4. ECOLOGY AND ORNITHOLOGY APPRAISAL

4.1 General Introduction

This chapter identifies the likely impacts on important ecology and ornithology features, referred to as Important Ecological and Ornithological Features (IEOFs – analogous with receptors in other assessments[1]) associated with the construction and operation of the Proposed Development. The objectives of the chapter are to:

- describe the ecological and ornithological baseline;
- identify the potential direct and indirect impacts on IEOFs; and
- describe any mitigation measures proposed to address likely impacts.

This chapter is supported by the following Figures (**Volume 3a**) and Technical Annexes (**Volume 2**):

- **Figure 4.1: Designated Sites;**
- **Figure 4.2: Phase 1 Habitat Survey;**
- **Figure 4.3: NVC;**
- **Figure 4.4: GWDTE;**
- **Figure 4.5: Confidential Ornithology Results;**
- **Technical Annex 4.1: Ecology and Ornithology Methodology and Results; and**
- **Technical Annex 4.2: Habitats Regulations Appraisal (Confidential).**

The assessment has been undertaken by Nadine Little ACIEEM[2], a principal ecologist at Ramboll, who has over nine years' experience in ecology assessments across a variety of sectors, including the assessment of electrical transmission infrastructure. The assessment has been prepared with reference to the Ecological Impact Assessment (EcIA) Guidelines from the Chartered Institute of Ecology and Environmental Management[3] (hereafter the 'CIEEM EcIA Guidelines').

4.2 Scope and Methodology

This chapter focusses on the potential impacts and effects of the construction and operation phases of the Proposed Development upon IEOFs, aligning with the assessment approach stated within the CIEEM EcIA Guidelines. No separate decommissioning assessment is proposed as part of the EA Report as the effects associated with the construction phase can be considered to be representative of worst-case decommissioning effects. This EcIA has also been prepared with reference to the applicable legislative framework and national and local planning policy; these are outlined in **Technical Annex 4.1 (Volume 2)**. Specific guidance documents for habitats and species are referenced throughout this chapter and the associated Annexes as appropriate.

Further information on the survey and assessment methodologies used are provided in **Technical Annex 4.1 (Volume 2)**.

The Study Areas for the assessment of ecology and ornithology impacts are shown on **Figure 4.1** and **Figure 4.2 (Volume 3a)** and include:

- a 2 km radius around the Site for the desk Study Area; and
- a 100 m radius around the Site for the terrestrial ecology field Survey Area.

[1] CIEEM report writing guidelines involve the identification of IEOFs and subsequently the assessment of impacts on these features.
[2] Associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM).
[3] Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (2018), URL: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.1.pdf [17th August 2022].

Together, these areas form the Ecology and Ornithology Study Area. This area is considered to represent the Zone of Influence (ZOI)[4] in which impacts on IEOFs could occur.

Specific ornithology surveys were not undertaken due to the small footprint of the Proposed Development and its location within coniferous woodland plantation; therefore no specific ornithology field Survey Area is stated above. However, the previous surveys for the proposed Creag Dhubh to Inveraray 275 kV Overhead Line (OHL), Creag Dhubh to Dalmally 275 kV OHL Connection and Creag Dhubh Substation captured the Proposed Development within their Survey Area. Details of the Survey Areas for each ornithological survey are stated in **Technical Annex 4.1 (Volume 2**).

4.3 Baseline Conditions

4.3.1 Statutory Designated Nature Conservation Sites

No statutory designated nature conservation sites for ecological features occur within the desk Study Area[5], as shown on **Figure 4.1 (Volume 3a)**. As a result, no statutory designated nature conservation sites designated for ecological features are considered further in this assessment.

