Daer Wind Farm
FEI Ornithology Report

natural power

Document history

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Issue	Date	Revision Details
A	02 September 2025	First revision
B	02 October 2025	Second revision
C	03 November 2025	Third revision
D	05 November 2025	Final revision

FEI

Contents

Glossary

Table 1: Glossary

Term	Definition
Applicant	RWE Renewables UK Onshore Wind Limited.
Baseline	The existing conditions that prevail against which the effects of the proposed development are compared.
Birds of Conservation Concern	A five-yearly assessment of ornithological conservation priorities, provided by a review of the population status of birds regularly found in the UK, Channel Islands and the Isle of Man conducted by the UK's leading bird conservation organisations.
Chartered Institute of Ecology and Environment Management (CIEEM)	CIEEM are a leading professional body for ecologists. Their Ecological Impact Assessment guidelines provide a standard framework and practical advice for ecologists to identify, quantify, and evaluate the potential impacts of development projects on habitats, species, and ecosystems, aligning with legal requirements like the Environmental Impact Assessment Regulations.
Ecological Impact Assessment (EcIA)	EcIA is an assessment of the impact of potential effects of the Proposed Development on the breeding, foraging and/or roosting ecology of Important Ornithological Features.
Effects	Outcome to an ornithological feature from an impact. For example, the effects on a golden eagle population from loss of habitat.
Embedded Mitigation	Embedded mitigation measures are proposed at the outset of the Proposed Development, to reduce impacts associated with construction, operation and decommissioning.
Environmental Impact Assessment (EIA)	The process of identifying, quantifying and evaluating potential effects of development-related or other proposed actions on the environment.
EIA Regulations	The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.
Habitat	The area or environment where a species naturally occurs.
Habitats Regulations Appraisal	A Habitats Regulations Appraisal is a process which assesses whether a Proposed Development will have a Likely Significant Effect on any statutory designated sites with which Important Ornithological Features recorded at the Proposed Development may have connectivity and if so whether there would be an adverse effect on the integrity of the designated site, having regard to its conservation objectives.
Impacts	Actions resulting in changes to an ornithological feature. For example, the construction activities of a development removing a plantation used by breeding birds.
Important Ornithological Feature (IOF)	IOFs are avian species recorded at the Proposed Development for which predicted effects of the Proposed Development may cause significant impacts in the absence of mitigation. These species are selected for further EcIA.
Infrastructure	This is used to describe all parts of Daer Wind Farm development that require construction activities, both temporary and permanent; including turbines, hard standings and tracks (where new or widened).
Daer Wind Farm	The turbines and all associated infrastructure required for Daer Wind Farm (also referred to as the 'Proposed Development') that lie within the Site boundary.
Mitigation	Measures, including any process, activity or design to avoid, reduce, remedy or compensate for potential negative effects of a development.
Proposed Development	Daer Wind Farm development (a 17-turbine scheme).
Proposed Phase 1 Development	Daer Wind Farm development without two turbines and associated hard standing and access tracks to these turbines (a 15-turbine scheme).
Proposed Phase 2 Development	The two turbines and associated access tracks to these turbines removed from the Daer Wind Farm Phase 1 Development.
Ramsar	A Ramsar Site is a wetland site of international importance designated under the Ramsar Convention, where waterfowl or waterfowl habitat are described as ecological features.
Site	All land within the Site Boundary.
Site Boundary	Proposed application boundary for the Proposed Development.
Site of Special Scientific Interest (SSSI)	SSSIs are protected areas that represent the UK's most important wildlife and/or geological sites.
Special Protection Area (SPA)	SPAs are internationally important areas for nature conservation, specifically birds, classified under the Birds Directive.
Zone of Influence	The area over which ornithological features may be subject to significant effects as a result of the proposed project or associated activities.

List of Abbreviations

Table 2: List of Abbreviations

Abbreviation	Description
AA	Appropriate Assessment
BEMP	Biodiversity Enhancement Management Plan
BoCC	Birds of Conservation Concern
CEMP	Construction Environmental Management Plan
CIA	Cumulative Impact Assessment
CIEEM	Chartered Institute of Ecology and Environmental Management
CRM	Collision Risk Modelling
EcIA	Ecological Impact Assessment
ECoW	Environmental Clerk of Works
ECU	Energy Consents Unit
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report

Abbreviation	Description
FCS	Forestry Commission Scotland (now Forestry and Land Scotland)
FEIR	Further Environmental Information Report
FLS	Forestry and Land Scotland
GET	Golden Eagle Topography modelling
GPS	Global Positioning System
Ha	Hectares
IOF	Important Ornithological Feature
IUCN	International Union for Conservation of Nature
LPA	Local Planning Authority
NHZ	Natural Heritage Zone
OEMP	Operational Environmental Management Plan
RUN	Restoring Upland Nature
RSPB	Royal Society for the Protection of Birds
RWE	RWE Renewables UK Onshore Wind Limited
SBL	Scottish Biodiversity List
SEPA	Scottish Environment Protection Agency
SNH	Scottish Natural Heritage (former name of NatureScot)
SPA	Special Protection Area
SPP	Species Protection Plan
SSGEP	South of Scotland Golden Eagle Project
SSSI	Site of Special Scientific Interest
UK	United Kingdom
ZoI	Zone of Influence

1.1 STATEMENT OF COMPETENCE

1.1.1 The author of this Further Environmental Information Report (FEIR) has over 13 years of experience in the environmental sector working in ecological consultancy. During this time, they have been involved with management of onshore wind development projects, production of Environmental Impact Assessment Report (EIAR) ornithology chapters, scoping reports, Habitats Regulations Appraisals and technical baseline reports as well as client and consultee liaison. They are an experienced ornithologist, having conducted various bird survey types, including those for Annex I/Schedule I listed raptors such as golden eagle.

1.2 INTRODUCTION

1.2.1 RWE Renewables UK Onshore Wind Limited (RWE) (the "Applicant") made an application for consent under Section 36 of the Electricity Act 1989 (as amended) and for a direction that planning consent be deemed to be granted under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 (as amended) for the proposed development of Daer Wind Farm (hereafter the "Proposed Development"). The Proposed Development is located in both South Lanarkshire (turbines 1-12) and Dumfries and Galloway (turbines 13-17) Local Planning Authority (LPA) areas and lies approximately 8 km west of the nearest town, Moffat. The application for consent was submitted by Natural Power Consultants Limited (Natural Power) on behalf of RWE.

1.2.2 The Proposed Development comprises the following main elements:

- Up to 17 wind turbines
  - Turbine foundations
  - External transformer housing
  - Crane pads
- Substation, control building and compound
- Battery/energy storage infrastructure
- Upgraded and new access tracks
- Underground electricity cables connecting infrastructure within the Proposed Development
- Two anemometry masts
- Signage
- Four temporary borrow pits
- Temporary construction and storage compounds, laydown areas and ancillary infrastructure
- Drainage and drainage attenuation measures (as required)

1.2.3 An assessment of the effects of the Proposed Development on ornithological receptors was provided within **Chapter 7** of the **EIAR** submitted to the Energy Consents Unit (ECU) on 11 May 2021, which predicted a low negative/negligible impact on all Important Ornithological Features (IOFs). All impacts predicted were considered to result in effects which are not significant.

