

Chapter 11: Ornithology

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Appendices

Appendix 11.1:	Technical Appendix
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Glossary of Terms

Annex I Bird Species	Rare or vulnerable bird species listed in Annex I of the Wild Birds Directive
Atlas of Living Scotland	Online resource for biodiversity information hosted by the National Biodiversity Network (NBN).
Bern Convention	Berne Convention on the Conservation of European Wildlife and Natural Habitats 1979.
Biodiversity Action Plan	A plan developed at a Local or National level (UK BAP) outlining objectives for the improvement of biodiversity which identifies priority species and habitats as a focus for conservation and enhancement.
BoCC (Birds of Conservation Concern)	Red, Amber and Green listing of birds reflecting each species' global, European and UK status and the importance of the UK populations in international terms.
CIEEM	Chartered Institute of Ecology and Environmental Management.
Cumulative effects	The assessment of effects which may occur where more than one development of a particular type combine to create a greater level of effect.
Directive	A form of European Union legislation which directs Member States to pass relevant domestic legislation and sets out the objective or policy which needs to be attained.
Ecia	Ecological Impact Assessment
ECow (Ecological Clerk of Work)	An ecological consultant employed to monitor construction works and advise of any ecological sensitivities and suggest appropriate methods and measures to minimise effects.
Effect	The consequences for the receptor of an impact after mitigation measures have been taken into account
ERLOB Species (European Red List of Birds)	Species identified by Birdlife International at a European Level taken from the IUCN Red List assessment of regional extinction risk in order that conservation action can be taken to improve their status.
Habitats Directive	European legislation - Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.
Highland-wide Local Development Plan (HwLDP)	Forms the basis for spatial planning within the Highland Council area as a whole.
IEFs (Important Ecological Features)	Those species that have been scoped in to the assessment and those that are predicted to be affected by the project.
Impact	A change experienced by a receptor either positive, neutral or negative.
JNCC (Joint Nature Conservation Committee)	The public body that advises the UK Government and devolved administrations on UK-wide and international nature conservation.
LBAP (Local Biodiversity Action Plan)	A plan, outlining objectives for the improvement of biodiversity at Local Authority level which identifies priority species and habitats as a focus for conservation and enhancement.
National Biodiversity Network (NBN)	A collaborative partnership including many UK wildlife conservation organisations, Government, country agencies, environmental agencies, local environmental records centres and voluntary groups created to exchange biodiversity information.
Priority species	Species identified in the UK or Local Biodiversity Action plans as a focus for conservation and enhancement.
Professional Judgement	The informed view of a qualified and experienced professional on a subject which may be considered generally subjective.
Red data lists / Red Lists	Lists of threatened species based on criteria identified by International Union for Conservation of Nature (IUCN).
RSPB	Royal Society for the Protection of Birds.
SAC (Special Area of Conservation)	European protected sites designated under the EC Habitats Directive that make a significant contribution to conserving the habitat types and species identified in Annexes I and II of the Directive.
Schedule 1 bird species	Species listed on Schedule 1 of the Wildlife and Countryside Act 1981

Scoping Opinion	The written opinion of the determining authority as to the scope and level of detail of information to be provided in an EIA report.
Scottish Biodiversity Strategy	Strategy comprised of two documents: '2020 Challenge for Scotland's Biodiversity' and 'Scotland's Biodiversity: It's in Your Hands' setting out how the government intends to conserve biodiversity.
SBL (Scottish Biodiversity List)	A list of animals, plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland.
SNH (Scottish Natural Heritage)	The body responsible for promoting, caring for and improving natural heritage in Scotland, and advising Government on natural heritage issues.
SPA (Special Protection Area)	European protected sites classified for rare and vulnerable birds (as listed on Annex I of the Birds Directive), and for regularly occurring migratory species in accordance with Article 4 of the Directive.
SSSI (Site of Special Scientific Interest)	Nationally designated areas of land and water considered to best represent the natural heritage in terms of their flora, fauna, geology, geomorphology or a mix of these features.
Study Area	A defined area within which the assessment has been undertaken.
UK BAP (UK Biodiversity Action Plan)	A UK-wide plan outlining objectives for the improvement of biodiversity which identifies priority species and habitats as a focus for conservation and enhancement.
Wild Birds Directive	European Legislation - Directive 2009/147/EC on the conservation of wild birds.

11 Ornithology

11.1 Executive Summary

- 11.1.1 This Chapter aims to assess the significance of the impacts of the Revised Coire Glas Pumped Storage Scheme (The Proposed Development) on the wild bird populations in the immediate and local area of The Proposed Development.
- 11.1.2 A desk study and field study were undertaken during the summer of 2017 to ascertain bird populations in the area.
- 11.1.3 General bird populations were considered to remain unaffected by The Proposed Development, and no impact assessment was conducted.
- 11.1.4 Once standard mitigation measures (provision of an Ecological Clerk of Works (ECoW), pre-construction monitoring of nesting birds, creating no-go zones around any sensitive nesting areas, etc.) are successfully implemented, there will be no residual effect from the construction or operational activity of The Proposed Development on the general bird life of the area.
- 11.1.5 This Chapter does not take into account protected bird species that may be present in the area. For an assessment on protected bird species, please refer to Confidential Ornithology Appendix 11.2.

