7 ORNITHOLOGY

7.1 Executive Summary

7.1.1 A programme of desk studies and field surveys were undertaken between 2016 and 2020 to determine the ornithological baseline of the site. Surveys were undertaken following best practice guidance and the assessment was undertaken following CIEEM guidelines. Surveys were undertaken between 2016-17 by WSP, with update surveys undertaken by Ramboll cover new route Sections in 2019-20. One of the key ornithological constraints is the Glen Etive and Glen Fyne SPA which borders the Proposed Development for 1 km and is classified for breeding golden eagle. Surveys only recorded low levels of golden eagle flight activity, however, and no significant impacts on the species or the SPA are predicted.

7.1.2 Field surveys recorded black grouse leks at five locations within the Ornithological Field Survey Area and territories were identified of white-tailed eagle and hen harrier as well as likely territories of goshawk and honey buzzard. Impacts on these features would be mitigated by adhering to Species Protection Plans and monitoring to be undertaken by the ECoW. A Section of line marking is also required to avoid collision risk on white-tailed eagle.

7.2 Introduction

7.2.1 This chapter assesses the potential effects on ornithology associated with the construction, operation and decommissioning of the Proposed Development. This chapter (and its associated Figures and Appendices) is not intended to be read as a standalone assessment and reference should be made to the introductory chapters of this EIA Report (**Volume 2, Chapters 1-5**).

7.2.2 The assessment has been carried out by Danny Oliver MCIEEM. Senior Ornithologist, Ramboll UK Ltd, who has over eight and a half years' experience with Ramboll designing and undertaken ornithological field surveys and undertaking ornithological impact assessments.

7.2.3 This chapter is accompanied by the following Figures and Technical Appendices:

- **Figure 7.1: Designated Sites;**
- **Figure 7.2: Ornithology Survey Locations;**
- **Figure 7.3: 2016-2017 Survey Results;**
- **Figure 7.4: 2019-2020 Survey Results;**
- **Figure 7.5: Confidential Survey Results;**
- **Technical Appendix 7.1: Ornithology Methodology and Results;**
- **Technical Appendix 7.2: Confidential Results and Mitigation; and**
- **Technical Appendix 7.3: Habitat Regulation's Appraisal.**

7.3 Assessment Methodology and Significance Criteria

Scope of the Assessment

7.3.1 An EIA Scoping Report was submitted in June 2020, which outlined the scope of this Ecological Impact Assessment (EcIA) based on the available baseline data at the time (see **Technical Appendix (TA) 4.1: EIA Scoping Report**). Subsequently a further consultation was undertaking in relation to the design requirement for increased tower heights (see **TA 4.3: Consultation Register).** The scope has since been revised to incorporate the Scoping Responses from various stakeholders (**Table 7.1**).

7.3.2 This chapter focusses on the effects of the construction, operation and decommissioning phases of the Proposed Development upon Important Ecological Features (IEF)[1] aligning with EcIA Guidelines from the Chartered Institute of Ecology and Environmental Management[2] (hereafter the 'CIEEM EcIA Guidelines'). This EcIA has been prepared with reference to the applicable legislative framework and national and local planning policy, with these listed in paragraphs 7.2.6 and 7.2.7. Specific guidance documents for habitats and species are referenced throughout this chapter and the associated Appendices.

7.3.3 The specific objectives of this chapter and the accompanying Technical Appendices are to:

- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the ornithological baseline of the Proposed Development and its zone of influence (ZOI)[3], including nature conservation sites designated for ornithology and other protected ornithological species, and, thereby, identify the ornithological features that will be the focus of this assessment;
- evaluate the sensitivity of each ornithological feature;
- describe the potential impacts from the Proposed Development, both direct and indirect, on ornithological features and assess whether they result in likely significant adverse effects for the ornithological features;
- describe the mitigation measures proposed to avoid, reduce, and offset likely significant adverse effects;
- assess the significance of residual effects remaining following the implementation of mitigation; and
- assess the significance of cumulative effects between the Proposed Development and cumulative developments.

7.3.4 This chapter is based on the Proposed Development as described in **Chapter 2: Description of the Proposed Development (EIAR Volume 2)**.

Legislation, Policy and Guidelines

7.3.5 The scope of the assessment has been informed by the following policy and legal framework:

Legislation

7.3.6 Relevant legislation has been reviewed and considered as part of this ornithology assessment. Of relevance are:

- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds[4];
- EC Directive on the Conservation of Natural Habitats and Wild Flora and Fauna, 92/43/EEC 1992[5];
- Conservation of Habitats and Species (Amendment) (EU Exit) Regulation 2019[6];

[1] These are any ornithological entity which could be impacted by the Proposed Development, including species, habitats or designated sites.

[2] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Available: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.1.pdf [Accessed June 2020].

[3] The area over which ecological features may be subject to significant effects as a result of the Proposed Development and its associated activities. In this case, the ZOI is considered to be up to 10 km beyond the site boundary.

[4] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009L0147

[5] EC Directive on the Conservation of Natural Habitats and Wild Flora and Fauna (1992): http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm [17th August 2021].

[6] The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019): https://www.legislation.gov.uk/ukdsi/2019/9780111176573#:~:text=%20The%20Conservation%20of%20Habitats%20and%20Species%20(Amendment),of%20capturing%20or%20killing%20fish%20are%E2%80%94%20More [17th August 2021].

- The Conservation of Habitats and Species Regulations 2017[7];
- Conservation (Natural Habitats Etc.) Regulations 1994[8];
- Wildlife and Countryside Act 1981[9];
- Nature Conservation (Scotland) Act 2004[10];
- Wildlife and Natural Environment (Scotland) Act 2011[11];
- UK Post-2010 Biodiversity Framework 2012[12];
- Electricity Act 1989[13];
- The Electricity Works (Environmental Impact Assessment) (Scotland) Act 2017[14]; and
- the Ramsar Convention on Wetlands 1971[15].

Planning Policy

7.3.7 Relevant planning policies reviewed for this biodiversity assessment are:

- Scottish Planning Policy (SPP) 2014[16];
- UK Biodiversity Action Plan (BAP) 2010[17];
- Scottish Biodiversity List (SBL) 2005[18];
- 2020 Challenge 2013[19];
- Argyll and Bute Local BAP[20]; and
- Argyll and Bute Biodiversity Duty Action Plan[21].

Guidance

7.3.8 Best practice guidance has been implemented when undertaking field surveys and is detailed in **TA 7.1: Ornithology Methodology and Results (EIAR Volume 4)**.

Extent of the Study Area

7.3.9 The Study Areas used during surveys for the Proposed Development are defined in **TA 7.1: Ornithology Methodology and Results (EIAR Volume 4).**

[7] The Conservation of Habitats and Species Regulations (2017): https://www.legislation.gov.uk/uksi/2017/1012/contents/made [17th August 2021].
[8] The Conservation (Natural Habitats Etc.) Regulations (as amended) (1994): http://www.legislation.gov.uk/uksi/1994/2716/contents/made [17th August 2021].
[9] The Wildlife and Countryside Act (as amended) (1981): http://www.legislation.gov.uk/ukpga/1981/69 [17th August 2021].
[10] Nature Conservation (Scotland) Act (as amended) (2004): http://www.legislation.gov.uk/asp/2004/6/contents [17th August 2021].
[11] Wildlife and Natural Environment (Scotland) Act (2011): http://www.legislation.gov.uk/asp/2011/6/enacted [17th August 2021].
[12] UK Post-2010 Biodiversity Framework (2012): http://jncc.defra.gov.uk/page-6189 [17th August 2021].
[13] Electricity Act (1989): https://www.legislation.gov.uk/ukpga/1989/29/contents [17th August 2021].
[14] The Electricity Works (Environmental Impact Assessment) (Scotland) Act (2017): http://www.legislation.gov.uk/ssi/2017/101/contents/made [17th August 2021].
[15] Ramsar Convention on Wetlands (1971): http://www.ramsar.org/about-the-ramsar-convention [17th August 2021].
[16] Scottish Planning Policy (2014): https://www.gov.scot/publications/scottish-planning-policy/pages/2/ [17th August 2021].
[17] UK BAP: http://jncc.defra.gov.uk/default.aspx?page=5155 [17th August 2021].
[18] The Scottish Biodiversity List (2005): https://www.nature.scot/scottish-biodiversity-list-documents [17th August 2021].
[19] The 2020 Challenge: http://www.gov.scot/Publications/2013/06/5538 [17th August 2021].
[20] The Argyll and Bute Local BAP (2010-2015): https://www.argyll-bute.gov.uk/sites/default/files/Unknown/AandB%20BAP%20Draft.pdf [28th September 2021].
[21] 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 [28th September 2021].