1.2.4 However, NatureScot were informed of the presence of a golden eagle nest that could be affected by the Proposed Development in early 2024. This information was communicated to the ECU on 22 October 2024 and then to RWE via the ECU on 24 October 2024.

1.2.5 The female (tag identification number 181544) associated with this territory is a bird that was translocated in 2021 by the South of Scotland Golden Eagle Project (SSGEP)[1], now known as Restoring Upland Nature (RUN). The female dropped her satellite-tag in January 2023, although subsequent presence has been confirmed through fieldwork and observations of her colour ring (F02). The male (tag identification number 1027, colour ring A29) of the pair was satellite-tagged as a fledgling at a nest in Galloway in 2018.

[1] South of Scotland Golden Eagle Project. Available from - https://www.goldeneaglessouthofscotland.co.uk/ [Accessed 19/06/2025]

1.2.6 No golden eagle sightings or nest sites were recorded during the baseline survey work at the Proposed Development between 2018 and 2020. As a result, golden eagle was not considered in the EIAR, and the implications of the Proposed Development on this pair/territory was not assessed in the EIAR.

1.2.7 This FEIR provides an updated baseline with regard to golden eagle as well as an updated assessment of potential effects from the Proposed Development on this species. To reduce the potential effects of the Proposed Development on golden eagle and abide by current legislation (i.e. the Wildlife and Countryside Act 1981 (as amended)), the updated assessment also presents and compares the effects of a 15 turbine scheme (i.e. the removal of two turbines), hereafter referred to as the Proposed Phase 1 Development.

1.2.8 The Proposed Phase 1 Development comprises up to 15 wind turbines, with a maximum tip height of 180 metres (m), with associated ancillary infrastructure (see **Figure 1.1: Proposed Development**). The Proposed Phase 2 Development covers the remaining two turbines and associated access tracks and hard standing that would be developed if certain criteria can be met with respect to golden eagles (see Paragraph 1.2.13). The remainder of the Proposed Development design remains the same as that presented in the original application, including the location of the proposed substation, anemometry mast, borrow pits and access tracks.

1.2.9 A full account of methods and results previously provided in the EIAR is not repeated here. For all other information relating to impact assessment of ornithological receptors, refer to **Chapter 7** of the **EIAR**. It is considered that the baseline data collected and the assessment on all other ornithological receptors still remains valid. If the Proposed Development was not built out in full and only the Proposed Phase 1 Development was constructed, it is likely to have no effect at worst, or at best, it would reduce the level of impact on all receptors.

1.2.10 This FEIR provides details of the updated baseline ornithological conditions on the Site and the immediate surrounding environment with regard to golden eagle only. Baseline ornithological conditions relating to golden eagle have been established using third-party satellite-tag data provided by RUN and Natural Research. The golden eagle baseline is described and assessed using recognised criteria, in accordance with industry guidelines (e.g. that produced by the Chartered Institute of Ecology and Environment Management: CIEEM, 2018[2]).

1.2.11 In line with the principles of proportionate EIA, embedded mitigation is considered at the outset of the assessment (see **Section 1.7** of this FEIR). Furthermore, to ensure proportionality based on the likelihood of potential effects, only ornithological features for which it is considered there may be significant effects in the absence of embedded mitigation are identified as Important Ornithological Features (IOFs) and are taken forward for a full EcIA.

1.2.12 Following such further assessment, no significant effects are anticipated upon golden eagle. However, additional controls will be put in place during construction and operation in an updated Species Protection Plan (SPP) (see Paragraphs 1.7.5 – 1.7.7). An Operational Environmental Management Plan (OEMP) will also be produced (see Paragraphs 1.7.13 – 1.7.15).

1.2.13 In addition to this, it is therefore proposed that the 15-turbine Proposed Phase 1 Development could be constructed as Phase 1 of the development proposals, with the remaining two turbines attributed to the Proposed Development only constructed if the golden eagle nest can be proven to be unused for five consecutive years (i.e. that it is not in habitual use) and would form Phase 2 of the development proposals. It is proposed that this is formally conditioned as part of any consent for Daer Wind Farm.

1.2.14 This FEIR should be read alongside the EIAR, particularly **Chapter 7: Ornithology** and **Chapter 6: Ecology**, as well as the associated appendices to these chapters.

1.2.15 This FEIR refers to the following confidential appendices and figures:

- FEIR Confidential Technical Appendix 1.1: Ornithology (includes Golden Eagle Topographical modelling and satellite tracking analyses);
- FEIR Confidential Figure 1.1: Proposed Development;
- FEIR Confidential Figure 1.2: Open Model 6+ Habitat within 300 m of Proposed Development;
- FEIR Confidential Figure 1.3: Open Model 6+ Habitat within 20 km of Proposed Development;
- FEIR Confidential Figure 1.4: Potential Range Boundary of Territorial Pair;
- FEIR Confidential Figure 1.5: Satellite Tag Fixes of Range Holding Pair;
- FEIR Confidential Figure 1.6: Interpolated Flight Lines of Range Holding Pair;
- FEIR Confidential Figure 1.7: Satellite Tag Fixes of Dispersing Birds;
- FEIR Confidential Figure 1.8: Nest and Roost within 10 km of Proposed Development; and
- FEIR Confidential Figure 1.9: Nest and Roost within 1 km of Proposed Development.

1.3 LEGISLATION, POLICY AND GUIDANCE

1.3.1 The updated ornithological assessment has been carried out with reference to a number of national policy documents, as addressed in the EIAR, namely **Chapter 4: Climate Change, Legislative and Policy Context** and **Chapter 6: Ecology**.

1.3.2 Legislative and guidance documents with specific relevance to ornithology are:

Legislation

- The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (the Habitats Regulations), which transposes the Habitats Directive into UK law[3];
- The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2019[4];

[2] CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3*. Chartered Institute of Ecology and Environmental Management, Winchester.

[3] UK Government (1994). The Conservation (Natural Habitats, &c.) Regulations 1994. Available at: https://www.legislation.gov.uk/uksi/1994/2716/contents/made [Accessed: 19/06/2025].

[4] Scottish Government (2019). The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2019. Available at: https://www.legislation.gov.uk/ssi/2019/113/contents/made [Accessed: 09/04/2025]

- The Conservation of Habitats and Species (Amendment) Regulations 2017, relating to reserved matters in Scotland and applies the HRA process to decisions on Section 36 consent applications in UK including Scotland[5];
- Directive 2009/147/EC on the Conservation of Wild Birds (the Birds Directive)[6];
- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive)[7];
- Wildlife and Countryside Act 1981 (as amended)[8];
- The Nature Conservation (Scotland) Act 2004[9]; and
- The Wildlife and Natural Environment (Scotland) Act 2011[10].