One statutory designated nature conservation site for ornithological features occurs within the desk Study Area, as shown on **Figure 4.1 (Volume 3a)**. Glen Etive and Glen Fyne Special Protection Area (SPA), classified for breeding golden eagle *Aquila chrysaetos*, lies 1.2 km east of the Proposed Development at its closest point. This is close enough to have potential connectivity between the Proposed Development and the SPA. Therefore, a Stage 1 Habitat Regulations Screening Assessment has been completed to assess the potential for Likely Significant Effects (LSEs) upon the Glen Etive and Glen Fyne SPA from the construction and operation of the Proposed Development, either alone or in combination with other plans or projects and in the absence of any mitigation. Details of this assessment are located in **Technical Annex 4.2 (Confidential Volume 4)**. No other statutory designated nature conservation sites for ornithological features occur within the Ecology and Ornithology Study Area.

4.3.2 Non-statutory Designated Nature Conservation Sites

There are no areas of Ancient Woodland within the desk Study Area and, therefore, no direct, or indirect impacts on this feature are predicted. Woodland included on the Semi-natural Ancient Woodland Inventory[6] occurs throughout the desk Study Area, as shown on **Figure 4.1 (Volume 3a)**. Native and Ancient Woodlands are important for biodiversity and nature conservation. Ancient woodland is defined as an area of woodland that has been continually wooded since 1750, and Policy 6 of the recently approved National Planning Framework 4 (NPF4) states that '*Development proposals will not be supported where they result in any loss of ancient woodlands, ancient and veteran trees, or adverse impact on their ecological condition*'[7] However, the woodland included on the Semi-natural Ancient Woodland Inventory in the desk Study Area is coniferous woodland plantation, which offers limited support for biodiversity and is, therefore, not considered further in this assessment.

4.3.3 Argyll and Bute Local BAP

The Proposed Development is located in the Argyll and Bute Local Biodiversity Action Plan (BAP) area[8]. The BAP covers the period from 2010 to 2015 but remains current in the absence of an updated version. It should be read in conjunction with

[4] The area over which ecological or ornithological features may be subject to impacts as a result of the Proposed Development and its associated activities.

[5] A 2 km buffer around the Proposed Development.

[6] A Guide to Understanding the Ancient Woodland Inventory (2018), URL: https://www.nature.scot/sites/default/files/2018-11/A%20guide%20to%20understanding%20the%20Scottish%20Ancient%20Woodland%20Inventory%20%28AWI%29.pdf [17th August 2022].

[7] National Planning Framework 4. Available here: https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2022/11/national-planning-framework-4-revised-draft/documents/national-planning-framework-4-revised-draft/national-planning-framework-4-revised-draft/govscot%3Adocument/national-planning-framework-4-revised-draft.pdf

[8] The Argyll and Bute Local BAP (2010-2015), URL: https://www.argyll-bute.gov.uk/sites/default/files/Unknown/AandB%20BAP%20Draft.pdf [17th August 2022].

the Argyll and Bute Biodiversity Duty Action Plan[9]. The priority habitats and species present in Argyll and Bute and included in the BAP that are considered to be relevant to the Proposed Development based on the habitats and species[10] recorded in the field Survey Area, are detailed in **Table 4.1**.

Table 4.1: Relevant Habitats and Species Included in the Argyll and Bute BAP

Habitats	Species
Peatlands	Lichen species
Planted conifer forest	Marsh fritillary *Euphydryas aurinia*
	Bats *Yangochirotera*
	Otter *Lutra lutra*
	Pearl-bordered fritillary *Boloria euphrosyne*
	Red deer *Cervus elaphus*
	Red squirrel *Sciurus vulgaris*
	Brown hare *Lepus europaeus*
	Water vole *Arvicola amphibius*
	Wildcat *Felis silvestris*
	Black grouse *Lyrurus tetrix*
	Golden eagle
	Hen harrier *Circus cyaneus*
	Merlin *Falco columbarius*
	Cuckoo *Cuculus canorus*

4.3.4 Ecology and Ornithology Field Survey Findings

Full details of the results of the field surveys undertaken for the Proposed Development are provided in **Technical Annex 4.1 (Volume 2)**. An extended Phase 1 habitat Survey and protected species surveys were undertaken by Ramboll ecologists in March 2022. Ornithology surveys were completed between 2016 and April 2022. Summarised results are provided in this chapter.