11.2 Introduction

- 11.2.1 This Chapter aims to assess the significance of the impacts of The Proposed Development on the wild bird populations in the immediate and local area of The Proposed Development.
- 11.2.2 The ornithological survey work was commissioned to inform the Impact Assessment process for The Proposed Development. All work was carried out in accordance with the relevant Scoping Opinion responses and all surveys followed best practice guidelines and methods.
- 11.2.3 Field surveys provided an update on those undertaken in 2010 to inform the Impact Assessment process for the previously consented Coire Glas Pumped Storage Scheme (The Consented Development).
- 11.2.4 For details of The Proposed Development, please refer to Chapter 3: Description of Development, and for wider ecological assessments, please refer to Chapter 10: Terrestrial Ecology, Chapter 12: Aquatic Ecology and Chapter 13: Fish.

11.3 Policy, Legislation & Guidance

- 11.3.1 No part of The Proposed Development area has been designated for its site, habitat, or species present within it, and there is no statutory or non-statutory designated site for bird populations within 5 km. The nearest site designated for birds is Loch Garry, which forms part of the West Inverness-shire Lochs Special Protection Area (SPA). It lies approximately 6.5 km north of Loch a Choire Ghlais, but the avifauna for which this site is designated is not compromised by The Proposed Development.

- 11.3.2 Several species recorded are, however, protected under international and national legislation, and several aspects of national legislation protect all areas of natural heritage. The relevant legislation is described below.
- 11.3.3 The Wild Birds Directive, or European Directive 2009/147/EC (the codified version of EEC Directive 79/409/EEC as amended) and the Habitats Directive (EEC Directive 92/43/EEC), state that all wild bird populations within the UK are protected under European legislation. These directives enabled the establishment of a Europe-wide network of designated conservation areas known as Natura 2000. Special Protection Areas (SPAs) are strictly protected sites classified in accordance with Article 4 of the EC Birds Directive. They are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species. Special Areas of Conservation (SACs) are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended).
- 11.3.4 The Wildlife and Countryside Act 1981 consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and the Birds Directive in Great Britain. The Act makes it an offence (with exception to species listed in Schedule 2) to intentionally kill, injure, or take any wild bird; take, damage or destroy the nest of any wild bird while that nest is in use or being built (also [take, damage or destroy the nest of a wild bird included in Schedule ZA1] under the Natural Environment and Rural Communities Act 2006), or; take or destroy an egg of any wild bird. Special penalties are available for offences related to birds listed on Schedules 1, 1A and A1, for which there are additional offences of disturbing these birds at any time, and whose habitually used nests may not be intentionally or recklessly damaged, destroyed or otherwise interfered with when not in use.
- 11.3.5 The Nature Conservation (Scotland) Act 2004 imposes a wide-ranging duty to further the conservation of biodiversity and the conservation and enhancement of natural features, including notification of Sites of Special Scientific Interest (SSSIs). Implementation is linked to a national biodiversity strategy that is endorsed by the Scottish Government.
- 11.3.6 On a local level or for particular species, the Scottish Biodiversity Strategy (Scottish Government 2004 and 2013a) has the objective of halting the loss of biodiversity and continuing to reverse previous losses through targeted action for species and habitats through improved knowledge, planning, design, practice and management.
- 11.3.7 Scottish Planning Policy (Scottish Government 2014) states that areas should be safeguarded and the character of the habitat enhanced, species diversity, rarity and extent must be established, and the species requirements must be fully factored into the planning and design of the development.

11.4 Scope of Assessment

Study Area

- 11.4.1 The ornithological study area was located in the southern part of Glengarry Forest and comprised of Coire Glas, Loch a' Choire Ghlais, Allt a' Choire Ghlais, open moorland to the east of Ben Tee, the South Laggan Forest, and land along the length of the public road

extending between North Laggan and Kilfinnan (Kilfinnan Road). The study included birds of the moorland around the proposed dam and upper reservoir, buried tunnels and access tracks, and the birds in the forested and agricultural areas adjacent to access roads, tracks, tunnel routes, site establishment areas and other structures associated with The Proposed Development.

11.4.2 The ornithological study area is illustrated in Appendix 11.1.

Scoping and Consultation

11.4.3 A Scoping Opinion was received from the Scottish Government in July 2017 and is included in Appendix 4.1. The relevant consultees for ornithology were The Royal Society for the Protection of Birds (RSPB) and Scottish Natural Heritage (SNH).

11.4.4 The following table summarises the relevant ornithological issues raised during scoping.

Table 11.1: Ornithological issues raised during consultation

Consultee	Summary Response	Comment/Action Taken
RSPB	<p><i>Information was provided on species listed under Annex 1 of the Birds Directive (2009/147/EC) and Schedule 1 of the Wildlife and Countryside Act (1981) and this important conservation status must be recognised when considering these development proposals. The potential impacts on this species should be adequately covered in the environmental statement.</i></p> <p><i>Appropriate mitigation should be proposed in order to minimise disturbance issues during the construction and during operational phases (including as a result of maintenance work). It is important that mitigation is presented in enough detail to adequately assess the proposals before the application is determined.</i></p> <p><i>The information and records of raptor species present in the area, can be obtained from Highland Raptor Study Group.</i></p> <p><i>We are happy to meet the applicant's consultants on site to discuss the proposals in more detail.</i></p>	<p>Following the field study and subsequent consultation with the RSPB, it is believed that all species have been adequately covered in this Chapter and in the Confidential Ornithology Appendix 11.2.</p> <p>Appropriate mitigation has been proposed in Section 11.9 of this Chapter and in the Confidential Ornithology Appendix 11.2.</p> <p>There was correspondence with members of the Raptor Study Group.</p> <p>Discussion with RSPB staff members was undertaken via email rather than on site.</p>

<p>SNH</p>	<p><i>There are a variety of guidance and advice notes for developments available on our website, covering topics such as landscape, birds and protected species. We would expect the applicant to follow the latest guidance as published on our website via http://www.snh.gov.uk/planning-and-development/</i></p> <p><i>We support the proposal to resurvey all protected birds and mammal species as described in the Scoping Report. All surveys should follow the latest agreed methodologies. Results and any possible mitigation measure should be provided in the ES and if necessary in a confidential annex.</i></p>	<p>All relevant guidance was followed throughout the field study and subsequent reporting period.</p> <p>All up-to-date methods have been used in the preparation of this Chapter, and suitable mitigation measures are provided in Section 11.9 of this Chapter and in the Confidential Ornithology Appendix 11.2.</p>
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11.4.5 In addition to the written scoping responses presented above, further consultation and face-to-face meetings were organised with SNH to discuss potential ornithological mitigation measures in more detail. Results of this consultation process have been included within the Good Practice & Mitigation Section of the Confidential Ornithology Appendix 11.2.