Policy and Guidance

1.3.3 Particular attention has also been given to the documents listed below, which include policies and cover the assessment of effects of wind farm developments on ornithological features. Reference has also been made to these guidance documents across this FEIR, where relevant:

- Nature Conservation: Implementation in Scotland of the Habitats and Birds Directives: Scottish Executive Circular 6/1995 as amended[11];
- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine [2];
- Royal Society for the Protection of Birds (RSPB), Bird Monitoring Methods[12];
- Raptors: A Field Guide to Survey and Monitoring[13];
- Birds and Wind Farms: Risk Assessment and Mitigation[14];
- Assessing significance of impacts from onshore windfarms on birds outwith designated areas[15];
- Monitoring the impacts of onshore wind farms on birds[16];
- Assessing the cumulative impact of onshore wind energy developments[17]
- A Review of Disturbance Distances in Selected Bird Species[18];
- British Standard 42020:2013 Biodiversity – code of practice for planning and development;
- Scottish Renewables, Scottish Natural Heritage (SNH), Scottish Environment Protection Agency (SEPA), Forestry Commission Scotland (FCS) (2010) Good Practice during Wind Farm Construction[19]; and
- Birds of Conservation Concern (BoCC) 5: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man[20].

1.4 METHOD OF ASSESSMENT

1.4.1 Amendments to the turbine layout of the Proposed Development and associated infrastructure will likely change the assessment of impacts to some of the IOFs, detailed in **Chapter 7** of the **EIAR**. **Chapter 7** assessed the following potential impacts during construction, operation and decommissioning of the Proposed Development on ornithological receptors:

- Habitat loss due to land-take;
- Disturbance and/or displacement; and
- Collision with turbines.

1.4.2 Given the scope of the amendments set out in this FEIR regarding the Proposed Development, it is considered that only potential effects on ornithological receptors that have since been identified require assessment (i.e. golden eagle only). All other potential effects on ornithological receptors (e.g. level of predicted collision mortalities) will be either unchanged (if the Proposed Development was built out) or reduced as a result of the construction of the Proposed Phase 1 Development only.

1.4.3 All appropriate embedded mitigation as identified within the EIAR will be retained.

[5] UK Government (2017). The Conservation of Habitats and Species Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/1012 [Accessed: 19/06/2025]

[6] EUR-Lex, (2019). Available from - https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009L0147&qid=1669635009762 [Accessed 19/05/2023]

[7] EUR-Lex, (2013). Available from - https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31992L0043 [Accessed 19/05/2023]

[8] *Wildlife and Countryside Act 1981.* Available from - https://www.legislation.gov.uk/ukpga/1981/69 [Accessed 19/05/2023]

[9] Scottish Government (2004). The Nature Conservation (Scotland) Act 2004. Available at: https://www.legislation.gov.uk/asp/2004/6/contents [Accessed: 01/04/2025]

[10] Scottish Government (2011). Wildlife and Natural Environment (Scotland) Act 2011. Available at: https://www.legislation.gov.uk/asp/2011/6/contents [Accessed: 01/04/2025]

[11] Scottish Executive (1995 (updated 2000)). Nature Conservation: Implementation in Scotland of the Habitats and Birds Directives. Scottish Executive, Rural Affairs Department, Edinburgh.

[12] Gilbert, G., Gibbons, D.W. & Evans, J. (1998). Bird Monitoring Methods. RSPB, Sandy.

[13] Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors: a field guide to survey and monitoring. 3rd Edition. The Stationery Office, Edinburgh.

[14] De Lucas, M., Janss, G. & Ferrer, M. (eds.) (2007) *Birds and Wind Power*. Quercus, Madrid.

[15] SNH (2018) *Assessing significance of impacts from onshore windfarms on birds outside designated areas*. Scottish Natural Heritage (now NatureScot), Inverness.

[16] SNH (2009) *Monitoring the impact of onshore wind farms on birds (Guidance note)*. Scottish Natural Heritage (now NatureScot), Edinburgh.

[17] SNH (2018) *Assessing the cumulative impacts of onshore wind farms on birds: guidance*. Scottish Natural Heritage (now NatureScot), Inverness.

[18] Goodship, N.M. & Furness, R.W. (MacArthur Green) (2022) *Disturbance Distances Review: an updated literature review of disturbance distances of selected bird species*. NatureScot Research Report 1283.

[19] Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency, Forestry Commission Scotland (2010) *Good practice during windfarm construction.*

[20] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747.

1.4.4 In addition, an updated cumulative impact assessment (CIA) on golden eagle only has been undertaken.

Data Searches

1.4.5 Natural Power requested data from RUN on 06 March 2025, pertaining to all satellite-tag golden eagle data they hold for an area including the Site and 20 km buffer.

1.4.6 In addition, Natural Power also requested data from Natural Research on 29 April 2025, pertaining to satellite-tag data they hold for the territory holding male (tag identification number 1027, colour ring A29).

Golden Eagle Topography (GET) Model

1.4.7 In the UK, golden eagles are confined almost exclusively to the Scottish Highlands and Islands, with very few pairs nesting regularly further south. Although historically more home ranges were occupied across Scotland, in southern Scotland (e.g. Ayrshire, Dumfries and Galloway, Lothian and Borders) just four territories were occupied during the latest national golden eagle census[21]. As a result, the SSGEP was launched in 2018 to boost the population of golden eagles in southern Scotland through translocations of nestlings and immature birds from elsewhere in Scotland. The population within the south of Scotland has grown to around 50 individuals (Cat Barlow *pers comm*).

1.4.8 A previous report on golden eagles in southern Scotland concluded that the south of Scotland could potentially hold 14-16 pairs[22]. The Lowther Hills, where the Proposed Development is situated was estimated "*to be sufficient to support at least three breeding pairs*". In 2024, a newly established golden eagle breeding territory was identified within 10 km of the Proposed Development. As such, GET modelling was carried out as recommended by NatureScot[23], details of which are provided within **FEIR Confidential Technical Appendix 1.1**.

Golden Eagle Tracking

1.4.9 In addition to the GET Model, golden eagle satellite tracking data provided by RUN and Natural Research was analysed in order to assess usage of the Site by both settled (e.g. territorial) and dispersing golden eagles (non-breeders). Information on nest sites, roost site locations and usage, home range boundaries, satellite tag fixes and flight path data is presented in **FEIR Confidential Technical Appendix 1.1.**

Approach to Impact Assessment

1.4.10 This section presents the approach taken to the impact assessment and provides an overview of how the potential for impact has been determined and the method by which impact significance has been ascertained. The approach adopted within this assessment follows the CIEEM guidelines[2], and in line with these guidelines professional judgement has been applied where appropriate. The criteria used and the underlying rationale are described further within the following sections.

Determining Important Ornithological Features (IOFs)

1.4.11 The assessment process involves identifying IOFs, in accordance with CIEEM guidelines[2]. These ornithological features and their values are determined by the criteria defined in **Table 3**.

Table 3: Approach used to evaluate ornithological features by defined geographical context

Level of value	Example
International	A regularly occurring species listed as a qualifying feature of an internationally designated site (e.g. SPA or Ramsar Sites) within the Zone of Influence (ZoI) of a proposed development and found in numbers that are crucial to the integrity of the designated site. Species populations present with sufficient conservation importance to meet criteria for SPA selection[24].
National	A regularly occurring species listed as a qualifying feature of a nationally designated site (e.g. Site of Special Scientific Interest (SSSI)) within the ZoI of a proposed development. Species populations present with sufficient conservation importance to meet criteria for SSSI selection[25, 26, 27].
Regional	A species occurring within SPAs, Ramsar sites and SSSIs, but not crucial to the integrity of the site. Species populations present falling short of SSSI selection criteria but with sufficient conservation importance to likely meet criteria for selection as a local site.
Local	Species described above but which are present very infrequently or in very low numbers. Other species of conservation concern, including species included on the UK BoCC Red and Amber Lists[20].
Negligible	All other species that are widespread and common and which are not present in locally important (or greater) numbers, and which are considered to be of low conservation concern (e.g. UK BoCC Green List species[20]).