Phase 1 Habitats

The dominant habitat present on the Site is coniferous woodland plantation, as shown on **Figure 4.2 (Volume 3a)**. Marshy grassland and running water are the only potentially sensitive habitats recorded in the field Survey Area.

No invasive non-native plant or animal species[11] were recorded during field surveys.

4.3.5 Groundwater Dependent Terrestrial Ecosystems (GWDTEs)

The habitats classified during National Vegetation Classification (NVC) surveys are shown on **Figure 4.3 (Volume 3a)**. The NVC results were used to determine the potential groundwater dependency of the habitats present in the field Survey Area.

[9] Argyll and Bute Biodiversity Duty Action Plan (2016-2021): https://www.argyll-bute.gov.uk/sites/default/files/argyll_and_bute_council_biodiversity_duty_action_plan_final_version_april_2016_2.pdf [17th August 2022].

[10] Note – Not all species stated in the table were recorded survey the field surveys, however the habitats present have the potential to support these species.

[11] An invasive non-native species is any non-native animal or plant that has the ability to spread causing damage to the environment, the economy, or public health. Non-native means the species is occurring outwith its natural range.

An area of rush vegetation around an unnamed tributary of the River Aray in the east of the field Survey Area was classified as M23 *Juncus effusus/acutiflorus-Galium palustre* rush-pasture community, which has high groundwater dependency. However, as this habitat is located along the watercourse, it is considered to be surface water dependent not groundwater dependent and is, therefore, not considered further in this assessment.

GWDTEs are also discussed in **Chapter 7: Hydrology and Geology (Volume 1)**.

4.3.6 Bat Roost Potential Trees

No trees with bat roost potential were recorded within the field Survey Area.

4.3.7 Protected Terrestrial Mammals

No protected or notable terrestrial mammals were recorded during field surveys, though the tributary of the River Aray was considered to have suitable habitat to support water vole and otter. Water vole burrows and feeding signs were previously recorded (May 2019 and September 2020) along the River Aray (north of the proposed Creag Dhubh Substation).

4.3.8 Reptiles and Amphibians

No reptiles or amphibians were observed during field surveys. However, the marshy grassland present within the Site does provide suitable habitat to support these species.

4.3.9 Ornithology Field Survey Results

Vantage Point Surveys

During field surveys for the proposed Inveraray to Creag Dhubh 275 kV Overhead Line (OHL) , a potential goshawk *Accipiter gentilis* territory was identified approximately 750 m from the Proposed Development, as shown on **Figure 4.5 (Volume 3a)**. This is outside of potential disturbance distance for this species so disturbance impacts[12] on this territory are not predicted.

No flights were recorded within the field Survey Area, though golden eagle flights were recorded in the Ecology and Ornithology Study Area, which are at least 1 km from the Proposed Development, as detailed in **Technical Annex 4.2 (Confidential Volume 4)**.

Black Grouse Surveys

During field surveys for the proposed Inveraray to Creag Dhubh 275 kV OHL , a lek was identified approximately 1.6 km from the Proposed Development, as shown on **Figure 4.5 (Volume 3a)**. This is outside of potential disturbance distance[13] for black grouse therefore no disturbance impacts are predicted on this lek.

Breeding Raptor Surveys

The nearest golden eagle nests are long established and well understood by fieldworkers in the area. The closest SPA nest to the Proposed Development is approximately 6 km away, which is outwith potential disturbance distance[14]. One subadult golden eagle was seen to fly very high over the Proposed Development. No disturbance impacts on golden eagle are predicted.

There were no further breeding raptor territories identified within the field Survey Area.

[12] Ruddock, M. and Whitfield, D.P., (2007) A Review of Disturbance Distances in Selected Bird Species. Natural Research (Projects) Ltd. for NatureScot.
[13] *Ibid*.
[14] *Ibid*.

Breeding Bird Survey (BBS)

The breeding bird survey results identified a suite of typical coniferous plantation birds were likely nesting within the footprint of the Proposed Development. This included common crossbill *Loxia curvirostra*, which is a species listed on Schedule 1 of the Wildlife and Countryside Act, 1981[15].