Consultation Undertaken

7.3.10 Consultation undertaken to date mainly pertains to the EIA Scoping Report. Scoping responses received at the time of writing which are relevant to this chapter are captured in **Table 7.1**.

Table 7.1: Scoping responses and other consultations of relevance to Chapter 7

Organisation	Type of Consultation	Response	How response has been considered
Scottish Natural Heritage (SNH) (now NatureScot [NS])	EIA Scoping Report; March 2021	One of the key issues NS required to be addressed in detail as part of the EIA process includes: - Ornithological impacts, including impacts on Glen Etive and Glen Fyne Special Protection Area for golden eagle *Aquila chrysaetos*. The route of the power line runs adjacent to Glen Etive and Glen Fyne Special Protection Area (SPA) (please see: https://sitelink.nature.scot/site/10113 for further details on this designated site). As such the Habitat Regulations will need to be considered before any application can be determined (please see: https://www.nature.scot/professional-advice/planning-and-development/environmental-assessment/habitats-regulations-appraisal-hra for details). Whilst the ongoing use of the line, once constructed, will not have any impact on the SPA, there is some scope for impact during construction from disturbance. It is not possible to determine the full magnitude of this impact at this time, however, a commitment in a construction method statement, to avoid any part of the SPA for accessing the works site, including overflying by helicopters, is likely to be sufficient for NS to conclude, and so advise, that there will be no likely significant effect in relation to the Habitat Regulations. When assessing the ornithological impacts, it is important that the following guidance is used https://www.nature.scot/guidance-assessment-and-mitigation-impacts-power-lines-and-guyed-meteorological-masts-birds.	Impacts on Glen Etive and Glen Fyne SPA are assessed in **TA 7.3: Habitat Regulations' Appraisal (EIAR Volume 4).** The guidance was followed as set out in **TA 7.1: Ornithology Methodology and Results (EIAR Volume 4)**.
Royal Society for the Protection of Birds (RSPB)	EIA Scoping Report; March 2021	<u>Designated Site</u> The site is close to the Glen Etive and Glen Fyne SPA designated for supporting a population of Annex 1 species (list of the EC Birds Directive) golden eagle. Although this proposal is not directly situated within the SPA, there is potential for it to impact on a golden eagle territory which is part of the wider golden eagle population in this area and any indirect impacts should be considered in the EIAR.	Habitat Regulations' Appraisal undertaken as set out in **TA 7.3: Habitat Regulations' Appraisal (EIAR Volume 4)**. **.**

Table 7.1: Scoping responses and other consultations of relevance to Chapter 7

Organisation	Type of Consultation	Response	How response has been considered
		We agree with the proposed approach for the Habitat Regulations Assessment outlined in the scoping report. <u>Bird Species of Conservation Concern</u> The following Annex 1 bird species have been highlighted in the scoping EIA report as occurring within or close to the proposal: golden eagle, white-tailed eagle *Haliaeetus albicilla*, hen harrier *Circus cyaneus*, peregrine *Falco peregrinus* and merlin *Falco columbarius*. Other Birds of Conservation Concern and important Local Biodiversity Action Plan (LBAP) species include black grouse *Lyurus tetrix*. The potential impacts on all of these species should be adequately covered within the EIAR. It should be remembered that all nesting birds are protected by law and therefore we would advise that if any vegetation removal is required along the route that this should occur outwith the breeding season (March- August inclusive) or that these areas are checked prior to work starting to ensure no nesting birds are present. <u>Survey requirements</u> From the information provided in the scoping report we agree with the species identified to be included in the EIAR. The EIA should establish how these species are using the site area through the vantage point observation surveys, plotting of flight lines and related information to determine any potential impacts. An assessment of the forestry and open ground habitat suitability for raptors, black grouse and breeding waders should be undertaken and should consider present usage in comparison to the potential alteration of habitat and displacement effects which may occur during and due to the development. <u>Golden and white-tailed eagle</u> As mentioned previously the proposal lies in close proximity to the Glen Etive and Glen Fyne SPA designated for its golden eagle population. Although the proposal footprint does not fall within the SPA there is potential for it to impact up on it and	Birds of Conservation Concern were included in the species identified during field surveys as described in **TA 7.1: Ornithology Methodology and Results (EIAR Volume 4)**. Impacts on nesting birds is assessed in paragraphs 7.5.8 and 7.5.9, with mitigation set out in Section 7.5.13. Impacts on golden and white-tailed eagle are assessed in Sections 7.5.7, 7.5.11 and 7.5.20. Impacts on golden eagle, specifically on birds from the Glen Etive and Glen Fyne SPA,

Table 7.1: Scoping responses and other consultations of relevance to Chapter 7

Organisation	Type of Consultation	Response	How response has been considered
		we advise that a Habitat Regulations Assessment is undertaken as is suggested with the scoping report. We also have records showing a golden eagle territory close to the proposal, we would advise consulting Argyll Raptor Study Group as they will be able to provide the most up to date information relating to this territory (NA21) and other raptor species activity within this area. White-tailed eagles are increasingly being reported from around this area, via both visual sightings and satellite tag information and it is noted from the scoping report that a white-tailed eagle nest was observed within 500 m of the proposal. We advise that since birds occupy this area, ongoing assessment and mitigation are required. Survey work should therefore occur throughout the planning and installation period. <u>Black grouse</u> In Argyll terms, the wider spread of birds within this area is important and any proposal should fully assess impacts on this species, including noise, and should avoid siting towers close to any lek sites. Consideration should also be given to mitigation works for the species within the site and surrounding area. <u>Cumulative impacts</u> An assessment of cumulative bird impacts in relation to other existing, consented and proposed projects (predominantly forestry and wind farms), within this natural heritage zone (NHZ) should be undertaken.	are discussed in **TA 7.3: Habitat Regulation' Appraisal**. This included reference to PAT modelling data provided by NatureScot. Pre-construction surveys for white-tailed eagle are also recommended. Impacts on black grouse are discussed in paragraph 7.5.12, with mitigation proposed in paragraph 7.5.16. Cumulative impacts on this species are also discussed in Table 7.5. A cumulative impact assessment has been undertaken assessing developments within NHZ 14. This is provided in Table 7.5 and the proceeding paragraphs.
RSPB	Pre-Application Consultation; August 2021	We have concerns with the preferred route in its current layout due to the impact on important peatland habitat and the proximity to a black grouse lek. The Section we are referring to runs from tower 35 – 40. We do not have any major concerns with this route from tower 40 through tower 47 and would support this Section as it prevents the loss of 0.8 ha of important ancient semi-natural woodland.	Black grouse lek locations have been identified, with impacts described in paragraph 7.5.12 and mitigation set out in paragraph 7.5.16. An access track towards Tower 36 has been moved to avoid impacts on black grouse and SPPs shall be adhered to.

Table 7.1: Scoping responses and other consultations of relevance to Chapter 7

Organisation	Type of Consultation	Response	How response has been considered
		Alterations to route With regards to the Section covering 35 – 40 we would recommend that this Section follows the route outlines in GL1 which runs through the commercial forestry, this eliminates the impact on the peatland and pulls the overhead line back to 500 m away from the black grouse lek. This would reduce the impact of the overhead line on the biodiversity of the area and important open habitats. As the footprint of this route would fall within commercial forestry which will be felled as part of the management the impact on the biodiversity of the area would be minimal in the long-term. Mitigation If the proposed route is chosen along with the modification we mention above we would strongly suggest that any construction work is undertaken outside of the main lekking period to reduce the disturbance on the black grouse lek. We would also ask that the powerlines near the lek are marked to increase visibility to reduce collision risk for black grouse. We would also recommend that any compensatory tree planting that takes place is done to increase the amount of native woodland in the area through planting or although existing native woodland to expand naturally through natural regeneration.	Route GL5 was ultimately chosen as preferred, but as discussed above access tracks have been altered to accommodate black grouse leks and SPPs shall be adhered to. Black grouse lek locations have been identified, with impacts described in paragraph 7.5.12 and mitigation set out in paragraph 7.5.16. An access track towards Tower 36 has been moved to avoid impacts on black grouse and SPPs shall be adhered to. Line marking is not considered to be required, following the analysis of flight data collected (in Table 7.4). Compensatory planting, to create habitats for black grouse, will be undertaken as set out in the Biodiversity Net Gain Assessment, to be provided following the submission of the EIA.

Method of Baseline Data Collation

7.3.11 The methods of baseline data collation, including desk and field survey methods, is provided in **TA 7.1: Ornithology Methods and Results (EIAR Volume 4)**. **.**

7.3.12 Field surveys were undertaken in two phases, with surveys undertaken in 2016-17 and 2019-20. The 2016-17 surveys were designed and undertaken by WSP ornithologists, with survey methodologies approved by NS at that time. These surveys focussed on the preferred route as it was in 2016-17[22], with survey coverage designed to identify potential ornithological constraints in this area. Of the final Proposed Development, surveys in 2016-17 covered Towers 1 to 33.