[21] Hayhow, D. B., Benn, S., Stevenson, A., Stirling-Aird, P. K., & Eaton, M. A. (2017). Status of Golden Eagle Aquila chrysaetos in Britain in 2015. *Bird Study*, 64(3), 281–294. https://doi.org/10.1080/00063657.2017.1366972

[22] Fielding, A.H. and Haworth, P.F. (2014). Golden eagles in the south of Scotland: an overview. Scottish Natural Heritage Commissioned Report No. 626.

[23] NatureScot (2021). NatureScot statement on modelling to support the assessment of forestry and wind farm impacts on golden eagles. Available from - https://www.nature.scot/doc/naturescot-statement-modelling-support-assessment-forestry-and-wind-farm-impacts-golden-eagles [Accessed 19/06/2025]

[24] An area that is used regularly by more than 1% of the Great British population of a species listed in Annex I of the Birds Directive (79/409/EEC as amended) in any season; an area is used regularly by more than 1% of the biogeographical population of a regularly occurring migratory species (other than those listed in Annex I) in any season; an area that is used regularly by over 20,000 waterfowl (waterfowl as defined by the Ramsar Convention) or 20,000 seabirds in any season.

[25] Drewitt, A.L., Whitehead, S. and Cohen, S. (2020). *Guidelines for the Selection of Biological SSSIs. Part 2: Detailed Guidelines for Habitats and Species Groups.* Chapter 17 Birds (version 1.1). Joint Nature Conservation Committee, Peterborough.

[26] Areas which regularly supports more than 1% of the total British breeding population of any native species (as per Woodward *et al.*, 2020), including lekking and feeding areas and seabird colonies of over 10,000 breeding pairs; areas which regularly support 1% or more of the total British non-breeding population of any native species in any season and non-breeding waterbird assemblages of over 20,000 individuals (as per Woodward *et al.*, 2020).

[27] Woodward, I., Aebischer, N., Burnell, D., Eaton, M., Frost, T., Hall, C., Stroud, D.A. & Noble, D. (2020). *Population estimates of birds in Great Britain and the United Kingdom.* British Birds 113: 69–104.

1.4.12 The assessment of ornithological features recorded during the baseline surveys also considers the importance of the Site for the species under consideration, rather than only considering the nature conservation importance of the species itself. As such, a species of international conservation importance may only have local or negligible importance in the context of the Proposed Development if very rarely recorded at the Site.

1.4.13 Therefore, while the importance of the species is considered, in order to assess the nature conservation importance of the Site, the number of individuals of that species using it and the nature and level of this use are also taken into account. An assessment is then made of the importance of the area in which the Proposed Development is situated to the species in question in order to determine whether they are an IOF.

1.4.14 In line with the principles of proportionate EIA, embedded mitigation is considered at the outset of the assessment. IOF status has only been assigned where there is still considered to be the potential for significant effects on the feature at the assigned value level arising from the Proposed Development, after the application of embedded measures.

Characterising Potential Effects on Ornithological Features

1.4.15 Impacts on IOFs are judged in terms of magnitude and duration. Magnitude refers to the size of an impact and is determined on a quantitative basis where possible. This may relate to the area of habitat lost to the development footprint in the case of a habitat feature or predicted loss of individuals in the case of a population of a particular species of bird. Within this FEIR, magnitude is assessed within six levels, as detailed in **Table 4**.

Table 4: Approach used to evaluate ornithological features by defined magnitude

Impact magnitude	Description
Very highly negative	Total or almost complete loss of an ornithological feature resulting in a permanent adverse effect on the integrity[28] of the feature. The conservation status of the feature would be permanently affected.
Highly negative	Result in large-scale, permanent changes in an ornithological feature, likely to change its ecological integrity. These impacts are therefore likely to result in overall changes in the conservation status of the feature.
Moderately negative	Includes moderate-scale long-term changes in an ornithological feature, or larger-scale temporary changes; however, the integrity of the feature is not likely to be affected. This may result in temporary changes in the conservation status of the feature, but these are reversible and unlikely to be permanent.
Low negative	Includes impacts that are small in magnitude, with small-scale temporary changes, and where integrity of an ornithological feature is not affected. These effects are unlikely to result in overall changes in the conservation status of the feature.
Negligible	No perceptible change in an ornithological feature.
Positive	The changes in an ornithological feature are considered to be beneficial to its ecological integrity or nature conservation status.

[28] Note that integrity in this context refers to ecological integrity of a population of a species at a defined value level, i.e. the maintenance of the conservation status of a population of a species at a specific location or geographic scale.

1.4.16 The Proposed Development is located within Natural Heritage Zone (NHZ) 19 – Western Southern Uplands and Inner Solway and so this is the NHZ against which impacts are assessed.

1.4.17 Impacts and spatial magnitude are assessed within an appropriate bio-geographic scale. With reference to golden eagle, impacts on their population are assessed in a regional context (e.g. South Scotland).

1.4.18 The assessment also considers whether the impact is positive or negative, short-term (for example only during construction) or long-term (throughout the lifetime of the Proposed Development), reversible or permanent. This is summarised in **Table 5**.

Table 5: Criteria for describing duration

Duration	Definition
Permanent	Effects continuing indefinitely beyond the span of one human generation (taken as approximately 25 years), except where there is likely to be substantial improvement after this period (e.g., the replacement of mature trees by young trees which need > 25 years to reach maturity, or restoration of ground after removal of a development. Such exceptions are termed “very long-term effects”).
Temporary	Long-term (15 – 25 years or longer; see above) Medium term (5 – 15 years) Short-term (up to 5 years)

1.4.19 Knowledge of how rapidly the population or performance of a species is likely to recover following loss or disturbance (e.g. by individuals being recruited from other populations elsewhere) is used to assess duration, where such information is available.

1.4.20 In addition, birds are assessed with consideration for their behavioural sensitivity and ability to recover from temporary negative conditions. Behavioural sensitivity is determined subjectively based on the species’ ecology and behaviour, using the broad criteria set out in **Table 6**. The judgement takes account of information available on the responses of birds to various stimuli (e.g. predators, noise and disturbance by humans).

Table 6: Criteria for describing sensitivity

Sensitivity	Definition
High	Species or populations occupying habitats remote from human activities, or that exhibit strong and long-lasting (guide: > 20 minutes) reactions to disturbance events.
Moderate	Species or populations that appear to be warily tolerant of human activities, or that exhibit short-term reactions (guide: 5 minutes - 20 minutes) to disturbance events.
Low	Species or populations occupying areas subject to frequent human activity and exhibiting mild and brief reaction (including flushing behaviour) to disturbance events.

1.4.21 It should be noted that behavioural sensitivity can differ between similar species and between different populations of the same species. Thus, the behavioural responses of birds are likely to vary with both the nature and context of the stimulus and the experience of the individual bird.