4.3.10 Future Baseline

The future baseline of the field Survey Area under the "do nothing" scenario is unlikely to change significantly in the absence of the Proposed Development. The coniferous woodland plantation is approximately 15 years old and is predominantly thicket stage Sitka spruce *Picea sitchensis*, with a smaller area of semi-mature Sitka spruce located in the northern area of the Site. Certain blocks of woodland within the Site boundary were identified as Phase 3 felling in the Long Term Forest Plan (to be felled in 2026) and some blocks of woodland were not identified for felling within the indicative forest plan period (**Figure 6, Technical Annex 2.1, Volume 2**). Plantation areas are then typically restocked for another rotation of the process. Climate change may have an effect on species distribution and this could be significant depending on the severity of the effect. For example, some forest nesting raptors such as goshawk, have expanded their range in recent years. Goshawk territories are now being recorded in parts of Argyll and Kintyre where they have never been seen before.

4.4 Potential Impacts and Mitigation

4.4.1 Construction

Potential effects during construction are detailed in **Table 4.2**, which also details the relevant IEOF and mitigation or control measures, where appropriate.

Table 4.2: Potential Impacts to Ecology or Ornithology during Construction and Relevant Mitigation/Control Measures

Potential Impact	Important Ecological Feature (Receptor)	Mitigation Proposed	Responsibility/Timing of Mitigation Measure
Permanent and temporary loss or degradation of terrestrial and/or aquatic habitat either directly as a result of (e.g.) excavation, compaction, or modification (such as vegetation and tree removal or covering), or indirectly as a result of (e.g.) dewatering, or from the accidental release of fuels, lubricants or other chemicals.	Habitats (marshy grassland. Aquatic habitat considered below).	Existing, or temporary, access tracks (e.g. such as floated access tracks/bog mats) would be used as far as possible and the extent of construction work would be minimised within marshy grassland habitat. Areas of marshy grassland, especially the area of M23, would be avoided, where possible. If not possible, floated access tracks/bog mats and low ground-pressure vehicles would be used to cross this habitat. Although coniferous woodland plantation is not included as a sensitive habitat for the purposes of this assessment, the area to be removed (approximately 2.4 ha) for tree felling will be replaced in line with the Scottish Government's Control of Woodland	Principal Contractor/Forestry Contractor Monitored by the Ecological/Environmental Clerk of Works (EcoW) During and immediately after construction

[15] The Wildlife and Countryside Act (as amended) (1982), URL: http://www.legislation.gov.uk/ukpga/1981/69 [17th August 2022].

Table 4.2: Potential Impacts to Ecology or Ornithology during Construction and Relevant Mitigation/Control Measures

Potential Impact	Important Ecological Feature (Receptor)	Mitigation Proposed	Responsibility/Timing of Mitigation Measure
		Removal Policy (CoWRP)[16], to meet Compensatory Planting requirements and to ensure no net loss of biodiversity. Ideally, a net gain should be achieved through the additional planting of native tree species (**Technical Annex 2.1 and 7.4, Volume 2**). Once construction works are complete, habitats would be reinstated as soon as possible in areas of temporary access. All peat would be re-used in line with the Outline Peatland Management Plan (OPMP) (**Technical Annex 7.2, Volume 2**), with the principle aim of retaining and re-using peat as close as possible to the point of extraction.	
Disturbance from construction lighting, noise and excavations or from felling activities.	Protected faunal species (including water vole, but not including birds).	Works would be completed following the Applicant's Species Protection Plans (SPPs) and General Environmental Management Plans (GEMPs) in line with the Construction Environmental Management Plan (CEMP). An outline CEMP is also included in **Technical Annex 3.2 (Volume 2)**. Pre-construction protected species surveys would be undertaken. If the results indicate the presence of a protected species, an assessment of the potential impacts on the species would be completed and appropriate mitigation measures identified (if required), such as micro-siting of infrastructure. A suitably qualified EcoW would input into the CEMP and complete ongoing monitoring of protected species and protection measures for protected species through the construction stage and during the felling works, where required.	Principal Contractor/Forestry Contractor Ecologist/ECoW No more than three months prior to construction Through the construction phase
Pollution from (e.g.) oil spill, siltation of watercourses or from construction dust	Terrestrial and aquatic habitats	The site-specific CEMP would include best practice measures on pollution prevention and mitigation (see **Technical Annex 3.2, Volume 2**), and	Principal Contractor and Forestry Contractor will be

[16] Scottish Government's CoWRP (2019), URL: https://forestry.gov.scot/publications/support-and-regulations/control-of-woodland-removal [17th August 2022].