7.3.13 The 2019-20 surveys, undertaken by Ramboll, were designed to cover the rest of the Proposed Development from Tower 33 to 47 and to provide an update for Tower 1 to 33 to confirm baseline conditions using Breeding Raptor Surveys. Survey coverage is demonstrated on **Figure 7.2: Ornithology Survey Locations (EIAR Volume 3a)**. This is considered sufficient to adequately identify all potential ornithological features which could be impacted by the Proposed Development.

Limitations and Assumptions

7.3.14 It should be noted that the availability and quality of the data obtained during desk studies is reliant on third party responses and recorders. This varies from region to region and for different species groups. Furthermore, the comprehensiveness of data often depends on the level of coverage, the expertise and experience of the recorder and the submission of records to the local recorder.

7.3.15 The data from the 2016-17 surveys is slightly older than the optimum for the assessment but did record the key species present. CIEEM recommends that data should not be older than three years at the time of submission[23], so this data at five to 6 years would be considered too old. The scope and locations used during the breeding raptor surveys undertaken in 2019-20 were based on the findings of the 2016-17 data and were undertaken during optimal periods for identifying activity by key species in relation to the Proposed Development. As such, Ramboll is confident that the combined data from 2016-17 and 2019-20 provides a robust dataset upon which to base this assessment.

7.3.16 Due to the remote nature of the field survey area, surveys were not impacted by coronavirus restrictions as local surveyors were able to travel separately to the field survey area and maintain social distancing

7.4 Baseline Conditions

7.4.1 Please refer to the following baseline reports for full details of baseline conditions. A summary of each feature is included when evaluating their relative nature conservation value (see **Sensitive Receptors**) or scoping them out from further assessment (see **Issues Scoped Out**), as part of the justification behind these assessments.

- **TA 7.1: Ornithology Methodology and Results;**
- **TA 7.2: Confidential Results and Mitigation; and**
- **TA 7.3: Habitat Regulations' Appraisal.**

[22] As described in Chapter 3: Consideration of Alternatives, Section 3.3.1: Summary of Project Evolution.

[23] CIEEM (2019) On the Lifespan of Ecological Reports and Surveys. Advice Note. Accessed at: https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf, 3rd March 2022.

7.4.2 The Proposed Development runs adjacent to Glen Etive and Glen Fyne SPA for a 1 km stretch. This SPA is classified for breeding golden eagle. Golden eagles were recorded during field surveys for the Proposed Development during both the 2016-17 and the 2019-20 field surveys. There are two known golden eagle nests within the Ornithology Desk Study Area.

7.4.3 Surveys also recorded hen harrier, merlin, white-tailed eagle, peregrine, and greylag goose. In addition, black grouse leks were identified within the Ornithology Field Survey Area and breeding raptor surveys identified territories of white-tailed eagle, hen harrier and barn owl and potential territories of hen harrier and goshawk.

Future Baseline

7.4.4 In the absence of the Proposed Development, the habitats identified within the Ornithology Field Survey Area are likely to continue to be present due to the maintained due to well established land management regimes. Given that scenario, there is no reason to believe that the suite of birds present would alter greatly. The most likely change would be an increase in some forest nesting raptors such as goshawk, the range of which is greatly expanding into Argyll in recent years due to decreased persecution.

Sensitive Receptors

7.4.5 **Table 7.2** summarises the important ornithological features scoped into the assessment.

Table 7.2: Nature Conservation Value of Important Ornithological Features Scoped-In

Feature	Nature conservation value	Justification
Glen Etive and Glen Fyne Special Protection Area (SPA) (includes all potential impacts on golden eagles, as all eagles potentially impacted by the Proposed Development would be SPA birds).	International	The SPA is classified for breeding golden eagle, with 19 active territories in 2003, more than 4.2% of the British population. The SPA is split into a northern (Glen Etive) and southern (Glen Fyne) Section, either side of the A85. The Proposed Development runs adjacent to the southern Section for approximately 1 km near between towers 18 and 23 near Achlian Farm. The Proposed Development lies 40 m from the SPA at its closest point, between towers 20 and 21. Per NS Connectivity Guidance[24] there is considered to be potential connectivity between this designated site and the Proposed Development. The Proposed Development runs between two golden eagle territories, one with an active nest location approximately 2.7 km to the north and another with an active nest location approximately 5.2 km to the south east. These both have potential connectivity with the Proposed Development. One golden eagle flight was recorded during the 2016-17 surveys, approximately 2.5 km from the Proposed Development. Two flights were recorded during the 2019-20 surveys, neither crossed the Proposed Development at collision risk height, but one flight was recorded at collision risk height flying towards the

[24] NatureScot (2016) Assessing Connectivity with Special Protection Areas (SPAs). Guidance.

Table 7.2: Nature Conservation Value of Important Ornithological Features Scoped-In

Feature	Nature conservation value	Justification
		Proposed Development. Golden eagle flight activity in the Field Survey Area is therefore considered low. The 2019 Scottish Raptor Monitoring Scheme (SRMS) Report[25] confirms that 83 golden eagle territories were identified in Argyll[26] in 2019.
Honey buzzard	National	A potential honey buzzard *Pernis apivorus* territory was identified approximately 1 km south east of the Proposed Development during the Breeding Raptor Surveys when a bird was seen calling and displaying above suitable habitat in July 2020. No specific nest site was identified. This has potential to be impacted by the Proposed Development. No honey buzzard flights were recorded during the VP surveys for the Proposed Development and honey buzzard flight activity is considered low.
White-tailed eagle	Regional	A white-tailed eagle territory was identified approximately 300 m from the Proposed Development. This has the potential to be impacted by the Proposed Development. One white-tailed eagle flight was recorded during the 2016-17 surveys, approximately 1.5 km north of the Proposed Development. Three white-tailed eagle flights were recorded during the 2019-20 surveys, all at potential collision risk height and within the Field Survey Area. White-tailed eagle flight activity is therefore considered to be medium. The 2019 SRMS Report[27] confirms that 39 white-tailed eagle territories were identified in Argyll in 2019.
Black Grouse	Regional	Five black grouse leks were identified during surveys for the Proposed Development, with the closest 110 m from one of the proposed Tower locations. There is potential for these leks to be disturbed by the Proposed Development. As suggested by the RSPB in their consultation response, the black grouse in the Field Survey Area are considered to be of regional importance. A black grouse flight was recorded during the VP surveys with two males recorded flying at collision risk height. Black grouse flight activity is considered to be low.
Hen harrier	Regional	Two hen harrier territories were identified in the Field Survey Area, with one approximately 750 m from the Proposed Development and the other approximately 1 km away. These

[25] Challis, A., Wilson, M.W., Schönberg, N., Eaton, M.A., Stevenson, A. & Stirling-Aird, P. (2020). Scottish Raptor Monitoring Scheme Report 2019. BTO Scotland, Stirling.
[26] Argyll Raptor Monitoring Area is very similar in boundary to Natural Heritage Zone 14 area, but differ in the former includes Mull, Coll and Tiree and the latter includes Arran.
[27] Challis, A., Wilson, M.W., Schönberg, N., Eaton, M.A., Stevenson, A. & Stirling-Aird, P. (2020). Scottish Raptor Monitoring Scheme Report 2019. BTO Scotland, Stirling.

Table 7.2: Nature Conservation Value of Important Ornithological Features Scoped-In

Feature	Nature conservation value	Justification
		territories have potential to be impacted by the Proposed Development. Seven hen harrier flights were recorded during the 2016-17 surveys, all within the Field Survey Area but below collision risk height. A single hen harrier flight was recorded during the 2019-20 surveys, flying at collision risk height in the Field Survey Area. Hen harrier flight activity during the VP surveys is considered to be low. The 2019 SRMS Report[28] confirms that 25 hen harrier territories were identified in Argyll in 2019.
Goshawk	Regional	Two potential goshawk *Accipiter gentilis* territories were identified approximately 1 km of the Proposed Development during the Breeding Raptor Surveys. These have potential to be impacted by the Proposed Development. No goshawk flights were recorded during the VP surveys, so goshawk flight activity is considered low. The 2019 SRMS Report[29] confirms that no goshawk territories were identified in Argyll in 2019, suggesting they are in the process of colonising the region. As a secretive bird, goshawk presence can be under recorded.
Barn Owl	Regional	A barn owl *Tyto alba* territory was identified approximately 500 m from the Proposed Development. This has potential to be impacted by the Proposed Development. No barn owl flights were recorded during the VP surveys so barn owl flight activity is considered to be low. The 2019 SRMS Report[30] confirms that 79 barn owl territories were identified in Argyll in 2019.
Merlin	Regional	No merlin territories were identified during the field surveys. Two merlin flights were recorded during the 2016-17 surveys within the Field Survey Area. One merlin flight was recorded during the 2019-20 surveys crossing the Proposed Development at collision risk height. Merlin flight activity is considered to be low. The 2019 SRMS Report[31] confirms that 5 merlin territories were identified in Argyll in 2019.