11.5 Methodology

Desk Study

11.5.1 The desk study included a review of ornithologically important data from the following sources:

- Existing data on statutory designated sites available through SNH Sitelink website (SNH, n.d.) (up to 10 km from Loch a Choire Ghlais);
- Existing records of Red List, Annex 1 and Schedule 1 bird species through the Atlas of Living Scotland (NBN, n.d.) (up to 10 km from Loch a Choire Ghlais);
- The UK Biodiversity Action Plan (UKBAP) (JNCC, n.d.) and Lochaber LBAP (Lochaber Biodiversity Group, 2004); and
- The Scottish Biodiversity List (SBL) (Scottish Government, 2013b).

Field Survey

11.5.2 A programme of bird surveys were undertaken in order to identify those birds likely to be affected by The Proposed Development and thereby inform the impact assessment process. The bird surveys were undertaken on May 11th and 12th, June 12th and 13th, and July 27th and 28th 2017 by a highly experienced field surveyor and Lead Principal Ornithologist at EnviroCentre Limited.

11.5.3 The methods used in the surveys followed SNH guidelines (SNH 2005, 2009). Areas of open ground were surveyed by the standard upland breeding bird survey method (Brown and Shepherd, 1993), and the forested areas, mixed areas of human habitation and agricultural land were surveyed using an adapted version of the Breeding Bird Survey (BBS) (BTO, 1994) and Common Bird Census (CBC) (Marchant, 1983).

Evaluation of Important Ecological Features

- 11.5.4 The evaluations are applied to those species that have been scoped in to the assessment and those that are predicted to be affected by the project. These are termed Important Ecological Features (IEFs).
- 11.5.5 European, national and local governments and specialist organisations have together identified a large number of species that provide the key focus for biodiversity conservation in the UK and Ireland, supported by policy and legislation. These provide an objective starting point for identifying the important ecological features that need to be considered.
- 11.5.6 The importance of each species is determined through consideration of three factors. Firstly, its legal protection; secondly, its conservation status; and finally, the population size at the site as a percentage of the European and national population sizes.
- 11.5.7 These three factors are described in more detail below.

Legal Protection of Bird Species

- 11.5.8 Wild birds within the UK are protected under both European and national legislation. On a European scale, The Birds Directive, or European Directive 2009/147/EC (the codified version of EEC Directive 79/409/EEC as amended), relates to the conservation of all species of naturally occurring birds in the wild state. It covers the protection, management and control of these species and applies to birds, their eggs, nests and habitats.
- 11.5.9 It requires measures to be taken to address the factors that may affect the numbers of birds, namely, the repercussions of man's activities and, in particular, the destruction and pollution of their habitats, in order to maintain populations at a level that corresponds to ecological, scientific and cultural requirements. The Directive requires, in particular, that species mentioned in Annex 1 shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution. Those species that are the subject of special conservation measures under the Directive are referred to as Annex 1 species.
- 11.5.10 Part I of Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) lists those birds that are protected by special penalties at all times, and provides the highest level of protection in the UK. Part II lists birds that are protected by special penalties during the close season. Those species that are protected by special penalties under the Act are referred to as Part I of Schedule 1, or Part II of Schedule 1 species.

Conservation Status of Bird Species

- 11.5.11 Wild birds may be listed as Priority Species in Biodiversity Action Plans at national (UK BAP) and local (LBAP) levels. These plans are non-statutory, but aim to describe the biological diversity of the UK, and to set out detailed measures for their conservation, in order to contribute to fulfilling the UK's international and national obligations.
- 11.5.12 The global conservation status of birds is defined in the IUCN Red List Categories and Criteria (IUCN, 2001). The general aim of this system is to provide an explicit, objective framework for the classification of species according to their extinction risk. This is the

world's most comprehensive inventory of the global conservation status of species and those categorised as Threatened may be further categorised on a decreasing scale as Critically Endangered, Endangered or Vulnerable.