This should not be confused with the specific term ‘Site Integrity’ used in Appropriate Assessment for European (formerly Natura 2000) sites.

Sensitivity also depends on the activity of the bird, for example, a species is likely to be less adaptable to disturbance whilst breeding than at other times. In addition, individual birds of the same species will differ in their tolerance depending on the level of human disturbance that they regularly experience in a particular area and have become habituated to (e.g. individuals that live in an area with high levels of urban activity and associated disturbance are likely to have a greater tolerance than those that occupy remote locations with little or no human disturbance). However, tolerance is likely to increase as breeding progresses.

Determining Significance of Potential Ornithological Effects

1.4.22 Only features for which there is considered to be the potential for significant effects are identified as IOFs and taken forward for EcIA. Having followed the process of identifying an IOF, determining its sensitivity, and characterising potential impacts, the significance of the effect is then determined. The CIEEM guidelines[2] use only two categories to classify effects: 'significant' or 'not significant'. In this FEIR, significance of effects is assessed following an assumption of the application of embedded mitigation measures (see **Section 1.7**). The significance of an effect is determined by considering the importance of the feature, the magnitude of the impact and applying professional judgement as to whether the integrity of the feature will be affected. The assessment includes potential impacts on each IOF from all phases of the development, e.g. construction, operation and decommissioning, and considers direct, indirect, secondary and cumulative impacts and whether the impacts and their effects are short, medium, long-term, permanent, temporary, reversible, irreversible, positive and/or adverse.

1.4.23 In this assessment, an effect that threatens the integrity of a feature is considered to be significant. It should be noted that, alongside the criteria provided, professional judgement is applied in determining the significance of a potential effect.

1.4.24 Where appropriate, mitigation and/or compensation measures, including the design process, are identified in order to avoid and reduce potentially significant effects. It is also good practice to propose mitigation measures to reduce negative effects that are not significant. The significance of residual effects on features after the effects of mitigation have been considered can then be determined, along with any monitoring requirements.

Cumulative Impact Assessment (CIA)

1.4.25 The CIA identifies any other projects which, in combination with effects from the Proposed Development could give rise to a significant cumulative impact on ornithological features. Cumulative effects are particularly important as ornithological features may be already exposed to background levels of threat or pressure and may be close to critical thresholds where further impacts could cause irreversible decline. Cumulative effects can also make habitats and species more vulnerable or sensitive to change

1.4.26 Cumulative effects can either be additive / incremental (i.e. multiple activities/projects may give rise to a significant effect due to their proximity in time and space) and connected (i.e. different aspects of the same project which may be authorised under different consent processes).

1.4.27 Guidance states that assessments should focus on the most significant cumulative impacts and conclude with a clear assessment of those which are likely to influence decision making. As per this guidance, any wind farm developments of fewer than three turbines (small scale wind energy proposals[29]) have been excluded from the cumulative assessment. This is due both to the lack of quantitative environmental information which usually exists in the public domain for such small scale developments, and also due to the low likelihood that significant adverse effects would be predicted for them. Only IOFs for which a greater than negligible residual impact is predicted are considered in the CIA, as negligible impacts will not result in a detectable increase in cumulative impacts.

1.4.28 The context in which cumulative effects are considered will depend upon the ecology of the species in question.

Trends and Predicted Future Baseline

1.4.29 In the absence of development, it is assumed that the land use within the Site and the surrounding locale would remain the same for the foreseeable future (i.e. upland sheep farming and rotationally harvested commercial conifer plantation). No major changes are expected to the character of the upland landscape, which comprises mostly marshy rush/purple moor grass pasture to the north and modified or intact bog to the south. There are also large areas of upland acid grassland spread across the Site and some larger areas of flush and fen to the south. Some blanket bog areas within the Site are being drained and periodically burned to improve the grazing resources. As such, no change in these habitats is anticipated in the short to medium term and consequently the bird community is likely to remain broadly similar. However, in the longer term, the ongoing agricultural improvement of the habitats within the Site will lead to greater modification and drying of the peatland habitat, with an associated reduction in habitat quality for the upland bird species which are positively associated with the presence of blanket bog, such as curlew, dunlin and black grouse.

1.4.30 It is more difficult to predict changes that may occur in the longer-term (i.e. over 25 years). Climate change and the shift in species and habitat distributions that this may cause, as well as potential land management changes that this may bring about, cannot be reliably predicted at this time. Baseline surveys carried out for the Proposed Development represent a snapshot of the ecology community present at the time and cannot be extrapolated to predict future population trends in the event of climate change, or a future change in land use at the Site.

1.5 CONSULTATION

1.5.1 Details of consultee responses during the pre-application submission period with specific relevance to ornithology are provided in **Tables 7.5 – 7.6 of the EIAR**.

1.5.2 **Table 7** details post-application consultation relating to golden eagle with NatureScot via the ECU.

[29] SNH (2016) Assessing the impact of small-scale wind energy proposals on the natural heritage (Guidance note). Scottish Natural Heritage.

Table 7: Post-submission NatureScot and ECU responses relating to ornithology

Comments/ issues raised/ recommendations	Addressed responses/ outcomes
The wind farm site lies within the nominal territory of the eagles (based on a 6km radius around the nest site).	This FEIR assesses impacts on the eagle territory identified during consultation on the home range identified from satellite-tag tracking data rather than a nominal 6 km radius around the nest site.
The likelihood of disturbance arising from construction and/or maintenance works, their significance should they arise, and ways in which disturbance are to be mitigated will require consideration and assessment.	All potential impacts on golden eagles relating to the Proposed Development and cumulatively with other developments are fully assessed within this FEIR.
If infrastructure cannot be relocated or deleted, the potential for a suspensive condition to be used which would only allow the construction of infrastructure within 1 km of the nest site once it has been demonstrated that the nest site is not in use and does not meet the definition of a 'habitually used nest'.	This FEIR assesses all effects of the Proposed Development on golden eagle.
The requirement for a Bird Protection Plan which considers the full range of circumstances likely to be encountered in relation to disturbance issues.	A Species Protection Plan (SPP) pertaining to golden eagle is detailed within this FEIR. All other species are considered within the EIAR for the Proposed Development.

Source: NatureScot via Energy Consents Unit (ECU).

1.6 BASELINE RESULTS

1.6.1 This section presents the baseline environment regarding golden eagles in relation to the Proposed Development and Proposed Phase 1 Development. No survey work was undertaken to support this assessment, which relies on golden eagle satellite tag data and nest site locations as well as modelling data. It is considered that this is not a significant limitation of the assessment undertaken within this FEIR.

Data searches

1.6.2 Details of satellite tag data provided by the RUN and Natural Research is detailed in **FEIR Confidential Technical Appendix 1.1**.

1.6.3 In summary, RUN provided information on the presence of territorial pairs, location of nest sites (both currently active and historical, e.g. within the last ten years) and Global Positioning System (GPS) (and associated metadata) for all RUN tagged eagles within a 10 km zone around the Site Boundary. This GPS data covered a period from October 2018 to April 2025 for 39 dispersing individuals. The dataset also covered a period from September 2012 to April 2025 for 11 settled eagles (of the 11 settled eagles, nine of these also form part of the dispersing data set prior to the individual 'settling' into a territory).