[28] Challis, A., Wilson, M.W., Schönberg, N., Eaton, M.A., Stevenson, A. & Stirling-Aird, P. (2020). Scottish Raptor Monitoring Scheme Report 2019. BTO Scotland, Stirling.
[29] Challis, A., Wilson, M.W., Schönberg, N., Eaton, M.A., Stevenson, A. & Stirling-Aird, P. (2020). Scottish Raptor Monitoring Scheme Report 2019. BTO Scotland, Stirling.
[30] Challis, A., Wilson, M.W., Schönberg, N., Eaton, M.A., Stevenson, A. & Stirling-Aird, P. (2020). Scottish Raptor Monitoring Scheme Report 2019. BTO Scotland, Stirling.
[31] Challis, A., Wilson, M.W., Schönberg, N., Eaton, M.A., Stevenson, A. & Stirling-Aird, P. (2020). Scottish Raptor Monitoring Scheme Report 2019. BTO Scotland, Stirling.

Table 7.2: Nature Conservation Value of Important Ornithological Features Scoped-In

Feature	Nature conservation value	Justification
Peregrine	Regional	No peregrine territories were identified during the field surveys. A single peregrine flight was recorded during the 2016-17 surveys, outside of the Field Survey Area and the level of flight activity is considered to be low. The 2019 SRMS Report[32] confirms that 32 peregrine territories were identified in Argyll in 2019.
Other Breeding Bird Species	Local	All bird nests are legally protected under UK law meaning that a significant effect is possible if any are destroyed due the construction, operation or decommissioning of the Proposed Development.

7.5 Issues Scoped Out

7.5.1 CIEEM EcIA Guidelines state that the assessment process does not require consideration of effects on ecological features deemed to be below a predefined nature conservation value threshold. Therefore, an assessment of the effects upon features of Site level nature conservation value or below, or those which do not occur within the Field Survey Area, have been excluded from further assessment.

7.5.2 This includes all species of bird not identified in **Table 7.2**, except for potential impacts on their nests. This includes diver *Gavia* species which were not identified within the Field Survey Area during surveys.

7.5.3 Electrocution of birds by OHLs is possible where a bird can touch a conductor while it is perched on an earthed tower, touch a conductor and the earth wire simultaneously or touch two conductor wires simultaneously. The configuration of the wires and towers of the Proposed Development means that none of those scenarios are possible as the gaps between conductors and perch points would be greater than the wingspan of any species found in the area.

7.5.4 When operational, the Proposed Development would require a low level of activity by site personnel both on foot and in vehicles. The potential for the Proposed Development to result in disturbance effects arising from noise and visual effects associated with the wires has been considered. While both factors have the potential to cause disturbance to birds, the level of this effect is considered too low to be significant and as such is not considered further in this chapter.

7.6 Assessment of Effects, Mitigation and Residual Effects

Mitigation by Design

7.6.1 The Proposed Development has been designed in such a way as to minimise potential impacts on environmental (including ornithological) features. This includes access tracks, with a temporary access track moved to avoid a potential black grouse lek near Tower 36, moved to now be 100 m away from the lek.

[32] Challis, A., Wilson, M.W., Schönberg, N., Eaton, M.A., Stevenson, A. & Stirling-Aird, P. (2020). Scottish Raptor Monitoring Scheme Report 2019. BTO Scotland, Stirling.

7.6.2 Embedded mitigation relevant to this chapter includes tried and tested measures documented within:

- General Environmental Management Plans (GEMPs) (**TA 3.1: GEMPs**), and
- Species Protection Plans (SPPs) for birds (**TA 3.2: SPPs**).

7.6.3 It is reasonable to assume protocols detailed within the GEMPs and SPPs will be implemented successfully.

7.6.4 All additional mitigation will be captured and delivered through the CEMP.

Construction Phase

7.6.5 The assessment of likely effects associated with construction is based on the typical activities described in **Chapter 2: Description of the Proposed Development (EIAR Volume 2)**.

Destruction or Disturbance of Species' Nests or Black Grouse Leks

Design Solutions and Assumptions

7.6.6 The mitigation hierarchy set out in the bird SPP will be adhered to. This establishes that all identified nests (and leks) will be retained/avoided in the first instance. The SPP also sets out that works will maintain a species-specific buffer around nests (stated in the SPP and enforced by the Ecological Clerk of Works (ECoW)) to avoid/reduce potential disturbance impacts. Where this exclusion zone cannot be maintained, or a feature must unavoidably be destroyed as a last resort, the SPPs stipulate that a licence will be sought from NS.

7.6.7 Construction works will be undertaken during hours of daylight, where possible. If night time working is required, this must be discussed and agreed with the ECoW prior to commencement.

Description of Effects

Designated Sites/SPA Bird Species

7.6.8 Potential disturbance of golden eagle territories within the Glen Etive and Glen Fyne SPA is assessed in more detail in **TA 7.3: Habitat Regulations' Appraisal**. Given the distance to the closest nests and the extremely low level of activity by the species, this impact is considered to be very unlikely therefore a **Minor Adverse** impact (i.e. not significant) is predicted.

Non-SPA Bird Species

7.6.9 There is potential for active birds' nests to be damaged or destroyed where works are required around nests, including tree felling. The tree felling works are due to take 7 months, as set out in **Table 2.2**: Indicative 24-Month Construction Programme (Sept 2023 – Sept 2025) in **Chapter 2: Description of the Proposed Development**. Installation of permanent and temporary tracks to allow access to towers may also result in damage or disturbance to nests if access occurs in the breeding season (March-August inclusive). However, the total area involved in those works is anticipated to be small; land take area is discussed in **Chapter 2: Description of the Proposed Development**, Section 2.3.3.

7.6.10 There is also potential for breeding birds to be disturbed by construction works and felling activities conducted near their nest sites. This could result in the abandonment and failure of the nest in the year of the works. This effect would be greatest in areas where woodland felling or temporary access track installation is required. For species of the passerine dominated general breeding bird assemblage, typically those not afforded specific additional protection under Schedule 1 of the Wildlife and Countryside Act 1981, the number of nest sites which could potentially be affected is likely to be small and the impact is unlikely to result in a discernible effect on the local populations of the species concerned. Any such effects on general breeding birds are therefore considered to be **Negligible** and not significant.

7.6.11 Since all birds and their nests are legally protected, their damage and/or destruction could constitute an offence. Species listed on Schedule 1 of the Wildlife and Countryside Act are also protected from disturbance, including their dependent young. Consequently, standard mitigation measures are presented below in order to prevent such instances occurring as a result of the construction works.

7.6.12 There is also the possibility that the works could impact on the nests of rare and vulnerable breeding raptors (i.e. specially protected species listed on Schedule 1). The damage, destruction or disturbance of such species' nests is likely to result in the loss of any nesting attempt or production of young in the year of the works, unless the birds initiate a second nesting attempt elsewhere. Although the number of nests which might be affected is likely to be very small, the lower abundance and higher (National and Regional) conservation value of such species means that the effects of such impacts could be as high as **Major Adverse** significance. Potential for impact on each territory identified during surveys is assessed in **Table 7.3** below.

Table 7.3: Nature Conservation Value of Important Ornithological Features Scoped-In

Species	Feature Information	Potential Impact Significance
Honey buzzard	A potential honey buzzard territory is present within 1 km of the Proposed Development, although its exact location is unknown. There is potential for the nest to be within 100 m of the Proposed Development. There is not a prescribed disturbance distance[33][34] for honey buzzard but based on disturbance distance for other species if the nest is within 100 m of the Proposed Development a significant disturbance impact is possible on a feature of National importance. More specific information on the location of these confidential features is provided in **TA 7.2: Confidential Results (Confidential Volume**).	**Major**
White-tailed eagle	A confirmed white-tailed eagle nest was identified approximately 350 m from the Proposed Development. Disturbance distances for white-tailed eagles vary dependent on the individuals, with some being more sensitive than others. Generally, a 500 m to 750 m disturbance distance is recommended, although this may be decreased to 300 m if birds become habituated[35]. There is potential for a significant disturbance impact on a feature of Regional importance.	**Moderate**

[33] The maximum distance at which disturbance impacts can be expected on a species nest.
[34] Ruddock, M. and Whitfield, D.P. (2007) A Review of Disturbance Distances in Selected Bird Species. Natural Research (Projects) Ltd. for SNH.
[35] Ruddock, M. and Whitfield, D.P. (2007) A Review of Disturbance Distances in Selected Bird Species. Natural Research (Projects) Ltd. for SNH.