Table 4.2: Potential Impacts to Ecology or Ornithology during Construction and Relevant Mitigation/Control Measures

Potential Impact	Important Ecological Feature (Receptor)	Mitigation Proposed	Responsibility/Timing of Mitigation Measure
		would follow Scottish Environment Protection Agency (SEPA) Guidance for Pollution Prevention (GPP[17]), The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended)[18], and relevant construction and Construction Industry Research and Information Association (CIRIA) guidance[19]. Standard pollution prevention guidelines would include measures such as silt fencing and traps, storage/bunding of equipment, material and chemicals at appropriate distances from watercourses, and supervision by an ECoW. Specific mitigation regarding peat to minimise impacts on watercourses has been included within the OPMP (**Technical Annex 7.2, Volume 2**).	required to produce their respective CEMP's. Monitored by ECoW During the forestry and construction phase
Destruction of bird nests and disturbance of breeding birds (including Schedule 1 species[20]). The loss of coniferous woodland plantation would remove some suitable nesting habitat for bird species. If the vegetation removal were to take place during the breeding season, it is possible, though unlikely, that nests would be damaged or destroyed during the process.	Breeding birds	Works would be completed with consideration of sensitive seasons for IEOFs. The removal of vegetation, including tree felling works, should be undertaken outside key periods (i.e., the bird breeding season of March to August, inclusive). Where this is not possible, an ECoW would carry out nesting bird checks prior to felling. If nesting birds are present, a suitable buffer zone would be implemented around the nest, with no work in this zone until the young have fledged or the nest is no longer in use. The EcoW would be responsible for the watching brief and protection measures for breeding birds through the forestry/construction stage, as set out in the Applicant's SPPs and in the CEMP.	Principal Contractor/Forestry Contractor Monitored by ECoW Undertaken no more than three days prior to felling.

4.4.2 Operation

[17] Works and Maintenance in or Near Water: GPP 5 (2018), URL: https://www.netregs.org.uk/media/1418/gpp-5-works-and-maintenance-in-or-near-water.pdf?utm_source=website&utm_medium=social&utm_campaign=GPP5%2027112017 [17th August 2022].

[18] The Water Environment (Controlled Activities) (Scotland) Regulations (2011), URL: https://www.legislation.gov.uk/ssi/2011/209 [17th August 2022].

[19] CIRIA guidance (2022), URL: https://www.ciria.org/ci/Civil_infrastructure/CIRIA_guidance.aspx [17th August 2022].

[20] The Wildlife and Countryside Act (as amended) (1982), URL: http://www.legislation.gov.uk/ukpga/1981/69 [17th August 2022].

Potential effects during operation are detailed in **Table 4.3**, which also details the relevant IEOF and mitigation or control measures, where appropriate.

Table 4.3: Potential Impacts to Ecology or Ornithology during Operation and Relevant Mitigation/Control Measures

Potential Impact	Important Ecological Feature (Receptor)	Mitigation Proposed	Responsibility/Timing of Mitigation Measure
Pollution (e.g. oil spill) from vehicles accessing the Proposed Development for maintenance activities.	Habitats and associated protected species.	Operations staff would implement their own Risk Assessment and Method Statement (RAMS) to identify and manage environmental risks from their work, such as oil spills.	Applicant, Operations team During the operational phase
Disturbance and displacement due to maintenance activities and presence of on-site personnel, including light disturbance from operational lighting.	Protected species and breeding birds	Unlikely to be required as disturbance would be at a very low level, with vehicles utilising existing access roads. Any operational lighting used would be designed to avoid any light spill onto the adjacent watercourse (River Aray) to prevent potential disturbance to water vole or otter.	As above

4.4.3 Residual Impacts

Implementation of the CEMP would avoid likely adverse impacts from pollution events and disturbance of habitats, with no residual impacts.