1.6.4 GPS data provided by Natural Research for the settled male of the territorial pair was recorded over a period of one year between November 2023 and 2024.

1.6.5 RUN also provided information on a single golden eagle nest site within 10 km of the Site. The territory was confirmed to be occupied again in 2025, with the pair reusing the nest built in 2024.

Golden Eagle Topographical (GET) Model

1.6.6 The potential impact from both the Proposed Development (17-turbine design) and Proposed Phase 1 Development (15-turbine design) was assessed using output from the GET Model.

1.6.7 Two turbine exclusion zones were constructed by buffering the turbine locations of the Proposed Development and the Proposed Phase 1 Development by 300 m and 500 m respectively and creating a convex hull around the resulting polygons. An additional zone of interest was constructed by creating a 6 km buffer around the known golden eagle nest site (the core range of golden eagle around a nest site), to represent the home range of this pair; as well as utilising Global Positioning System (GPS) tracking data to assess the impact on the home range of the predicted territory. For each zone, the area that was predicted to be associated with high golden eagle suitability was identified (e.g. GET 6+ habitat). As eagles will avoid large bodies of water, closed-canopy forestry and built-up areas, these areas, referred to as closed habitat, were then removed to provide a final prediction of the total area of suitable golden eagle habitat. The remaining, open habitat was evaluated within the 6 km buffer around the nest and a 300 m, 500 m and 'regional' 20 km buffer of a convex hull around the outer turbines of the Proposed Development and the Proposed Phase 1 Development. The percentage of the total area predicted as suitable golden eagle habitat was then calculated. **Table 8** and **Table 9** present these figures.

Table 8: Areas and percentages of GET 6+ habitat in relation to the Proposed Development and known golden eagle nest site

Zone	Area (ha)	Total area of GET 6+ habitat (ha)	Total area of open GET 6+ habitat (ha)	Percentage of open GET 6+ habitat	Percentage of total open GET 6+ habitat within 6 km of nest	Percentage of total open GET 6+ habitat within 20 km turbine buffer
300 m turbine buffer	1,473.72	489.26	439.39	29.81	12.42	0.82
500 m turbine buffer	1,788.31	645.07	543.22	30.38	15.35	1.02
6 km buffer around nest	11,304.57	4,805.37	3,538.64	31.30	-	6.63

Zone	Area (ha)	Total area of GET 6+ habitat (ha)	Total area of open GET 6+ habitat (ha)	Percentage of open GET 6+ habitat	Percentage of total open GET 6+ habitat within 6 km of nest	Percentage of total open GET 6+ habitat within 20 km turbine buffer
20 km turbine buffer	157,288.78	69,035.31	53,402.36	33.95	-	-

Source: Natural Power.

Table 9: Areas and percentages of GET 6+ habitat in relation to the Proposed Phase 1 Development and known golden eagle nest site

Zone	Area (ha)	Total area of GET 6+ habitat (ha)	Total area of open GET 6+ habitat (ha)	Percentage of open GET 6+ habitat	Percentage of total open GET 6+ habitat within 6 km of nest	Percentage of total open GET 6+ habitat within 20 km turbine buffer
300 m turbine buffer	1,253.08	399.08	378.62	30.22	10.70	0.71
500 m turbine buffer	1,557.33	538.67	484.05	31.08	13.68	0.91
6 km buffer around nest	11,304.57	4,805.37	3,538.64	31.30	-	6.64
20 km turbine buffer	156,035.25	68,681.89	53,283.24	34.15	-	-

Source: Natural Power.

Golden Eagle Tracking

1.6.8 A total of 14,222 satellite tag fixes relating to dispersing golden eagles were provided by RUN. A total of 61,321 satellite tag fixes relating to the territory holding male were provided by Natural Research.

1.6.9 In order to analyse the satellite tag data, satellite tag fixes were interpolated. Linear interpolation was carried out as described in the **FEIR Confidential Technical Appendix 1.1** because the data is not suitable for state-space models. Interpolation is carried out in order to obtain regular-interval data, which estimates a tag's position during times when satellite fixes are missing from the dataset. Further information on number of interpolated fixes within 300 m and 500 m of a convex hull around the outer turbines of the Proposed Development and Proposed Phase 1 Development are detailed in **Table 10**.

Table 10: Golden eagle GPS tracking data provided by RUN and Natural Research with respect to the Proposed Development and Proposed Phase 1 Development

Data	Total no. of interpolated fixes	No. of interpolated fixes within 300 m turbine buffer	No. of interpolated fixes within 500 m turbine buffer	Percentage of interpolated fixes within 300 m turbine buffer	Percentage of interpolated fixes within 500 m turbine buffer
Proposed Development					
Dispersing eagles	316,047	6,275	7,539	1.99	2.39
Territorial male	9,143	833	1,079	9.11	11.80
Proposed Phase 1 Development					
Dispersing eagles	316,047	5,172	6,364	1.64	2.01
Territorial male	9,143	67	83	0.73	0.91

Source: RUN and Natural Research.

1.6.10 A total of 1,373 roost sites were identified within 2 km of the Proposed Development, covering a six year period from May 2019 to April 2025. Further information on number of fixes within a 300 m, 500 m, 1 km and 2 km around the Proposed Development and Proposed Phase 1 Development are detailed in **Table 11** and **Table 12** respectively. The buffer zones represent operational displacement (300 m), lower and upper distances for construction disturbance/displacement (500 m and 1 km), and roost survey buffer (2 km) as outlined within NatureScot (2017)[30] survey guidance. Further details are provided within **FEIR Confidential Technical Appendix 1.1**.

Table 11: Golden eagle roost identification analysed from GPS tracking data provided by RUN and Natural Research with respect to the Proposed Development

Data	Total no. of roost sites	Buffer around Proposed Development (m)	No. of roosts within buffer	Percentage of roosts inside buffer (%)
Dispersing eagles	1,006	300	24	2.39
		500	28	2.78

[30] NatureScot (2017). Recommended bird survey methods to inform impact assessment of onshore windfarms. Updated: March 2025. Available at: https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms (Accessed on 15/08/2025)

Data	Total no. of roost sites	Buffer around Proposed Development (m)	No. of roosts within buffer	Percentage of roosts inside buffer (%)
		1,000	38	3.78
		2,000	66	6.56
Territorial male	367	300	19	5.18
		500	34	9.26
		1,000	74	20.16
		2,000	113	30.79
All satellite tagged dispersing eagles and territorial male	1,373	300	43	3.13
		500	62	4.52
		1,000	112	8.16
		2,000	179	13.04

Source: RUN and Natural Research.

Table 12: Golden eagle roost identification analysed from GPS tracking data provided by RUN and Natural Research with respect to the Proposed Phase 1 Development

Data	Total no. of roost sites	Buffer around Proposed Phase 1 Development (m)	No. of roosts within buffer	Percentage of roosts inside buffer (%)
Dispersing eagles	1,006	300	6	0.60
		500	12	1.19
		1,000	36	3.58
		2,000	64	6.36
Territorial male	367	300	10	2.72
		500	18	4.90
		1,000	47	12.81
		2,000	107	29.16
All eagles	1,373	300	16	1.17
		500	30	2.18
		1,000	83	6.05
		2,000	171	12.45

Source: RUN and Natural Research.

