

Creag Dhubh to Inveraray 275 kV Connection Environmental Impact Assessment

Volume 4 | Appendix 9.1

Ornithology Methodology

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List of Abbreviations

BAP	Biodiversity Action Plan
BBS	Breeding Bird Survey
BNG	British National Grid
CIEEM	Chartered Institute of Ecology and Environmental Management
CRA	Collision Risk Assessment
EIAR	Environmental Impact Assessment Report
IBA	Important Bird Area
IPCC	Intergovernmental Panel on Climate Change
LOD	Limits of Deviation
NHZ	Natural Heritage Zone
NNR	National Nature Reserve
OHL	Overhead Line
SPA	Special Protection Area
SNH	Scottish Natural Heritage
SSSI	Site of Special Scientific Interest
VP	Vantage Point
WCA	Wildlife and Countryside Act

1 INTRODUCTION

1.1 Introduction

1.1.1 This Technical Appendix presents full details of the methodology and results for the field surveys undertaken for the Proposed Development, including references to best practice, and impact assessment methodology. It should be read in conjunction with **Chapter 9: Ornithology and Chapter 2: Description of The Proposed Development (EIAR Volume 2)**.

1.2 Method of Baseline Data Collection

Field Surveys 2018-19

1.2.1 Surveys were conducted by Ramboll Ornithologists between February 2018 and January 2019. The surveys included Vantage Point (VP) Surveys, Black Grouse *Lyrurus tetrrix* Surveys and Breeding Bird Surveys (BBS) (hereafter collectively referred to as the ornithological surveys).

Vantage Point Surveys

1.2.2 VP surveys undertaken in 2018-19 consisted of watches between February 2018 and January 2019; at eight VP survey locations. These survey locations are shown on **Figure 9.2, EIAR Volume 3a**.

- VP1 (British National Grid Reference [BNG]) NN 06647 08325;
- VP2 BNG NN 10165 11653;
- VP3 BNG NN 09240 14341;
- VP4 BNG NN 09906 18173;
- VP5 BNG NN 15286 15212;
- VP6 BNG NN 15103 20683;
- VP7 BNG NN 02724 13602; and
- VP8 BNG NN 03638 16391.

1.2.3 The VP Locations were designed to cover the Routeing Survey Area, as it was defined in 2018. Surveys were undertaken following methods outlined in NatureScot (previously Scottish Natural Heritage [SNH]) guidance documents^{1,2}). Target species of the VP surveys included the qualifying interest species of Glen Etive and Glen Fyne SPA (golden eagle). Target species also included birds listed on Schedule 1 of the Wildlife and Countryside Act (WCA) 1981 (as amended)³ and birds vulnerable to collisions with powerlines, such as geese and swans.

1.2.4 Flights were recorded as per guidance⁴, with each flight divided into 15 second intervals and each interval assigned to a height band related to the configuration of wires on the OHL. At the commencement of surveys, the Proposed Development comprised towers of up to 55 m tall therefore the height bands were defined as follows:

- Band A – below collision risk height (0 – 5 m);
- Band B – at collision risk height (5 – 55 m); and
- Band C – above collision risk height (>55 m).

¹ Scottish Natural Heritage (2014) Recommended bird survey methods to inform impact assessment of onshore wind farms. SNH Guidance Document.

² Scottish Natural Heritage (2016) Assessment and Mitigation of Impacts of Power Lines and Guyed Meteorological Mats on Birds.

³ The Wildlife and Countryside Act (as amended): <http://www.legislation.gov.uk/ukpga/1981/69> [Accessed 17 August 2021]

⁴ Scottish Natural Heritage (2016) Assessment and Mitigation of Impacts of Power Lines and Guyed Meteorological Mats on Birds.

2021-22 Surveys

Vantage Point Surveys

1.2.5 A further programme of VP surveys was undertaken by Ramboll UK Limited ornithologists between March 2021 and April 2022 to record flight activity associated with the Proposed Development. This survey focussed on the Route Options as they were defined in March 2021, using VP Locations 2, 3, 4, 7 and 8 (or slightly altered locations) from the 2018-19 surveys. As the Routeing Study progressed VP Locations 7 and 8 were dropped after routes they were covering were dropped, after March 2021. The methodology used was consistent with the 2018-2019 surveys and best practice guidance⁵.

- VP2 BNG NN 09880 11678;
- VP3 BNG NN 09793 14353;
- VP4 BNG NN 09906 18173;
- VP7 BNG NN 02724 13602; and
- VP8 BNG NN 03638 16391.

Black Grouse Surveys

1.2.6 Black grouse surveys were undertaken to cover the Ornithology Field Survey Area. Methods followed those outlined in Gilbert et. al. 1998⁶. Surveyors stopped at various locations within the Ornithology Field Survey Area and listened for the distinctive calls made by black grouse when lekking. Surveyors also used binoculars to scan for birds.