Table 7.3: Nature Conservation Value of Important Ornithological Features Scoped-In

Species	Feature Information	Potential Impact Significance
	More specific information on the location of these confidential features is provided in **TA 7.2: Confidential Results (Confidential Volume).**	
Hen harrier	Two hen harrier territories were identified, one 750 m and the other 1 km from the Proposed Development. The recommended disturbance distance for hen harrier is between 500 and 750 m. As the closest territory is on the limit of the disturbance distance, disturbance impacts on either nest are considered unlikely and significant impacts on these features of Regional importance are not predicted. More specific information on the location of these confidential features is provided in **TA 7.2: Confidential Results (Confidential Volume)**.	**N/A**
Goshawk	Two potential goshawk territories are present within 1 km of the Proposed Development, although exact nest locations are unknown. Whilst one of them is at least 500 m from the Proposed Development, there is potential for the nest of the other to be within 100 m of the Proposed Development. The prescribed disturbance distance for goshawk is between 300 and 500 m[36]. If a nest is present within 500 m of the Proposed Development a significant disturbance impact is possible on a feature of Regional importance. More specific information on the location of these confidential features is provided in **TA 7.2: Confidential Results (Confidential Volume).**	**Moderate**
Barn owl	A barn owl territory was identified approximately 500 m from the Proposed Development. The prescribed disturbance distance for barn owl is 50 – 100 m, so disturbance impacts are very unlikely on this feature of Regional importance. More specific information on the location of these confidential features is provided in **TA 7.2: Confidential Results (Confidential Volume).**	**N/A**

[36] Ruddock, M. and Whitfield, D.P. (2007) A Review of Disturbance Distances in Selected Bird Species. Natural Research (Projects) Ltd. for SNH.

7.6.13 Five black grouse leks were identified within the Field Survey Area. These were identified 100 m, 115 m, 420 m, 490 m, and 715 m from the Proposed Development. Prescribed disturbance distances for black grouse leks are between 300 and 500 m, so disturbance impacts are possible from the Proposed Development on all four leks identified during surveys. It should be noted that three of the five leks (the leks 420 m, 490 m, and 715 m from the Proposed Development) do not have a line of sight to the Proposed Development, with raised ground between the leks and the Proposed Development, this is shown on **Figure 7.5: Confidential Results**. This decreases the likelihood of potential disturbance impacts and, as prescribed disturbance distances assume a clear line of sight, would reduce the distance at which disturbance impacts are likely to occur to less than 420 m. Impacts on the leks located 420 m, 490 m and 715 m from the Proposed Development are considered unlikely and no significant impact is predicted on these features of Regional importance. Potential significant impacts are likely on the leks at 100 m and 115 m from the Proposed Development, with potential **Moderate Adverse** impacts predicted on this feature of Regional importance.

Mitigation During Construction

7.6.14 Where possible, all felling and vegetation clearance work would be undertaken outside of the breeding bird season (March to September inclusive). Where this is not possible, pre-construction surveys for nesting birds will seek to identify the locations of any active nests within, or immediately adjacent to the working and felling areas along the OHL Route. All pre-construction bird surveys should extend a sufficient distance out from the OHL Route to identify any nest sites which may be within the disturbance range of the species in question. For example, pre-construction checks for general nesting birds do not need to extend more 50 m beyond the development footprint, while surveys for rare and vulnerable raptors should extend out to between 500 m and 750 m.

7.6.15 Surveys for rare and vulnerable breeding raptors, including hen harrier, honey buzzard, white-tailed eagle, and goshawk, will be conducted in the year prior to works. The surveys should focus on confirmed or probable territories, identified in the survey work already undertaken and should be expanded to include other areas of potentially suitable habitat. The surveys should seek to locate any new nest sites and advise the applicant and their Principal Contractor of required mitigation measures in line with the Bird SPP.

7.6.16 In the event that any confirmed, or suspected active nests are identified within range of potential disturbance, then a works exclusion zone will be established around the nest site to a distance as set out in the Bird SPP and as advised by the ECoW. Works will not be permitted to commence within the exclusion zone until nesting has been completed and the young have fledged, or the ECoW deems, through monitoring each stage of the breeding attempt, that the extent of the exclusion zone may be reduced. This measure is of particular importance for the white-tailed eagles, as their nest site is 350 m at its closest point to the OHL and as identified in **Table 7.3**, there is potential for significant disturbance of this species whilst nesting. The construction activity on the Section closest to the white-tailed eagle nest will be timed to avoid the key territorial and breeding season between February to August.

7.6.17 To prevent any disturbance impacts on black grouse construction works will be timed to avoid periods of lekking activity. Where any works are to be undertaken with 500 m of an identified lek site, works shall be restricted to avoid any early morning or late evening works during the main lekking season (March to May). The ECoW shall undertake regular surveys (every two weeks between March and May) of the lek sites to ensure they remain functional and are being attended by males and females.

Monitoring

7.6.18 Construction phase monitoring would be carried out by the ECoW, to ensure compliance with environmental legislation and effective delivery of mitigation measures (and licence conditions) set out in the generic and works-specific SPP. This would include monitoring of the white-tailed eagle nest identified during field surveys, with monitoring required through to the completion of the construction phase, and any other potential breeding raptor nests that could be impacted by the Proposed Development, e.g. goshawk or honey buzzard. Monitoring shall also include surveys of the black grouse leks to ensure they remain functional through the construction phase. Additional mitigation measures would be enacted if deemed necessary as a result of monitoring.

Residual Effect

7.6.19 Through the implementation of pre-construction surveys, checks and on-going monitoring during construction, the residual effects on breeding birds through nest damage/destruction or disturbance are anticipated to be of **Negligible** significance (i.e. not significant).

Operational Phase

Collision Risk

Description of Effects

7.6.20 Once the Proposed Development is constructed and operational it would provide a potential collision risk for birds. Birds are known to collide with powerlines with most collisions resulting in the death of the bird. Collisions can occur for reasons including poor weather conditions resulting in low visibility, from strong wind pushing birds into powerlines or from birds recognizing the larger conductor wires and changing height to avoid them only to collide with the thinner earth wire at the top of the OHL.

7.6.21 Potential collision risk is assessed qualitatively for powerlines, with the methodology set out in **TA 7.1: Ornithology Methodology and Results (EIAR Volume 4)**. For this assessment, any flight of a bird between 5 m and 55 m is considered to be at collision risk height. The collision risk assessment is set out in **Table 7.4**.

Table 7.4: Collision Risk Assessment

Species	Flights Crossing Line at Collision Risk Height	Assessed Flight Activity	Assessed Collision Risk	Justification
Golden eagle	1[37]	Low	Low	Golden eagle is a large bird with poor agility and manoeuvrability, but, away from the nest area, the species typically spends more time flying at higher altitudes than the Proposed Development, considerably higher than collision risk height. Given the distance from the Proposed Development to the nearest nest locations, it is considered unlikely that the species would be flying at collision height even if it were flying near the preferred alignment of the Proposed Development. The records of golden

[37] Flight not seen crossing Proposed Development at collision risk height, but recorded at collision risk height flying in direction of Proposed Development.

Table 7.4: Collision Risk Assessment

Species	Flights Crossing Line at Collision Risk Height	Assessed Flight Activity	Assessed Collision Risk	Justification
				eagle near the Proposed Development were of birds flying considerably above collision height (approximately 100 m), except for one golden eagle flight, recorded heading towards the Proposed development at collision risk height.
Honey buzzard	0	Low	Low	Honey buzzards spend most of their flying time below canopy height within coniferous woodland and as such are adapted to avoiding potential collisions with branches and other obstacles. Honey buzzard fly above canopy height during the breeding season to undertake territorial displays. They typically exhibit this behaviour over territories within woodland rather than open areas. Consistent with the absence of any flight activity and given the distance from the possible territory and the Proposed Development, collision risk is predicted to be low.
White-tailed eagle	1	Medium	Moderate	White-tailed eagle is a large bird with poor agility and manoeuvrability. It has one of the lowest avoidance rates of a bird species in relation to impacts from collisions with wind turbines[38]. While only one flight was recorded crossing the Proposed Development at collision risk height, it is recognised that these surveys were undertaken prior to the identification of a white-tailed eagle territory approximately 300 m from the Proposed Development. Flight activity to and from that nest was seen to be focussed on the side furthest from the Proposed Development. However, it involved birds typically flying at or around collision height. This means, should they approach the nest from the direction of the Proposed Development, they would be at risk of collision. Following the precautionary principle and taking account of the low avoidance rate for the species, a Moderate collision risk is considered appropriate.
Black grouse	0	Low	Low	Black grouse are fast-flying birds that make daily commutes between lekking foraging and roosting areas. They hold their heads facing forward in

[38] NatureScot (2018) Avoidance Rates for the Onshore SNH Wind Farm Collision Risk Model.