- 11.5.13 Those species not considered as Threatened may be categorised as Near Threatened when close to qualifying, or if likely to qualify in the future. A species at the lowest level of threat is categorised as Least Concern, and widespread and abundant species are included in this category. When there is inadequate information to make an assessment, a species may be categorised as Data Deficient.
- 11.5.14 The European conservation status of birds is determined by Birdlife International in their European Red List of Birds (BirdLife International, 2015), which identifies priority species in order that conservation action can be taken to improve their status taken from the IUCN Red List assessment of regional extinction risk. Such birds are described as European Red List of Birds Species (ERLOB).
- 11.5.15 The national conservation status of birds is determined by their listing on the Red, Amber and Green lists of Birds of Conservation Concern (BoCC), as defined by Eaton *et al.* (2015). The criteria used to assign a species to one of these lists reflect each species' global, European and UK status and measure the importance of the UK populations in international terms.
- 11.5.16 BoCC Red List species are either globally Threatened using IUCN criteria; have suffered a severe decline since 1800 without substantial recent recovery; have suffered a severe decline in breeding or non-breeding population of more than 50% over 25 years; or suffered a severe decline in breeding range of more than 50%, measured by birds present in 10 km squares, over 25 years.
- 11.5.17 BoCC Amber List species must have been identified as an ERLOB; or have been Red listed for historical decline in a previous review, but with a substantial recent recovery; or have a moderate (25%-50%) decline in breeding or non-breeding populations or breeding range over the past 25 years; or have a UK breeding population of fewer than 300 pairs, non-breeding population of fewer than 900 individuals; or have at least 50% of the UK breeding or non-breeding population found in 10 or fewer sites; or be species of international importance with at least 20% of the European breeding or non-breeding population found in the UK.
- 11.5.18 BoCC Green List species comprise all regularly occurring species that do not qualify under any of the Red or Amber criteria. The Green list also includes those species listed as recovering from historical decline in the last review that have continued to recover and do not qualify under any of the other criteria.

Population Size at the Site

- 11.5.19 To establish the importance of the population size at the site, the size of the European and national populations need to be estimated. In determining the size of the UK population, reference is made to the websites of three organisations: the RSPB (RSPB, 2012), the British Trust for Ornithology (BTO) (BTO, 2012), and the Joint Nature Conservation Committee (JNCC) (JNCC, 2012). Scottish populations are determined using The Birds of Scotland (Forrester *et al.*, 2012). Where there is variation between the estimates provided by these organisations, the range of estimates is provided.

11.5.20 Table 11.2 shows a procedure for determining the geographical level of importance of bird species. Where a feature is important at more than one level in the table, its overriding importance is that of the highest level. Usually only the highest level of legal protection is listed.

Table 11.2: Geographical Level of Importance of Ecological Features

Level of Importance	Assessment Criteria		
	Legal protection	Conservation status	Population size
International	Any species within Annex 1 of the EU Birds Directive (The European Union, 2009)	Any species which is listed as Critically Endangered or Endangered on the IUCN Red List (IUCN, 2001)	Supporting greater than 1% of EC population
National (UK/England)	Any species within Schedule 1 of the Wildlife and Countryside Act (UK Government, 1981)	Any species that is listed as a Priority Species in the UKBAP (JNCC, n.d.); any species on the BoCC Red List (Eaton et al., 2015)	Supporting greater than 1% of UK population
National (Scotland)		Any species on the Scottish Biodiversity List (Scottish Government, 2013b)	Supporting greater than 5% of the Scottish population
Regional		Any species on the BoCC Amber List	Supporting greater than 0.5% of UK population
County		Any species that is listed as a Priority Species in the LBAP (Lochaber Biodiversity Group, 2004)	Supporting greater than 0.05% of UK population
Local		BoCC Green List; or species with no conservation concern; common and widespread throughout the UK	Supporting less than 0.05% of UK population

Impact Assessment

11.5.21 The assessment of impacts describes how the baseline conditions would change as a result of the project and its associated activities and from other developments. The term ‘impact’ is used commonly throughout the EIA process and is usually defined as a change experienced by a receptor (this can be positive, neutral or negative). The term ‘effect’ is commonly used at the conclusion of the EIA process and is usually defined as the consequences for the receptor of an impact after mitigation measures have been taken into account. The EIA Regulations specifically require all likely significant effects to be considered. Therefore, impacts and effects are described separately and the effects for the IEFs are assessed as being either significant or not according to the importance and sensitivity of the IEF.

11.5.22 Significant cumulative effects can result from the individually insignificant but collectively significant effects of actions taking place over a period of time or concentrated in a location, for example:

- Additive / incremental; and
- Associated / connected.

Assessment Criteria - Magnitude

- 11.5.23 The CIEEM guidance states that when describing changes/activities and positive or negative impacts on ecosystem structure and function, reference should be made to the following parameters:
- Magnitude;
 - Extent;
 - Duration;
 - Reversibility; and
 - Timing and frequency.
- 11.5.24 **Magnitude:** refers to the size, amount, intensity and volume of an impact, determined on a quantitative basis if possible, but typically expressed in terms of relative severity, such as major, moderate, low or negligible. Extent, duration, reversibility, timing and frequency of the impact can be assessed separately but they tie in to determine the overall magnitude.
- 11.5.25 **Extent:** the area of which the impact occurs. When the IEF is the habitat itself, magnitude and extent may be synonymous.
- 11.5.26 **Duration:** the time for which the impact is expected to last prior to recovery or replacement of the IEF. This is defined in relation to ecological characteristics, rather than human timeframes. The duration of an activity may differ from the duration of the resulting impact caused by the activity and this is taken into account.
- 11.5.27 **Reversibility:** an irreversible (permanent) impact is one from which recovery is not possible within a reasonable timescale or for which there is no reasonable chance of action being taken to reverse it. A reversible (temporary) impact is one from which spontaneous recovery is possible or for which effective mitigation is possible and an enforceable commitment has been made.
- 11.5.28 **Timing and frequency:** the number of times an activity occurs will influence the resulting impact. The timing of an activity or change may cause an impact if it happens to coincide with critical life-stages or seasons.
- 11.5.29 Criteria for describing the magnitude of an impact are presented in Table 11.3.