The majority of habitats (excluding the coniferous woodland plantation) would be reinstated following completion of construction of the Proposed Development, resulting in an adverse impact for the short to medium term (approximately three to five years for marshy grassland habitat). The coniferous woodland plantation offers limited opportunity for biodiversity, such as nesting birds, and its loss (approximately 2.4 ha) would be mitigated through compensatory woodland planting in line with the CoWRP. Where possible, replanting areas would incorporate semi-natural broadleaved woodland and mixed woodland, instead of coniferous woodland plantation to offer better support for biodiversity. As a result, no long-term residual impacts are predicted.

Following the implementation of mitigation such as a pre-construction protected species survey and a breeding bird survey, no residual impacts are predicted on protected species or breeding birds.

4.4.4 Cumulative Impacts

An appraisal has been undertaken of potential in-combination impacts with the following cumulative developments identified in **Chapter 2: Environmental Appraisal Methodology (Volume 1)** and illustrated in **Figure 2.2 (Volume 3a),** that fall within the 2 km Ecology and Ornithology Study Area[21] (**Figure 4.1, Volume 3a**):

[21] The area over which ecological or ornithological features may be subject to potential impacts as a result of the Proposed Development and its associated activities. In this case, the Zone of Influence (ZOI) is considered to be up to 2 km beyond the Site given the small scale of the Proposed Development and the type of habitats present on the Site.

- Creag Dhubh to Dalmally 275 kV OHL Connection[22] (ECU00002199, In Planning, part of the Argyll and Kintyre 275kV Strategy);
- Creag Dhubh Substation[23] (22/00782/PP, In Planning, part of the Argyll and Kintyre 275kV Strategy); and
- Inveraray to Creag Dhubh 275 kV OHL connection[24] (ECU00003442, In Planning, part of the Argyll and Kintyre 275kV Strategy); and
- Blarghour Wind Farm Connection Project[25] (pre-planning, reasonably foreseeable as part of the Argyll and Kintyre 275 kV Strategy).

Considering the lack of IEOFs, the low likelihood of potential impacts and the effectiveness of the mitigation proposed, the Proposed Development is not likely to result in any in-combination impacts with cumulative developments. Furthermore, the first three cumulative developments would be delivered by the Applicant as part of the wider Argyll and Kintyre 275 kV Strategy. Accordingly, potential impacts would be managed collectively in accordance with each project's CEMP to ensure potential impacts are mitigated. Each of the cumulative developments listed is considered likely to result in similar impacts as the Proposed Development, due to them being present within the same coniferous woodland plantation as the Proposed Development, therefore the same mitigation strategies are likely to be required.

4.5 Conclusion

Field surveys identified the IEOFs present that could be impacted by the Proposed Development. These included marshy grassland, habitat suitable to support water vole and otter, and bird nests. Impacts included direct impacts, such as destruction of habitats or nests, and indirect impacts, including pollution and disturbance from light or noise. These impacts would be mitigated through the timing of works to avoid ecologically sensitive seasons (such as the bird breeding season of March to August, inclusive), where possible, employing a project ECoW, following SPPs for protected species that could be impacted by works and preparing a project-specific CEMP for Forestry and Construction phases. Following the successful implementation of this mitigation, no residual impacts on IEOFs are considered to exist. No cumulative impacts are predicted.

[22] https://www.ssen-transmission.co.uk/projects/project-map/creag-dhubh---dalmally-275kv-connection/
[23] https://www.ssen-transmission.co.uk/projects/project-map/creag-dhubh---dalmally-275kv-connection/
[24] https://www.ssen-transmission.co.uk/projects/project-map/creag-dhubh---inveraray-275kv-overhead-line/
[25] https://www.ssen-transmission.co.uk/projects/project-map/blarghour-wind-farm-connection-project/