Table 7.4: Collision Risk Assessment

Species	Flights Crossing Line at Collision Risk Height	Assessed Flight Activity	Assessed Collision Risk	Justification
				flight, which is better for identifying obstacles, but are limited in how they can avoid collisions due to their speed. Flights are typically undertaken at low heights, flying high enough to clear trees but not much higher. As such flights are typically at the height of the thicker, conductor wires of the configuration and not the top earth wires which is typically thinner and more prone to collisions. This includes flights to and from any leks sites. It is therefore considered that, in line with the above and the low level of flight activity observed, a low potential for collision risk is considered appropriate, and mitigation is not required in the form of line marking.
Hen harrier	0	Low	Low	When hunting, hen harriers typically fly very low to the ground with their heads facing downwards, known as quartering[39]. This means they are typically recorded flying at less than collision risk height but are less able to avoid potential collisions. They are very agile, however. During the early breeding season, males skydance[40] as a territorial display. This involves the birds flying up and down repeatedly and would put them at the risk of collision. Consistent with the low flight activity recorded, collision risk is predicted to be low.
Goshawk	0	Low	Low	Goshawk, much like honey buzzards, spend most of their flying time within coniferous woodland, below the canopy and as such are adapted to avoiding potential collisions with branches and other obstacles. When flying above canopy height during the breeding season, typically limited to territorial displays, the birds would be found over territories within woodland rather than over open areas. Consistent with the low flight activity recorded, collision risk is predicted to be low.
Barn Owl	0	Low	Low	Barn owl typically fly at night or at dawn and dusk.. They have very good eyesight for flying at night and are reasonably agile/manoeuvrable but are susceptible to collisions when quartering or looking

[39] Quartering describes the low hunting flights of owls and harriers where they fly low to the ground very slowly looking for prey.

[40] Skydancing describes hen harrier courtship behaviour, where the male and female fly in unison and mirror behaviours.

Table 7.4: Collision Risk Assessment

Species	Flights Crossing Line at Collision Risk Height	Assessed Flight Activity	Assessed Collision Risk	Justification
				down which is why many fall victim to collisions with traffic. However, the other reason that they are susceptible with traffic is that they typically fly low over the ground. Consistent with the low flight activity, and typical low flight height, below that of the OHL, collision risk is predicted to be low.
Merlin	1	Low	Low	Merlin is a small raptor species that hunt by pursuing small avian prey. They are exceptionally agile/manoeuvrable. They are ambush predators which fly low and grab birds such as skylark or meadow pipit from on or close to the ground. Consistent with the low flight activity, and low flight height, below that of the OHL, collision risk is predicted to be low.
Peregrine	1	Low	Low	Peregrine is a large raptor species that hunts by pursuing prey or ambushing them from above via steep dives unseen by the prey species below. They will also pursue flocking species such as small waders. They are agile and manoeuvrable and likely able to avoid potential collisions. There is no evidence of a peregrine territory close to the Proposed Development, hence the extremely low activity. Consistent with the low flight activity and good avoidance ability, collision risk is predicted to be low.

7.6.22 Collision risk for all species except white-tailed eagle is assessed to be low, and as such only **Minor Adverse** impacts are predicted (not significant) for these species.

7.6.23 Potential moderate collision risk impacts are predicted for white-tailed eagle, which has the potential to result in a **Moderate Adverse** (significant) impact on this species of Regional importance.

Mitigation During Operation

7.6.24 To mitigate the potential for significant impacts on white tailed eagle from collision risk, line marking will be undertaken on a Section of the earth wire of the Proposed Development. The line marking location is provided in **TA 7.2: Confidential Results and Mitigation (Confidential Volume)**. Collision risk can be decreased by line marking as it improves the visibility of the thinner, less visible earth wire which reduces the likelihood of a collision taking place. Studies have shown that by marking the earth wire, collision risk can be reduced between 60% and 97%[41] [42] [43] [44].

7.6.25 Line marking would involve installing bird diverters along approximately 840 m of the earth wire. The type and distribution of bird diverters would be agreed prior to their installation with NatureScot. The detailed design would consider NatureScot Guidance[45] and is anticipated to be similar to the approach used on the Inveraray to Crossaig OHL project, of which construction of phase 1 is complete and phase 2 is currently in construction. Diverters can take many forms, from spiralled wire to reflective discs, they are recommended to be as large as possible and of contrasting colours to improve visibility.

7.6.26 Flight diverters would be checked as part of routine maintenance visits to ensure they are still present. This would be undertaken every spring, after the period of worse weather in the winter. Line marker surveys could be undertaken alongside other operational maintenance surveys with the aim to replace any that are found to be missing to maintain their effectiveness. If diverters are missing, these would be replaced to maintain their effectiveness.

7.6.27 To confirm the effectiveness of this mitigation measure, it is proposed that a programme of post-construction monitoring is undertaken with carcass searches undertaken for the stretch of the Proposed Development that is line marked. This monitoring would be undertaken following on from the pre-construction raptor monitoring undertaken for mitigation measure. Approximately 840 m of the line-marked Section would be surveyed, including a buffer of approximately 25 m on either side of the line. The post-construction monitoring plan would be based on a programme of systematic carcass searches and included the following[46]:

- Any dead birds would be recorded. Where possible, a cause of death, whether collision or other, would be recorded, as would be the species, sex, age and any other relevant information. Identified birds would be marked to ensure they were not double counted on a subsequent visit.
- A calibration exercise would be undertaken to calculate the efficiency of the surveyors undertaking the carcass searches. This involved artificially placing carcasses in the survey area and having surveyors search for them. The success rate would then be used to develop a correction factor that would be applied to the survey results.
- The carcass searches would be undertaken at regular intervals throughout the course of one year, with ten monthly visits spread across the year, commencing when the Proposed Development becomes operational.

[41] Alonso, J.C., Alonso, J.A. and Munoz-Pulldo, R. (1994) Mitigation of bird collisions with transmission lines through groundwire marking. *Biological Conservation 67* (2), p. 129-134.

[42] Guyonne, F. E. and Ferrer, M. (1998) Rate of Bird Collision with Power Lines: Effects of Conductor-Marking and Static Wire-Marking. *Journal of Field Ornithology* 69 (1) p. 8-17.

[43] Frost, D (2008) The use of 'flight diverters' reduces mute swan *Cygnus olor* collision with power lines at Abberton Reservoir, Essex, England. *Conservation Evidence 5*, p. 83-91.-

[44] Barrientos, R., Alonso, J. C., Ponce, C. and Palacin, C. (2011) Meta-Analysis of the Effectiveness of Marked Wire in Reducing Avian Collisions with Power Lines. *Conservation Biology.* 25 (5), p. 893-903.

[45] NatureScot (2016) Assessment and Mitigation of Impacts of Power Lines and Guyed Meteorological Masts on Birds. Guidance.

[46] This plan has been defined similar to the program of post-construction monitoring undertaken for the Knocknagael to Tomatin 275kV OHL: Ramboll UK Ltd (2021) LT19 Knocknagael to Tomatin: Post Construction monitoring Report.

Residual Effect

7.6.28 As a result of the implementation of line marking, the residual effects on white-tailed eagle through collision risk is anticipated to be **Minor Adverse** (i.e. not significant).

Cumulative Effects

7.6.29 Cumulative effects are considered to include both the total effects resulting from the Proposed Development in combination with other similar Proposed Developments (past, present and reasonably foreseeable), and the additional contribution of the Proposed Development to the total cumulative effects taking account of other similar Proposed Developments. As such, the aim is to identify any likely significant effects associated with the combination or addition of the Proposed Development with the cumulative baseline. Where available, information for infrastructure projects within NHZ 14 were consulted and are presented below. Developments for which no data could be reviewed are listed below but have been left out of the assessment. The absence of data for some cumulative developments is not considered to be a significant limitation on this assessment. The key ornithological issues for development in the areas of Argyll crossed by the Proposed Development have been identified and are fully assessed in this Section. Based on our professional judgement, specialist local knowledge of the area and the robust and precautionary approach taken in this assessment, we consider it to be unlikely that potentially significant cumulative effects have been overlooked.