1.6.11 The tag fixes from the territory-holding male were used to estimate the range boundary of the range holding pair, given a 95% and 50% kernel density analysis to determine the territory extent as well as the core area used by the pair. The home range is estimated to be 8,819.24 ha, of which 1,220.97 ha forms the core area (e.g. used 50% of the time). Of the home range, 60.25% (5,313.33 ha) comprises available good golden eagle habitat (open GET 6+). Further information on number of fixes within a 300 m and 500 m of a convex hull around the outer turbines of the Proposed Development and Proposed Phase 1 Development are detailed in **Table 13** and **Table 14**. Further details are provided within **FEIR Confidential Technical Appendix 1.1**.

Table 13: Golden eagle home range information from analysed GPS tracking data provided by Natural Research with respect to the Proposed Development

Home range kernel	Turbine buffer (m)	Kernel area (ha)	Area of kernel in buffer zone (ha)	Area of kernel in buffer zone with open GET 6+ habitat (ha)	Percentage of open GET 6+ of the kernel in buffer zone (%)
50%	300	1,220.97	132.69	58.83	4.82
	500		171.94	70.05	5.74
95%	300	8,819.24	610.38	276.28	3.13
	500		738.47	323.08	3.66

Source: Natural Research.

Table 14: Golden eagle home range information from analysed GPS tracking data provided by Natural Research with respect to the Proposed Phase 1 Development

Home range kernel	Turbine buffer (m)	Kernel area (ha)	Area of kernel in buffer zone (ha)	Area of kernel in buffer zone with open GET 6+ habitat (ha)	Percentage of open GET 6+ of the kernel in buffer zone (%)
50%	300	1,220.97	23.97	12.33	1.01
	500		48.35	23.45	1.92
95%	300	8,819.24	422.13	220.43	2.50
	500		538.77	268.15	3.04

Source: Natural Research.

1.7 POTENTIAL IMPACTS

General Impacts

1.7.1 The main ways in which a wind farm may affect golden eagle is via:

- Habitat loss due to land-take: construction of turbine bases, access tracks and other structures will lead to direct habitat loss. The effects of habitat loss will depend upon the extent of land-take and the type of habitat affected. Embedded mitigation measures will be put in place to prevent any associated damage to, or destruction of, nests, as discussed below.
- Disturbance and/or displacement: the construction stage of wind farm developments can have potential impacts caused by associated noise and visual disturbance and if unmitigated could lead to the temporary displacement or disruption of nesting, roosting and foraging golden eagles whilst the construction activities are taking place. The level of impact depends on the timing of potentially disturbing activities, the extent of displacement (both spatially and temporally), and the availability of suitable habitats in the surrounding area for displaced eagles to occupy. Disturbance impacts during the operational phase are likely to be less than during the construction phase, as disturbance due to human activities will be considerably reduced,

plus golden eagle may become habituated to the activity. Displacement around turbines following construction and lasting throughout the operational phase is well known to occur in golden eagles. In addition, during the operational phase turbines may act as a barrier to movement, where regularly having to fly around the wind farm could result in greater energy expenditure.

- Collision with turbines: collision of a bird with the turbine rotors or tower is likely to be fatal. The likelihood of collision depends on a number of factors, such as the ecology of the species (time spent flying, manoeuvrability, etc), the surrounding habitat, the layout of the turbines and weather conditions. Golden eagles are known to avoid operational wind farms[31,32,33]. and are therefore less likely to be subject to collision risk.

1.7.2 In line with the principles of proportionate EIA, embedded mitigation is considered from the outset. Features have only been taken on for further impact assessment where there is the potential for significant effects following the implementation of this embedded mitigation.

Embedded Mitigation

1.7.3 Embedded mitigation measures are proposed at the outset of any proposed development, to reduce impacts associated with construction, operation and decommissioning. Only embedded mitigation measures relevant to golden eagle are detailed herein. Embedded mitigation in relation to all other species is detailed within the EIAR.

1.7.4 This assessment refers to both the 17-turbine Proposed Development, and the Proposed Phase 1 Development only (i.e. the 15-turbine scheme). All embedded mitigation detailed within this FEIR is proposed taking account of a 'suspensive condition' which would be used to control and avoid potential construction-phase disturbance impacts to known golden eagle nest sites. This condition would only allow the construction of wind turbines within 1 km of the nest site (i.e. Proposed Phase 2 Development) once it has been demonstrated that the nest site is not in use and does not meet the definition of a habitually used nest. There are no known definitions of a habitually used nest in relation to golden eagles, although Kortland *et al* (2011)[34] considered that white-tailed eagle nests used in any of the previous five breeding seasons would be considered to be 'habitually used'. It is therefore proposed that the definition of a habitually used golden eagle nest follows the same definition and is one that has been used at least once in the most recent five-year period. In addition, construction of other wind farm infrastructure such as access tracks within 1 km of the nest site would only be permitted in the non-breeding season. This updated assessment is undertaken under the assumption that an SPP would be produced in detail and agreed through liaison with NatureScot and the LPA as a Condition of any consent.

All Phases: Species Protection Plan (pertaining to golden eagle only)

1.7.5 Although the two Phase 2 turbines would not be built while golden eagles continue to use the known nest site, access track infrastructure within 1 km of the nest would still be required for access to other turbines. Protocols would therefore be developed to detail how any works within 1 km of any active golden eagle nest site, and/or within 500 m of any active golden eagle roost site would be undertaken.

1.7.6 With respect to roosting golden eagles, surveys would focus on identifying golden eagle roosts within 500 m of scheduled construction works during the pre-construction and construction phases. Surveys would utilise data provided by RUN and Natural Research, which were used to identify roost sites in the vicinity of the Site for this assessment.

1.7.7 Potential disturbance to roosting golden eagles would be mitigated by the following temporal working restrictions. Any construction activities that have the potential to disturb golden eagles using roost sites within 500 m would be restricted to avoiding activity overnight and within two hours of dusk (two hours before official sunset time) and dawn (two hours after official sunrise time) (SNH, 2014)[35].

Construction Phase: General

1.7.8 All relevant construction phase embedded mitigation measures, such as appointment of an ECoW, would be implemented through a CEMP, which would be agreed in advance with the local planning authorities, in consultation with NatureScot.

1.7.9 In line with good practice, an independent ECoW would be appointed prior to the commencement of construction and would be present during enabling works and throughout the construction period. They would be a suitably experienced individual, whose role would be to oversee that all works are carried out in accordance with environmental legislation and good practice, and with agreed construction phase management plans, such as the CEMP.

1.7.10 Prior to the start of construction, contractors would be made aware of the ornithological sensitivities within the Site (particularly with regard to the potential presence of Schedule 1 breeding species). The ECoW would give regular Toolbox Talks to contractors regarding the status and locations of protected and sensitive species and habitats at the Site.

[31] Fielding, A.H., Anderson, D., Benn, S., Dennis, R., Geary, M., Weston, E. and Whitfield, D.P. (2021) Responses of dispersing GPS tagged golden eagles (Aqila chrysaetos) to multiple wind farms across Scotland. Ibis 164,(1), 102-117.