Table 11.3: Criteria for Describing Magnitude of Impact

Magnitude	Description
Major	Total or major loss or alteration to the IEF, such that it will be fundamentally changed and may be lost from the site altogether; and/or loss of a very high or high proportion of the known population or range of the IEF.
Moderate	Loss or alteration to the IEF, such that it will be partially changed; and/or loss of a moderate proportion of the known population or range of the IEF.
Low	Minor shift away from the existing or predicted future baseline conditions. Change arising from the loss or alteration will be discernible but the condition of the IEF will be similar to the pre-development conditions; and/or having a minor impact on the known population or range of the IEF.
Negligible	Very slight change from the existing or predicted future baseline conditions. Change barely discernible, approximating to the 'no change' situation; and/or having a negligible impact on the known population or range of the IEF.

Assessment Criteria – Significance

- 11.5.30 Significance is a concept related to the weight that is attached to effects when decisions are made. For the purposes of EclA, a ‘significant effect’ is an effect that either supports or undermines biodiversity conservation objectives for IEFs. In broad terms, significant effects encompass effects on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution).
- 11.5.31 Significant effects are quantified with reference to an appropriate geographic scale (see Table 11.2 above). The CIEEM guidance has one ‘level of importance’ and a geographical ‘scale of significance’. This is to deal with the fact that the geographical scale at which the effect is significant is not necessarily the same as the geographic level of importance of the IEF.
- 11.5.32 A sensitivity scale is used, along with professional judgement, to determine the significance of effects, as shown in Table 11.4:

Table 11.4: Sensitivity of Important Ecological Features

Sensitivity	Definition
High	Tolerance: The IEF has a very limited tolerance of the effect.
	Adaptability: The IEF is unable to adapt to the effect.
	Recoverability: The IEF is unable to recover, resulting in permanent or long term (>10 years) change.
Medium	Tolerance: The IEF has limited tolerance of the effect.
	Adaptability: The IEF has limited ability to adapt to the effect.
	Recoverability: The IEF is able to recover to an acceptable status over the medium term (5-10 years).
Low	Tolerance: The IEF has some tolerance of the effect.
	Adaptability: The IEF has some ability to adapt to the effect.
	Recoverability: The IEF is able to recover to an acceptable status over the short term (1-5 years).
Negligible	Tolerance: The IEF is generally tolerant of the effect.
	Adaptability: The IEF can completely adapt to the effect with no detectable changes.
	Recoverability: The IEF is able to recover to an acceptable status near instantaneously (<1 year).

- 11.5.33 Consideration of conservation status is important for assessing the significance of effects of impacts on individual habitats and species. The Habitats Directive provides a helpful definition of conservation status for habitats and species (as defined by Articles 1 (e) and 1(i)):
- 11.5.34 *For habitats, conservation status is determined by the sum of the influences acting on the habitat and its typical species, that may affect its long-term distribution, structure and functions as well as the long-term survival of its typical species within a given geographical area; and*
- 11.5.35 *The conservation status of natural habitats will be taken as ‘favourable’ when:*
- i. its natural range and areas it covers within that range are stable or increasing, and*
 - ii. the species structure and functions which are necessary for its long term maintenance exist and are likely to continue to exist for the foreseeable future, and*
 - iii. the conservation status of its typical species is favourable as defined in Article 1(i).*

11.5.36 *For species, conservation status is determined by the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area.*

11.5.37 *The conservation status of species will be taken as 'favourable' when:*

- i. population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and*
- ii. the natural range of the species is neither being reduced for the foreseeable future, and*
- iii. there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.*

Assessment Criteria – Confidence in Predictions

11.5.38 CIEEM does not cover levels of confidence in predictions adequately, therefore an approach has been adopted based on river conservation evaluation (SNH, 2001). A simple, qualitative index based on professional judgement is assigned to each predicted effect as follows:

- A: high confidence
- B: intermediate confidence
- C: low confidence

11.5.39 Factors influencing confidence include:

- The frequency and effort of field sampling;
- Constraints to the field survey;
- The completeness of the data (field and desk);
- The age of the data (although recent data are not necessarily always more reliable than old data);
- The state of scientific knowledge relating to the predicted effects of development activities on the IEF (the accuracy of the magnitude assessment); and
- The accuracy of the assessment of significance.

Assessment Criteria – Success of Mitigation

11.5.40 It is necessary to consider five potentially distinct kinds of counter-acting measures for the effects of a project on ornithology as follows:

- Avoidance;
- Cancellation;
- Reduction;
- Remedial / compensatory; and
- Enhancement / net beneficial.

11.5.41 The word 'mitigation' has developed a wider meaning and common usage in environmental assessment than its strict meaning related to reducing the severity of something. Mitigation can sometimes be used as a generic term for a wide range of counter-acting measures, all of which, as the Directive and Regulations prescribe, are intended to *prevent, reduce and where possible offset any significant adverse effect on the environment*. Mitigation can be used to encompass measures intended to avoid, cancel or reduce adverse effects (this is the 'mitigation hierarchy').

11.5.42 Mitigation and compensation measures often carry a degree of uncertainty. Uncertainty associated with a design will vary according to a number of factors, such as:

- The technical feasibility of what is proposed;
- The overall quantity of what is proposed;
- The overall quality of what is proposed;
- The level of commitment provided to achieve what is proposed;
- The provision of long-term management; and
- The timescale for predicted benefits.

11.5.43 The following objective scale is used for the success of mitigation:

- Certain/near certain: probability estimated at 95% chance or higher.
- Probable: probability estimated above 50% but below 95%.
- Unlikely: probability estimated above 5% but less than 50%.
- Extremely unlikely: probability estimated at less than 5%.

11.6 Potential Impacts of The Proposed Development

11.6.1 The Proposed Development would comprise the following main activities prior to, during and after the construction period, which could potentially negatively impact on ornithology in the absence of effective mitigation.