Installed Wind Farms

A'Chruach

7.6.30 A 21 turbine wind farm in Kilmichael Forest approximately 4 km west of Minard. This wind farm is located 25 km south west of the Proposed Development. The assessment of cumulative effects for A'Chruach Wind Farm highlighted the potential for a cumulative collision risk on both red-throated divers and black grouse. It was considered reasonable to assume that A'Chruach Wind Farm would only make a small contribution to any cumulative effects as the magnitude of the effect was low. Collision risk for red-throated divers and black grouse associated with the Proposed Development was considered to be negligible and low respectively.

Allt Dearg Community Wind Farm

7.6.31 A 12 turbine wind farm south west of Stronachullin, approximately 50 km south west of the Proposed Development. Insufficient information was available on any significant environmental effects. As a result, an assessment of the cumulative effects could not be undertaken.

An Suidhe

7.6.32 A 24 turbine wind farm to the west of Inveraray, approximately 13 km south west of the Proposed Development. Insufficient information was available on any significant environmental effects. As a result, an assessment of the cumulative effects could not be undertaken.

Beinn an Tuirc

7.6.33 A 45 turbine wind farm approximately 89 km to the south of the Proposed Development. Insufficient information was available on any significant environmental effects. However, the cumulative assessment undertaken as part of the consented Phase 3 extension identified no potentially significant cumulative effects with other developments.

Beinn an Tuirc Extension

7.6.34 A 19 turbine wind farm to the north of the existing wind farm. Insufficient information was available on any significant environmental effects. However, the cumulative assessment undertaken as part of the consented Phase 3 extension identified no potentially significant cumulative effects with other developments.

Beinn Ghlas

7.6.35 A 16 turbine wind farm approximately 12 km to the west of the Proposed Development. Insufficient information was available on any significant environmental effects. As a result, an assessment of the cumulative effects could not be undertaken.

Carraig Gheal

7.6.36 A 20 turbine wind farm approximately 10 km to the west of the Proposed Development. Insufficient information was available on any significant environmental effects. As a result, an assessment of the cumulative effects could not be undertaken.

Clachan Flats (Ardkinglas)

7.6.37 A nine turbine wind farm approximately 10 km to the south east of the Proposed Development. Insufficient information was available on any significant environmental effects. As a result, an assessment of the cumulative effects could not be undertaken.

Cour

7.6.38 Cour Wind Farm is a ten turbine development approximately 75 km to the south of the Proposed Development. The project's residual impacts included minor impacts on breeding curlew (displacement), a minor collision risk impact on golden eagle and a moderate collision risk impact on red-throated diver. The Proposed Development is not predicted to have any significant effects on curlew or red-throated diver but is predicted to have a moderate collision risk impact on golden eagle.

Cruach Mhor

7.6.39 A 35 turbine wind farm approximately 32 km to the south of the Proposed Development. Insufficient information was available on any significant environmental effects. As a result, an assessment of the cumulative effects could not be undertaken.

Deucheran Hill

7.6.40 A nine turbine wind farm near Carradale, approximately 82 km south of Crossaig. Golden eagle and red-throated diver were recorded using the site. No significant effect was predicted associated with collision risk on golden eagle (negligible risk). The predicted collision mortality for red-throated diver was one bird every 22.2 years.

Freasdail

7.6.41 An 11 turbine wind farm approximately 65 km south of the Proposed Development. No significant effects on ornithology are predicted associated with Freasdail Wind Farm. Most effects were predicted to be minor, however minor negative effects were predicted for disturbance and displacement of breeding curlew, displacement of curlew and kestrel and collision risk on hen harrier and Greenland white-fronted geese.

Isle of Gigha

7.6.42 A four turbine wind farm on Gigha, approximately 85 km south west of the Proposed Development. Insufficient information was available on any significant environmental effects. As a result, an assessment of the cumulative effects could not be undertaken.

Srondoire (Extension to Allt Dearg)

7.6.43 The Srondoire Wind Farm is an extension to Allt Dearg Wind Farm comprising of three turbines. Minor residual effects were predicted on snipe *Gallinago* and golden eagle from construction disturbance, displacement/habitat loss and collision mortality. The Proposed Development is not considered to have any effects relating to snipe, but is predicted to have a moderate magnitude impact on golden eagle from collision risk (prior to the implementation of appropriate mitigation).

Tangy I, II and III Wind Farms

7.6.44 Tangy Wind Farms have collectively 37 turbines located 99 km south of the Proposed Development. Key target species for this development were Greenland white-fronted goose *Anser albifrons*, hen harrier, merlin and herring gull *Larus argentatus*. The Proposed Development is not predicted to have any impacts on Greenland white-fronted goose and herring gull. The Proposed Development is assessed to have non-significant, adverse effects on hen harrier and merlin, the effects are considered alongside those from the Proposed Development in this cumulative Section.

Consented Wind Farms

A'Chruach Extension

7.6.45 A three turbine wind farm to be located on moorland to the east of the installed wind farm. No potentially adverse effects were required to be assessed in detail and therefore no significant residual effects have been identified. As a result, no cumulative effects are predicted.

Auchadaduie

7.6.46 A three turbine wind farm approximately 88 km to the south of the Proposed Development. No significant effects are predicted on ornithological features from Auchadaduie Wind Farm or from cumulative effects associated with Auchadaduie Wind Farm and others surrounding it. As a result, no cumulative effects are predicted.

Beinn an Tuirc Phase 3

7.6.47 A 17 turbine wind farm to the south of the existing wind farm. Residual effects from land take, disturbance (in construction, operation and decommissioning) and collision risk were all assessed to be negligible. Cumulative effects of disturbance and collision risk were assessed to be minor. No Cumulative effects are predicted.

Blarghour

7.6.48 A 15 turbine wind farm approximately 5 km south west of the Proposed Development. Surveys for this wind farm identified potential negligible-minor impacts on golden and white-tailed eagle. The Proposed Development could potentially result in significant impacts on golden and white-tailed eagle, therefore potentially significant impacts are considered in this cumulative assessment.

Blary Hill

7.6.49 A fourteen turbine wind farm approximately 90 km to the south of the Proposed Development. All residual effects from Blary Hill Wind Farm on ornithological features have been assessed to be not significant. The predicted minor negative impacts from this wind farm are listed below:

- habitat loss for forestry passerines;
- habitat loss for black grouse;
- construction disturbance of forestry passerines;
- construction disturbance of black grouse;
- construction disturbance of curlew; and
- displacement of forestry passerines.

7.6.50 The Proposed Development is predicted to have potential significant effects on black grouse from disturbance. This effect shall be considered alongside effects from Blary Hill in this cumulative assessment.

Wind Farms in Planning

Car Duibh

7.6.51 A 26 turbine wind farm approximately 8 km south west of the Proposed Development. Target species for this wind farm were golden eagle, peregrine falcon, merlin, hen harrier, osprey, goshawk, short-eared owl, divers, black grouse, breeding Schedule 1 and Annex 1 waders and all waders and waterfowl. This project has potential to contribute to the cumulative impacts on golden eagle, hen harrier, merlin, black grouse, goshawk and peregrine falcon alongside the Proposed Development.

Cruach Nam Mult

7.6.52 Two turbines approximately 66 km south west of the Proposed Development. While golden eagle, merlin and hen harrier were all recorded within the site, an impact assessment has not been undertaken which would allow for a comparison with the data collected for the Proposed Development. Species considered to be most at risk from collisions with Cruach nam Mult Wind Farm are buzzard, lesser black-backed gull, greater black-backed gull, raven and kestrel.

Eascairt (Kintyre)

7.6.53 A 13 turbine wind farm approximately 70 km south of the Proposed Development. Eascairt windfarm is predicted to have minor disturbance impacts on red-throated diver and black grouse. Minor collision risk impacts are predicted for hen harrier, red-throated diver, golden eagle and black grouse. Displacement impacts are predicted on hen harrier (minor), red-throated diver (minor), golden eagle (moderate) and black grouse (minor). The Proposed Development is predicted to have potential significant effects on black grouse from disturbance, and non-significant impacts on hen harrier. These effects shall be considered alongside effects from Eascairt in this cumulative assessment.

Ladyfield

7.6.54 A 22 turbine wind farm approximately 3 km south east of the Proposed Development. Target species for this project included golden eagle, hen harrier, merlin, golden plover *Pluvialis apricaria* and greekshank *Tringa nebularia*. This project has potential to contribute to the cumulative impacts on golden eagle, hen harrier and merlin alongside the Proposed Development.

Narachan

7.6.55 A 22 turbine wind farm approximately 78 km south of the Proposed Development. Surveys for this wind farm identified golden eagle, red-throated diver, black grouse, osprey and goshawk as target species. The Proposed Development could potentially result in significant impacts on golden eagle, black grouse and osprey, therefore potentially significant impacts are considered in this cumulative assessment.