Breeding Bird Surveys

1.2.7 The Breeding Bird Survey (BBS) used a combination of Common Bird Census methodology⁷ and Brown and Shepherd methodology for survey of upland waders⁸ by walking to within 100 m of all points within the Limit of Deviation (LOD) of the Proposed Development. This survey was undertaken in spring/summer 2021, following the Preferred Route Option at that time. Surveys were repeated in spring/summer 2022 to cover the Proposed Alignment.

1.2.8 When birds were observed or heard, their behaviour was recorded. Where this indicated territorial behaviour, e.g. singing, alarm calling, carrying food/nesting material, then it was interpreted to indicate a potential breeding territory. If territorial behaviour was recorded at the same location, by the same species on more than one survey visit, then it was considered to be a confirmed breeding territory. By combining the data and discounting records that were thought to be the same bird, the number of territories for each species could be estimated.

⁵ NatureScot (2017) Recommended bird survey methods to inform impact assessment of onshore wind farms. NatureScot Guidance.

⁶ Gilbert, G., Gibbons, D.W. & Evans, J. (1998) Bird Monitoring Methods, RSPB/BTO. pp. 394-396.

⁷ Bibby, C. J., Burgess, N., Hill, D. & Mustoe, S.H. (2000). Bird Census Techniques (2nd Edition). Academic Press.

⁸ Brown, A.F. and Shepherd, K.B. (1993). A method for censusing upland breeding waders. Bird Study 40: 189-195.

1.3 Analysis

Qualitative Collision Risk Assessment

- 1.3.1 The flight data collected was digitised using ArcGIS which was then used to undertake a qualitative Collision Risk Assessment (CRA). All flights by a particular species crossing⁹ the Proposed Development at collision risk height were counted giving the total number of bird crossings¹⁰ of the Proposed Development per species. The proportion of those bird crossings at collision height was then calculated and this was used to assess the level of flight activity.
- 1.3.2 Once the flight activity level was established then the CRA was undertaken considering the following factors about each bird species:
- Species group (e.g. raptor, wildfowl);
 - Species abundance;
 - Typical flight style/height; and
 - Agility/Manoeuvrability.
- 1.3.3 Using professional judgement and considering the above calculations and factors, a classification of collision risk of high, moderate, or low was reached in line with the Likelihood of Impact scale¹¹ (also set out in **Table 9.2, Chapter 9: Ornithology, EIAR Volume 2**) as follows:
- High: likely, very likely, extremely likely, and virtually certain to occur (67% to 100%);
 - Moderate: possible and more than likely to occur (34% to 66%); and
 - Low: extremely unlikely, very unlikely, and unlikely to occur (0% to 33%).

Assessment of Impacts

- 1.3.4 This assessment has been completed following CIEEM Guidelines (2019)¹².

Criteria for Evaluating Importance of Features

- 1.3.5 The ornithological features (designated sites, habitats, and species) identified have been assigned an ornithological importance using the guidance set out by CIEEM which refers to a geographic scale of importance. The classification of importance assesses ornithological features in relation to their population size, diversity, rarity, fragility, typicalness, connectivity with surroundings, intrinsic value, recorded history, and potential value. **Table 1.1** describes how the valuation of nature conservation features has been applied at different geographical scales and to different populations of species.

Table 1.1 Geographic Conservation Importance

Importance	Example
International	Internationally designated sites including SPA, Ramsar sites, potential SPAs and potential Ramsar sites; discrete areas which meet the published selection criteria for international designation, but which are not themselves designated as such, or smaller areas which are essential to maintain the viability of a larger whole. Important Bird Areas (IBA) are included

⁹ Including flights entering and leaving the LOD without fulling crossing.

¹⁰ A "bird crossing" being a count of one for every individual bird flying over the LOD, e.g. a flight by a group of 50 birds would count as 50 bird crossings.

¹¹ https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch1s1-6.html

¹² CIEEM (2019) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (Version 1.1) . Chartered Institute of Ecology and Environmental Management, Winchester.