11.6.2 Preliminary activities prior to the main construction contract:

- Increased human and vehicular presence in the area; and
- Vegetation clearance.

11.6.3 Construction phase:

- Access and travel on/off-site, including temporary access routes for construction vehicles and vessels;
- Areas for plant maintenance and for storage of oils, fuels and chemicals;
- Movement of materials to/from or within the site;
- Acoustic disturbance and vibration from construction activities;
- Assembly areas for components of construction;
- Blasting operations;
- On-site borrow pits;
- Soil stripping;
- Environmental incidents and accidents e.g. spillages, noise and emissions;
- Lighting;
- Provision of services and utilities;
- Setup and subsequent removal of site offices/compounds and final site clearance after construction;
- Storage areas for construction / excavated materials;
- Structural works for new building and engineering; and
- Vegetation/habitat clearance including tree felling.

11.6.4 Operational phase:

- Access to site (both route and means) for maintenance purposes;
- Presence of people, vehicles and their activities;
- Physical presence of structures e.g. new tracks, dam, buildings;

- Fluctuating water levels within the newly-created upper reservoir and Loch Lochy; and
- Site operation and management e.g. maintenance operations, industrial processes generating emissions, lighting, noise, use of a road by traffic etc.

11.6.5 Potential non-standard operations:

- One-off incidents and accidents (including fuel leaks and spills, vandalism, erosion and sediment runoff).

11.6.6 The Proposed Development could potentially positively impact on ornithology post-construction in the following ways:

- Potential increased bird nesting areas in new plantings around the site boundary and on buildings; and
- Increase in freshwater habitat in and around the reservoir.

11.7 Baseline Conditions

Designations

11.7.1 There are no sites designated for their birdlife within the study area. The nearest designated site is the West Inverness-shire Lochs SPA, which lies approximately 6.5 km to the north. It is designated for its breeding Black-throated Diver (*Gavia arctica*) and Common Scoter (*Melanitta nigra*) populations. Suitable breeding habitat for these species is not present within the study area for The Proposed Development.

11.7.2 There are no other sites designated for their ornithology within 10 km of The Proposed Development.

Priority Species

Desk Study

11.7.3 A search of the relevant sources (see paragraph 11.5.1) was conducted over a 10 km radius from Loch a Choire Ghlais for species afforded extra legal protection, and a 5 km radius from Loch a Choire Ghlais for those with high levels of conservation concern.

11.7.4 The following Annex 1 species have been recorded within 10 km of the site:

- Hen Harrier (*Circus cyaneus*): there have been two records up to 2005 - approximately 2 km southeast and 10 km north;
- Golden Eagle (*Aquila chrysaetos*): there have been several records up to 2015 within 10 km;
- Peregrine (*Falco peregrinus*): there have been three records up to 2011 - approximately 2 km southeast, 5 km west and 10 km north;
- Merlin (*Falco columbarius*): there have been two records up to 2011 - approximately 8 km west and 10 km north;
- Black-Throated Diver: there have been three records up to 2009 - approximately 8 km west, 9 km southwest and 10 km north; and
- Red-Throated Diver (*Gavia stellata*): there have been three records up to 2011 - approximately 3 km east, 6 km south and 10 km north.

- 11.7.5 The following Schedule 1 species have been recorded within 10 km of the site:
- Scottish Crossbill (*Loxia scotica*): there have been eight records up to 2015 - approximately 2 km east, 5 km northeast, 9 km northeast, 10 km northeast, 9 km north, 10 km northwest, 8 km west and 9 km southwest; and
 - Barn Owl (*Tyto alba*): there have been six records up to 2012 - approximately 2 km east, 5 km southeast, 6 km east (two records), 8 km north and 9 km northeast.

- 11.7.6 The following BoCC Red List species have been recorded within 5 km of the site:
- Ring Ouzel (*Turdus torquatus*): there have been four records within 1 km, one record approximately 2 km northeast, one record approximately 3 km northeast, and one record approximately 4 km northeast.

- 11.7.7 There are also an additional 50 species listed on various biodiversity lists (UKBAP, SBL and the LBAP) which may potentially be relevant to habitats found in the study area.

Field Study

- 11.7.8 A total of 52 species was recorded during the field study. Nine species were recorded on Brown & Shepherd walkover surveys on the open moorland and mountainous areas of The Proposed Development, 23 species were recorded within the forested habitat along the proposed upgrade of existing forestry tracks, and 47 species were recorded in the mixed habitat along the side of Loch Lochy, Ceann Loch, and the Caledonian Canal.

- 11.7.9 Of the total species recorded, Golden Eagle and Merlin are included on Annex 1 of the Birds Directive and Schedule 1 of the Wildlife and Countryside Act, and further information on these records can be found within the Confidential Ornithology Appendix 11.2. These species are not assessed further within this Chapter.

- 11.7.10 (Common) Crossbill (*Loxia curvirostra*) and Greenshank (*Tringa nebularia*) are included on Schedule 1 of the Wildlife and Countryside Act.

- 11.7.11 Seven species recorded are Priority Species on the UKBAP: Dunnock (*Prunella modularis*), House Sparrow (*Passer domesticus*), Lesser Redpoll (*Acanthis cabaret*), Reed Bunting (*Emberiza schoeniclus*), Song Thrush (*Turdus philomelos*), Spotted Flycatcher (*Muscicapa striata*), and Woodcock (*Scolopax rusticola*).

- 11.7.12 Twelve species recorded have been placed on the BoCC Red List: Cuckoo (*Cuculus canorus*), Grey Wagtail (*Motacilla cinerea*), House Sparrow, Lesser Redpoll, Mistle Thrush (*Turdus viscivorus*), Merlin, Skylark (*Alauda arvensis*), Song Thrush, Spotted Flycatcher, Starling (*Sturnus vulgaris*), Tree Pipit (*Anthus trivialis*), and Woodcock.