Upper Sonachan

7.6.56 An 18 turbine wind farm approximately 2 km west of the Proposed Development. No significant effects are predicted on ornithological features. As a result, no cumulative effects are predicted.

West Torrisdale

7.6.57 A 12 turbine wind farm approximately 88 km south of the Proposed Development. The scoping report highlights Greenland white-fronted goose, hen harrier, golden eagle, white-tailed eagle and black grouse as species likely present within the habitats on and surrounding the proposed wind farm. The Proposed Development could potentially result in significant impacts on hen harrier, golden eagle, white-tailed eagle and black grouse, therefore potentially significant impacts are considered in this cumulative assessment.

Grid Infrastructure

Inveraray to Crossaig 275 kV OHL

7.6.58 The Inveraray to Crossaig 275 kV OHL is currently being constructed and runs from Inveraray substation (8 km south east of the Proposed Development) to Crossaig substation (74 km south of the Proposed Development). Mitigation was required to prevent significant impacts on golden eagles from disturbance. The Proposed Development could potentially result in significant impacts on golden eagle, therefore potentially significant impacts are considered in this cumulative assessment.

LT194 Creag Dhubh to Inveraray 275 kV OHL

7.6.59 This OHL is at the scoping stage and will run between the Proposed Creag Dhubh substation (at the southern terminus of the Proposed Development) connecting into the Inveraray to Crossaig 275 kV OHL at its southern end. The assessment for this project shall assess impacts on golden eagle (in particular from the Glen Etive and Glen Fyne SPA), white-tailed eagle and black grouse. The Proposed Development could potentially result in significant impacts on golden eagle (and Glen Etive and Glen Fyne SPA), white-tailed eagle and black grouse, therefore potentially significant impacts are considered in this cumulative assessment.

Temporary Diversion of OHL during Construction of Proposed Creag Dhubh Substation

7.6.60 The southern end of the Proposed Development connects into the proposed Creag Dhubh substation. During its construction there will be a need to install Sections (approximately 800 m) of OHL to allow continued transmission of energy while the substation is connected to the OHL. These Sections of OHL would be required within coniferous plantation around the proposed substation, an area previously scoped out from the breeding raptor surveys due to low habitat suitability (see **TA 7.1: Ornithology Methods and Results**). Potential significant impacts on nesting birds would be possible during felling for this diversion, but assuming best practice methods are followed (felling outside of breeding bird season and pre-felling checks for nests) no significant impacts are predicted.

Blarghour Wind Farm Connection Project

7.6.61 This project is in the pre-planning process and is reasonably foreseeable as part of the Argyll and Kintyre 275 kV Strategy. This would connect the consented Blarghour Wind Farm to the proposed Creag Dhubh substation, and therefore would connect into the south eastern extent of the Proposed Development. Surveys for this project are likely ongoing, but it is assumed that a similar suite of species to those observed during surveys for the Proposed development would be present, therefore potential exists for significant cumulative impacts on Glen Etive and Glen Fyne SPA, golden eagle and goshawk.

Cumulative Impact Summary

7.6.62 The above information is summarised in **Table 7.5**, which also sets out the assessed cumulative impacts.

Table 7.5: Cumulative Impact Assessment Summary

Feature	Developments with Potential Significant Impacts[47]	Assessed Cumulative Impacts
Glen Etive and Glen Fyne SPA	Ladyfield, LT194, Blaghour grid connection.	All developments are on the fringes of the SPA, with no construction proposed within the SPA. Each development is to be constructed on land too low or wooded to be used by golden eagles. This impact is further assessed in TA 7.3: HRA. No significant cumulative impacts are predicted on Glen Etive and Glen Fyne SPA.
Golden eagle	Cour, Srondoire, Blarghour, Car Duibh, Eascairt, Ladyfield, Narachan, West Torrisdale, Inveraray to Crossaig, LT194, Blaghour grid connection.	The Proposed Development is predicted to have a low collision risk impact on golden eagle and is very unlikely to have disturbance impacts on golden eagle. Neither of these impacts are considered sufficiently large to increase the cumulative impact on golden eagle within NHZ 14 to significant levels. No significant cumulative impacts are predicted on golden eagles.
White-tailed eagle	Blarghour, West Torrisdale, LT194.	The Proposed Development has potential to result in significant disturbance and collision risk impacts on white-tailed eagle. These impacts are limited to a single territory identified within the ornithology field survey area. This territory is close enough to be impacted by collision risk from LT194 but not the other two projects. The mitigation presented in this chapter is considered sufficient to prevent any significant impacts on white-tailed eagle from occurring, and sufficient to prevent potential for significant impacts on the NHZ 14 populations of white-tailed eagle. No significant cumulative impacts are predicted on white tailed eagle.
Honey buzzard		No other developments were identified within NHZ 14 with potential impacts on honey buzzard. No significant cumulative impacts are predicted on honey buzzard.

[47] This includes developments yet to be submitted into planning that may provide significant impacts, based on review of scoping report.

Table 7.5: Cumulative Impact Assessment Summary

Feature	Developments with Potential Significant Impacts[47]	Assessed Cumulative Impacts
Hen harrier	Freasdail, Tangy, Car Duibh, Eascairt, Ladyfield, West Torrisdale,	The Proposed Development is predicted to have a low collision risk impact on hen harrier and is not predicted to have disturbance impacts on hen harrier. The collision risk impact is not considered sufficiently large to increase the cumulative impact on hen harrier within NHZ 14 to significant levels. No significant cumulative impacts are predicted on hen harrier.
Goshawk	Car Duibh, Blaghour grid connection.	Car Duibh wind farm is in the scoping stage and intends to undertake surveys targeting goshawk, however this wind farm on a moorland area is very unlikely to present significant impacts on a raptor that is a forest specialist. The Blarghour grid connection connects into the proposed Creag Dhubh substation, potentially near where a goshawk territory was identified. Impacts would likely be limited to disturbance, which would be mitigated through undertaking pre-construction surveys and adhering to a SPP. No significant cumulative impacts are predicted on goshawk.
Barn owl		No other developments were identified within NHZ 14 with potential impacts on barn owls. No significant cumulative impacts are predicted on barn owls.
Black grouse	A' Chruach, Blary Hill, Car Duibh, Eascairt, Narachan, West Torrisdale, LT194	Black grouse impacts from disturbance and collision risk are possible on the cumulative developments listed. The Proposed Development is predicted to have a low collision risk impact on black grouse and is not considered sufficiently large to increase the cumulative impact on black grouse within NHZ 14 to significant levels. Disturbance impacts on black grouse are proposed to be mitigated by following a SPP and avoiding works during peak times of day for lekking between March and May. This is considered sufficient to prevent any significant impacts on black grouse. There are no cumulative developments due to be constructed concurrently with the proposed development, therefore no significant cumulative impact is predicted on black grouse.
Merlin	Tangy, Car Duibh, Ladyfield,	The Proposed Development is predicted to have a low collision risk impact on merlin and is very unlikely to have disturbance impacts on merlin. Neither of these impacts are considered sufficiently large to increase the cumulative impact on merlin within NHZ 14 to significant levels. No significant cumulative impacts are predicted on merlin.
Peregrine	Car Duibh	The Proposed Development is predicted to have a low collision risk impact on peregrine and is very unlikely to have disturbance impacts on peregrine. Neither of these impacts are considered sufficiently large to increase the cumulative

Table 7.5: Cumulative Impact Assessment Summary		
Feature	**Developments with Potential Significant Impacts[47]**	**Assessed Cumulative Impacts**
		impact on peregrine within NHZ 14 to significant levels. No significant cumulative impacts are predicted on peregrine.

7.7 Summary

7.7.1 A programme of desk studies and field surveys were undertaken between 2016 and 2020 to determine the baseline of the site. Surveys were undertaken following best practice guidance and the assessment was undertaken following CIEEM guidelines. Surveys were undertaken between 2016-17 by WSP, with update surveys undertaken by Ramboll cover new route Sections in 2019-20. One of the key ornithological constraints is the Glen Etive and Glen Fyne SPA which borders the Proposed Development for 1 km and is classified for breeding golden eagle. Surveys only recorded low levels of golden eagle flight activity, however, and no significant impacts on the species or the SPA are predicted.

7.7.2 Field surveys recorded black grouse leks at five locations within the Ornithological Field Survey Area and territories were identified of white-tailed eagle and hen harrier as well as likely territories of goshawk and honey buzzard. Impacts on these features would be mitigated by adhering to Species Protection Plans and monitoring to be undertaken by the ECoW. A Section of line marking is also required to avoid collision risk on white-tailed eagle. **No significant residual impacts or cumulative impacts on ornithological features are predicted.**