11.20 **Negligible** or no material effects on osprey were predicted for one operational, one consented and one application stage wind farm. Combining this with the low-level effects predicted from the Proposed Development, **no significant** cumulative effect on the regional population is likely.
- 11.11.21 It is thus considered that **no significant** adverse cumulative effects on the NHZ14 osprey population will arise in conjunction with the schemes considered.

Cumulative Effects on Red-throated Diver

- 11.11.22 **Negligible** to **minor** adverse effects on this species were predicted for two operational and two consented wind farms. **Negligible** collision risk was predicted for a further application wind farm. The greatest predicted effect concerned a **minor**, low-magnitude disturbance effect during the construction of Sròndaire Wind Farm. As this is already operational, there is no risk of a significant cumulative effect with the Proposed Development.
- 11.11.23 The RSPB specifically requested that cumulative effects on red-throated diver are considered in light of land conversion to commercial forestry. It is considered that the most likely effects on divers would be related to increased management and timber harvesting. However, any significant increase in felling/harvesting is unlikely to be overlap with the Proposed Development. An increase in management operations is also considered unlikely to lead to significant cumulative effects. The reasons for this are the same as given for black-throated divers in paragraph 11.11.15.

¹⁸ The golden eagle adult mortality rate is 5%; the juvenile (up to age 4) mortality rate is 85% (BTO Bird Facts, 2023 (<https://www.bto.org/understanding-birds/birdfacts/golden-eagle>; accessed on 14/02/2024)).

- 11.11.24 Considering the low-level effects predicted from the Proposed Development and the geographical spread of the relevant cumulative projects, a significant effect on the regional population appears very unlikely. It is considered that **no significant** adverse cumulative effects on the NHZ14 population will arise in conjunction with the schemes considered.

Cumulative Effects on White-tailed Eagle

- 11.11.25 Based on operational and consented schemes where information is available, no additional annual collisions have been predicted for white-tailed eagles.
- 11.11.26 A total of 1.29 theoretical annual collisions are predicted if all application stage schemes are consented. The figure, which constitutes 3.2% of the NHZ population, is a minimum number given the lack of information from some sites. However, most of this is predicted at a single wind farm (An Càrr Dubh). The level of white-tailed eagle collisions predicted for An Càrr Dubh Wind Farm is over 11 times that predicted for the Proposed Development. Background mortality for this species in the context of NHZ14 is 2.56 individuals per year (considering adult survival¹⁹).
- 11.11.27 Despite an increasing number of wind turbines, the white-tailed eagle population continues to increase within the NHZ (NatureScot, 2023). Prior to the recent Highly Pathogenic Avian Influenza (HPAI) outbreak, white-tailed eagle productivity in Argyll was 0.9-1 chick per year (Challis *et al.*, 2022). HPAI has led to an apparent decline in white-tailed eagle breeding success from 67% to 45% (Wilson *et al.*, 2023). However, even with HPAI and the addition of 1.29 theoretical collisions, the NHZ14 population is still set to increase. In this context, it is considered that the resultant adverse cumulative effect on the favourable conservation status of the NHZ14 population would be **not significant**.
- 11.11.28 Other adverse effects predicted are limited to **negligible to minor** effects at two consented and one application wind farm. However, potential collisions are the only source of potential cumulative effects from the Proposed Development.
- 11.11.29 In summary, there are likely **no significant** adverse cumulative effects on the white-tailed eagle NHZ14 population in combination with the above schemes.

11.12 Additional Mitigation or Compensation

- 11.12.1 No **significant** effects are predicted on any of the scoped in ornithological features. The Proposed Development largely falls outside of golden eagle territories, and the population of white-tailed eagle in the NHZ is increasing. Low- and very low-level effects have been predicted for ospreys and whooper swans respectively. As such, no bird-specific mitigation or compensation is proposed.
- 11.12.2 Independently to this assessment, the oHMP (**Technical Appendix 10H**) proposes various habitat enhancements to benefit black grouse and diver species. The oHMP sets out proposed habitat management measures to mitigate the effects on identified ecological features, notably peatland habitats, as well as delivering additional biodiversity improvements to benefit ecological and ornithological features. The four main aims of this oHMP are:
- Aim 1: To restore and enhance the extent of peatland habitats;

¹⁹ The white-tailed eagle adult mortality rate is 6.4%; the juvenile mortality rate (up to age 3) is 60.5% (BTO Bird Facts, 2023 (<https://www.bto.org/understanding-birds/birdfacts/white-tailed-eagle>; accessed on 14/02/2024)).

- Aim 2: To increase native woodland coverage and enhance connectivity through riparian planting; and low density non-riparian broadleaf planting for black grouse;
- Aim 3: To increase montane scrub coverage; and
- Aim 4: To enhance habitat for divers.

11.12.3 Under the oHMP, habitat networks will also be improved across the Development Site through planting of broadleaf riparian woodland, low density non-riparian broadleaf woodland along forestry edges and targeted planting of montane scrub on more elevated areas. These interventions will provide ecological enhancement for a variety of species including black grouse by improving nesting and foraging habitat, whilst installation of artificial nest platforms for divers will help contribute to improved breeding success of these.

11.13 Conclusions of Significance Evaluation

- 11.13.1 An assessment has been made of the likely effects of the Proposed Development during the construction, operation and decommissioning stages. **No significant** effects are predicted for ornithological features scoped into this assessment (black grouse, black-throated diver, golden eagle, osprey, red-throated diver, white-tailed eagle and whooper swan) in terms of the EIA Regulations.
- 11.13.2 It is concluded that provided good practice is followed to avoid disturbance to breeding birds, including the use of exclusion zones during construction and avoiding damage or destruction of occupied nests, significant effects on any ornithological feature are unlikely.

11.14 Implementation of Environmental Measures

- 11.14.1 **Table 11.18** describes the Environmental Measures relevant to ornithology which are embedded within the Proposed Development. It also details the mechanism by which they would be implemented, and who is responsible for their implementation.

Table 11.18 Summary of Environmental Measures Relevant to Ornithology

Environmental measure	Responsibility for implementation	Compliance mechanism
Construction Phase		
Preparation of HMP and CEMP	Developer	Planning condition
Preparation of Species Protection Plans (including BPP)	Developer	Planning condition
Toolbox talks	Construction Manager and ECoW	Set out in the CEMP to be required by planning condition
Pre-construction surveys to be set out in an Ornithological Monitoring Plan BPP, then implemented	Developer/Contractor	Planning condition

Environmental measure	Responsibility for implementation	Compliance mechanism
Operational Phase		
All maintenance working areas would be clearly defined and checked for breeding birds before works undertaken	Developer and ECoW	Planning condition
Decommissioning Phase		
Preparation of a Restoration and Decommissioning Plan	Developer	Planning condition

11.15 References

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