- 11.7.13 Twelve species recorded have been placed on the BoCC Amber List: Common Sandpiper (*Actitis hypoleucos*), Common Gull (*Larus canus*), Dunnock, Bullfinch (*Pyrrhula pyrrhula*), Greenshank, House Martin (*Delichon urbica*), Lesser Black-backed Gull (*Larus fuscus graellsii*), Meadow Pipit (*Anthus pratensis*), Mallard (*Anas platyrhynchos*), Oystercatcher (*Haematopus ostralegus*), Reed Bunting, and Willow Warbler (*Phylloscopus trochilus*).

- 11.7.14 The remaining 26 species recorded have been placed on the BoCC Green List. These include Blackbird (*Turdus merula*), Blackcap (*Sylvia atricapilla*), Blue Tit (*Cyanistes caeruleus*), Buzzard (*Buteo buteo*), Canada Goose (*Branta canadensis*), Chaffinch (*Fringilla coelebs*),

Coal Tit (*Periparus ater*), Goldcrest (*Regulus regulus*), Goldfinch (*Carduelis carduelis*), Great Spotted Woodpecker (*Dendrocopos major*), Great Tit (*Parus major*), Greenfinch (*Carduelis chloris*), Grey Heron (*Ardea cinerea*), Hooded Crow (*Corvus cornix*), Pheasant (*Phasianus colchicus*), Pied Wagtail (*Motacilla alba yarrellii*), Raven (*Corvus corax*), Robin (*Erithacus rubecula*), Sand Martin (*Riparia riparia*), Sedge Warbler (*Acrocephalus schoenobaenus*), Siskin (*Carduelis spinus*), (Barn) Swallow (*Hirundo rustica*), Stonechat (*Saxicola rubicola*), (Northern) Wheatear (*Oenanthe oenanthe*), Woodpigeon (*Columba palumbus*), and Wren (*Troglodytes troglodytes*).

- 11.7.15 The majority of the 52 species recorded constitute abundant species within the study area recorded many times within suitable habitat (e.g. Meadow Pipit in rough pasture and moorland habitats and Chaffinch, Wren, Blackbird amongst many others in forested habitats), and The Proposed Development would not impact on their local or national populations, and therefore they have been scoped out of the assessment process.
- 11.7.16 Several species afforded extra protection under Schedule 1 (Greenshank), or considered to have a high conservation concern by appearing on the UKBAP or the BoCC Red List (Dunnock, House Sparrow, Reed Bunting and Starling) were recorded within the study area, but in areas located away from The Proposed Development, or in habitats that will not be directly, or indirectly, affected by The Proposed Development. These species have also been scoped out of the assessment process.
- 11.7.17 Several species are also afforded protection under Schedule 1 ((Common) Crossbill), or considered to have a high conservation concern by appearing on the UKBAP or the BoCC Red List: (Cuckoo, Grey Wagtail, Lesser Redpoll, Mistle Thrush, Skylark, Song Thrush, Spotted Flycatcher, Tree Pipit and Woodcock). These species were recorded in a variety of habitats that could be affected by The Proposed Development, most likely through habitat loss from their preferred foraging or nesting locations with the creation of access tracks through open moorland, rough pasture and agricultural land, or the felling of trees and loss of the forest understorey in wooded areas.

Prediction of Future Baseline & Modifying Influences

- 11.7.18 With no change to the management of the moorland habitat, bird life would remain in the current state, and any fluctuations in species' populations would be due to natural changes, although the diversity of species is likely to remain the same.
- 11.7.19 All the commercial forestry areas are likely to be felled in the future, which would lead to short-distance dispersal of those species currently found in the many plantations along the access routes. Should there be replanting of native trees to replace the coniferous blocks, the diversity of species may increase as a result over a long time period. Should the woodland areas be clear felled and left open, the diversity of species would likely drop, but it could lead to an increase in raptor activity in the short term as prey items would become more visible, especially in the former woodland blocks adjacent to the moorland.
- 11.7.20 Bird activity in the agricultural land, rough pasture, and lochside fields along the Loch Lochy public road depends on the land management, but it is likely to remain stable providing the area remains undeveloped in terms of additional housing and infrastructure, and the current intensity of farming continues. Should land be lost to development along the lochside, diversity in the local area may drop as suitable habitat for many breeding species will be lost. Similarly, should farming intensity increase, the land use may lead to a local

decline in certain species which are currently seen in the area. There is similar, suitable moorland, rough pasture and low-intensity agricultural land along the length of the Great Glen, and in areas above the plantation forestry which covers much of the lower slopes of the Great Glen.

11.8 Evaluation

Species

11.8.1 Evaluations are only applied to those species where there is the potential for impacts that could result in significant adverse ecological effects as a result of The Proposed Development.

11.8.2 Although the ten species listed in Paragraph 11.7.17 may potentially be affected by The Proposed Development, once the appropriate mitigation measures listed in Sections 11.10 and 11.11 have been implemented, any residual effects on their preferred habitat will be minimised, and the effect on them will be not significant. As a result, these species are not being assessed further.

11.9 Assessment of Ecological Impacts

Negative Construction Impacts

Impacts of Habitat Loss

11.9.1 Although The Proposed Development is not considered to result in significant adverse ecological effects to the general birdlife of the area, the following section assesses the impacts of habitat loss on the birdlife of the area. For an assessment of the habitats, please refer to Chapter 10: Terrestrial Ecology.