Importance	Example
	<p>here as they are designations based on international population levels and trends though they are not statutory designations.</p> <p>Resident or regularly occurring populations of species which may be considered at an International/ European level¹, the loss of which would adversely affect the conservation status or distribution of the species at an International / European level. Resident or regularly occurring populations that contribute >1% of the international (European or worldwide) population.</p>
National	<p>Nationally designated sites including SSSI, NNR, Marine Nature Reserve; discrete areas which meet the published selection criteria for national designation, but which are not designated as such; or areas of habitat types identified in the UK Biodiversity Action Plan (BAP).</p> <p>Resident or regularly occurring populations of species which may be considered at the UK or National level², the loss of which would adversely affect the conservation status or distribution of the species across Britain or the Country. Resident or regularly occurring populations that contribute >1% of the national population.</p>
Regional	<p>Areas of a key habitat type identified in Regional BAPs; viable areas of key habitat identified as being of Regional importance in the appropriate Natural Heritage Zone (NHZ); or smaller areas of such habitat which are essential to maintain the viability of a larger whole.</p> <p>Resident or regularly occurring populations of species which may be considered at the Regional level, the loss of which would adversely affect the conservation status or distribution of the species across the Region. Resident or regularly occurring populations that contribute >1% of the regional population.</p>
County	<p>Designated sites at the local authority level in Scotland including statutory Local Nature Reserves and non-statutory Local Nature Conservation Sites; or discrete areas which meet the published selection criteria for designation, but which are not designated as such.</p> <p>Resident or regularly occurring populations of species which may be considered at the local authority level, the loss of which would adversely affect the conservation status or distribution of the species across the local authority area.</p>
Local	<p>A population of a species or assemblage considered locally important in the context of the immediate surrounding area.</p> <p>Resident or regularly occurring populations and supporting habitats of any bird species of conservation importance in the context of the immediate surrounding area.</p>
<p>Notes:</p> <p>1: Species protected at a European level means: bird species listed within the Birds Directive.</p> <p>2: Species protected, or which may be considered at the UK or National level means: birds listed within Wildlife and Countryside Act 1981 (as amended) Schedule 1 and / or listed for their principal importance for biodiversity in accordance with the Nature Conservation (Scotland) Act 2004 Section 2(4); species listed within the UKBAP or UK Red Data Books.</p>	

Criteria for Characterising Impacts

1.3.6 The parameters set out in

1.3.7 **Table 1.2** have been adopted to characterise impacts.

Table 1.2: Impact Characterisation

Parameter	Description
Direction	Impacts are either adverse (negative) or beneficial (positive).

Parameter	Description
Magnitude	<p>This is defined as high, medium, low or negligible, with these being classified using the following criteria:</p> <p>High: Total/near total loss of a bird population due to mortality or displacement or major reduction in the status or productivity of a bird population due to mortality or displacement or disturbance.</p> <p>Medium: Partial reduction in the status or productivity of a bird population due to mortality or displacement or disturbance.</p> <p>Low: Small but discernible reduction in the status or productivity of a bird population due to mortality or displacement or disturbance.</p> <p>Negligible: Very slight reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Reduction barely discernible, approximating to the 'no change' situation.</p>
Extent	The geographical area over which an impact occurs.
Duration	The time for which the impact is expected to last prior to recovery of the feature or replacement of the feature by similar resource (in terms of quality and / or quantity). This is expressed as a short term, medium term, or long-term effect relative to the ornithological feature that is impacted.
Frequency	The number of times an activity occurs will influence the resulting effect. For example, a single person walking a dog would likely be a low magnitude impact on nearby waders using wetland habitat, but numerous walkers would subject the waders to frequent disturbance, which might be an impact of medium or even high magnitude and could affect feeding success, leading to displacement of the birds and knock-on effects on their ability to survive.
Timing	The timing of an activity or change. This may result in an impact if it coincides with critical life-stages or seasons e.g. bird nesting season.
Reversibility	<p>Irreversible impacts: permanent changes from which recovery is not possible within a reasonable time scale or for which there is no reasonable chance of action being taken to reverse it.</p> <p>Reversible impact: temporary changes in which spontaneous recovery is possible or for which effective mitigation (avoidance / cancellation / reduction of effect) or compensation (offset / recompense / offer benefit) is possible.</p>
Likelihood of Impact	<p>The likelihood of an impact occurring. The following convention, adapted from the Intergovernmental Panel on Climate Change (IPCC)¹³, is adopted:</p> <p>Virtually certain > 99% probability of occurrence</p> <p>Extremely likely 96 - 99%</p> <p>Very likely 91 - 95%</p> <p>Likely 67 - 90%</p> <p>More likely than not 51 - 66%</p> <p>Possible 34 - 50%</p> <p>Unlikely 11 - 33%</p> <p>Very unlikely 6 - 10%</p> <p>Extremely unlikely < 5%</p>

¹³ https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch1s1-6.html

Parameter	Description
	While not a parameter defined in the CIEEM Guidance, likelihood has been used in this assessment where the chances of an effect resulting could vary. The percentages quoted are to give context for each of the likelihoods defined. The evaluation of likelihood has been undertaken qualitatively based on experience and professional judgement.

Limitations and Assumptions

- 1.3.8 Bird surveys are based on sampling techniques, not absolute *censi*. Results give an indication of numbers and activities of birds at the particular times that surveys were carried out. The surveys for the Proposed Development were distributed by time of day and by date throughout the year sufficient to give a representation of the range of activity, but were limited occasionally by inclement winter weather, though this did not compromise the overall survey effort.