11.9.2 The construction of new, permanent access tracks and the upgrading of existing access tracks will lead to a loss of plantation forest, open moorland and agricultural land in the area, currently used as nesting and foraging habitats for several species recorded during the surveys.

11.9.3 The construction of the proposed dam and reservoir would lead to a loss of rocky moorland habitat, currently used infrequently by several species as a foraging, nesting or loafing site.

11.9.4 The construction of the proposed Lower Control Works, and potential fluctuations in loch depth would lead to a loss of loch shoreline. This area is infrequently used by birds to forage and loaf.

Impacts of Disturbance

11.9.5 Disturbance (both noise and visual) from the increase in human and vehicular traffic on site, and the creation of borrow pits, construction of the dam, reservoir, site establishment areas, access tracks, lower control works, jetty and administration building would be across the whole site at some point through the construction phase. Despite being irregular and localised within the site for much of the construction period, birds may be displaced from foraging, nesting or loafing in their preferred location.

Negative Operational Impacts

Impacts of Disturbance

- 11.9.6 Due to the reduced volume of traffic and personnel on site, the probability of any effects on birdlife from disturbance during the post-construction, operational phase of the project is unlikely, and will be restricted to visual disturbance to foraging birds being startled by vehicles using the access tracks for maintenance visits.

Positive Operational Impacts

- 11.9.7 Once the construction phase is complete, and the newly-created reservoir has settled, the greater size of waterbody may increase the opportunity for a variety of species to use the new source of fresh water as a safe location to roost or loaf. This may apply to gulls (or other species) using the Great Glen as a flyway between the east and west coasts.

11.10 Good Practice & Mitigation

During Construction

- 11.10.1 There are several mitigation measures proposed to ensure potential effects on birds are minimised during the construction of The Proposed Development. These measures, outlined below, assume an Ecological Clerk of Works (ECoW) would be employed as required, during the construction phase to ensure that disturbance within sensitive ecological areas is kept to an absolute minimum and contractors are aware of procedures to follow should they encounter a protected bird within the vicinity of the proposed works. Likely specific tasks are listed below.
- 11.10.2 During the early breeding season, regular monitoring during the progression of the construction works should be undertaken by the appointed ECoW to ensure that any species nesting, or considering nesting, within close proximity of construction activity is detected, and suitable deterrence or protection measures are implemented at an early stage in agreement with the relevant statutory bodies. This is particularly important along the North Laggan to Kilfinnan public road, where most bird activity is located.
- 11.10.3 Where construction is required during the breeding season, the following mitigation procedures are recommended:
- All defined routes of access track should be surveyed by a suitably qualified ornithologist before the start of construction to ascertain the potential risk to any breeding birds within the immediate construction area and a 100 m buffer on the open moorland, and within 50 m of any works undertaken in the forested areas; and
 - In the event that nesting birds are present within the construction areas, or a risk of disturbance is identified, then appropriate measures should be taken to ensure that the potential for any significant effects is avoided. This may involve measures on the ground such as establishment of buffer-zones around nests to prevent any activity, as advised by the appointed site ECoW.
- 11.10.4 The estimated success rate of all the above mitigation measures are considered to be Certain.

Operational Measures

- 11.10.5 There is not considered to be any need for any mitigation measures during the operational phase.
- 11.10.6 Further mitigation measures to ensure impacts during the construction and operational phases of The Proposed Development on protected bird species are minimised can be found in the Confidential Ornithology Appendix 11.2.
- 11.10.7 The estimated success rate of all the above mitigation measures are considered to be Certain.

11.11 Compensation & Enhancement

- 11.11.1 In the lowland and forested areas, habitat compensation and enhancement can be provided once construction has been completed. In areas disturbed by construction activities and identified for new planting, a selection of native tree and berry-bearing bush species could be planted to increase the food source for a variety of passerines.

11.12 Further Survey Requirements

- 11.12.1 If construction of The Proposed Development commences on open ground during the bird breeding season (March to August), or tree felling is planned in the spruce plantations between February and August (to account for the potential of breeding (Common) Crossbill), pre-construction surveys should be undertaken by a qualified ornithologist to ensure that no nesting bird will be affected by the imminent works.

11.13 Monitoring

- 11.13.1 Information on a potential monitoring programme of protected bird species prior to construction commencing, and during the construction and operational phases of The Proposed Development can be found in the Confidential Ornithology Appendix 11.2.

11.14 Cumulative Effects

- 11.14.1 Due to the impacts and effects of The Proposed Development being considered unlikely and not significant to the general bird life of the area, no cumulative effects have been considered.
- 11.14.2 Cumulative effects with other developments in the planning system relating to protected bird species can be found within the Confidential Ornithology Appendix 11.2.

11.15 Residual Effects

- 11.15.1 The effect on general bird life from The Proposed Development will be not significant, so once the proposed mitigation measures have been successfully implemented during the construction phase, and The Proposed Development is operational, no residual effects are considered likely.
- 11.15.2 Residual effects relating to protected bird species can be found within the Confidential Ornithology Appendix 11.2.

11.16 Conclusions

- 11.16.1 The impacts on general bird life from the construction and operational phases of The Proposed Development are considered to be negligible and not significant.
- 11.16.2 Once the recommended mitigation measures (provision of an ECoW; pre-construction monitoring of nest sites; marking no-go areas to avoid sensitive nesting areas; et cetera) have been successfully implemented, the residual effects will remain negligible, and not significant.
- 11.16.3 This conclusion does not take into account the presence of protected bird species. For concluding comments which include all species recorded within The Proposed Development, please refer to the Confidential Ornithology Appendix 11.2.

11.17 References

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