[32] Fielding, A.H., Anderson, D., Benn, S., Dennis, R., Geary, M., Weston, E. and Whitfield, D.P. (2021) Non-territorial GPS-tagged golden eagles Aquila chrysaetos at two Scottish wind farms: Avoidance influenced by preferred habitat distribution, wind speed and blade motion status. PLoS ONE 16(8): e0254159.

[33] Fielding, A.H., Anderson, D., Benn, S., Taylor, J., Tingay, R., Weston, E.D. and Whitfield, D.P. (2024) Approach Distances of Scottish Golden Eagles Aquila chrysaetos to Wind Turbines According to Blade Motion Status, Wind Speed, and Preferred Habitat. Diversity. 2024; 16(1):71.

[34] Kortland, K., Evans, R., Douse, A. and Patterson, G. (2011). *Managing forests for white-tailed eagles – Forestry Commission Scotland Practice Note*. Available at: https://www.forestresearch.gov.uk/publications/managing-forests-for-white-tailed-eagles/ (accessed on 03/11/2025)

[35] SNH (2014). Implications of Additional Protection for Hen Harrier, Red Kite and Golden Eagle under Schedules A1 & 1A of the Wildlife and Countryside Act (1981). Guidance. March 2014. Available at: https://web.archive.org/web/20240914104750/https://www.nature.scot/doc/implications-additional-protection-hen-harrier-red-kite-and-golden-eagle-under-schedules-a1-1a (accessed on 06/08/2025).

1.7.11 The ECoW would carry out pre-construction survey checks during the bird breeding season (March to August, inclusive) in advance of vegetation stripping or excavation works to check for the presence of any active nests. Any active nests found would be cordoned off to a suitable distance for the species concerned (in line with appropriate guidance and an on the ground assessment) and construction operations delayed within the cordon until the young have fledged and/or the nest becomes vacant naturally. There would be a clear line of responsibility for establishing that these measures are adhered to. This would reduce the possibility of illegal damage, destruction or disturbance to occupied bird nests during the construction phase. Golden eagle nests are protected year-round under Schedule A1 of the Wildlife and Countryside Act 1981 (as amended). The law prohibits taking, damaging, destroying, or interfering with a golden eagle nest at any time it is habitually used by the birds. Even nests that are not actively being used in a particular year, but are part of a golden eagle territory, are also protected, as they may be used in the future and therefore cannot be taken, damaged, destroyed or interfered with at any time. Any golden eagle nests identified within 1 km of the Proposed Development would be added to a constraints register and appropriate buffer zones would be implemented around the feature throughout the year to protect it from damage or destruction. Full details of the ECoW role and responsibilities would be provided in the CEMP and secured through an appropriate planning condition.

1.7.12 Good practice via timing of works and pre-construction surveys would be necessary to reduce the possibility of illegal damage, destruction or disturbance to occupied bird nests during the construction phase. Adherence to this would be overseen by the ECoW.

Operational Phase: General

1.7.13 With the exception of the operation and general maintenance of the wind turbines, there would be little on-site activity during the operational phase, and therefore levels of disturbance would be considerably reduced relative to the construction period. Where potential effects exist, control measures would be incorporated into an OEMP.

1.7.14 The OEMP would detail mitigation measures required during the operational phase relating to bird species to ensure ongoing compliance with relevant environmental legislation. This is likely to include lower speed limits, temporary restrictions on the use of flashing beacons, and no stopping and exiting vehicles, when within potential disturbance distances of active golden eagle nest sites or roost sites. The OEMP would also be updated with mitigation measures including signage to inform the public to stay on designated paths and keep dogs on leads during the bird breeding season.

1.7.15 A programme of post-construction “operational monitoring” focused on golden eagle is also proposed and this would be agreed with NatureScot and LPA as part of a wider ornithological monitoring Condition. As part of the operational monitoring, any golden eagle (and other species) collisions would be reported using the NatureScot bird collision incident form (a robust internal reporting procedure is already in place for all bird strikes across RWE’s operational assets).

Operational Phase: Habitat Management Plan

1.7.16 An HMP for the Proposed Development would be finalised following approval of the planning application subject to consultation with the landowner, NatureScot and LPA. The main aim of this HMP would be to restore, compensate for and provide enhancement to the habitats impacted by the Proposed Development. This would have positive wider biodiversity implications, including for golden eagle, by improving habitats for their prey species.

Decommissioning Phase

1.7.17 Embedded mitigation of decommissioning activities would follow that proposed for the embedded mitigation of construction activities, including pre-decommissioning surveys and ECoW supervision of activities.

Updated Feature Assessment

1.7.18 A summary of the legislation, guidance and baseline results pertaining to golden eagle, and its determination as an IOF requiring full EcIA is detailed in **Table 15**.

Table 15: Determination of Important Ornithological Features occurring within the Proposed Development

Feature	Covering legislation and guidance/conservation designation[8,20,36]	Geographical level of value	Population estimate[27]	Baseline	IOF	Justification
Golden eagle	Annex I Schedule 1/1A/A1 BoCC5 red listed species Scottish Biodiversity List (SBL)	Regional	UK: 508 breeding pairs[21] (confined to Scotland) NHZ 19: 2 occupied breeding territories (based on results of the 2003 golden eagle survey)[37] South of Scotland: ~50 individuals, 17 breeding territories[38]	A breeding territory was identified within 10 km of the Proposed Development in 2024 and was occupied again in 2025. In addition, non-breeding golden eagles were also identified using the Site.	Yes	Given the high conservation status of golden eagle in Scotland, the translocation of a small population into the south of Scotland, and the proximity of a newly established breeding territory to the Site, golden eagle is considered to be an IOF and is taken forward for full EcIA.

Source: Natural Power

[36] Scottish Government (2020). Scottish Biodiversity List. Available from - https://www.nature.scot/doc/scottish-biodiversity-list [Accessed 18/06/2025]

[37] Wilson, M. W., Austin, G. E., Gillings S. and Wernham, C. V. (2015). Natural Heritage Zone Bird Population Estimates. SWBSG Commissioned report number SWBSG_1504. pp72. Available from:www.swbsg.org

[38] Cat Barlow *pers comm* (March 2025).

Impact Assessment

1.7.19 An impact assessment for golden eagle is provided below for the construction and operation periods. Decommissioning effects are predicted to be of similar or lower magnitude to the effects during construction.

Golden eagle

Introduction

1.7.20 Golden eagle is listed on Annex I, Schedule 1/1A/A1 and the SBL. This species is a scarce resident breeding species confined largely to the uplands to the west and north of the Highland Boundary Fault. The entire UK breeding population of 508 pairs is confined to Scotland[21], most of them in the Western Highlands and the Hebrides. A small population of fewer than ten pairs has been present in southern Scotland and northern England in recent history. Recent studies into satellite-tagged golden eagles showed that dispersal from the core golden eagle range in the Highlands and Islands was severely limited and that the population is divided into three distinct sub-populations: the Highlands and Inner Hebrides; Western Isles; and the Southern Uplands[39].

1.7.21 A feasibility study commissioned by NatureScot[22] estimated that a breeding population of "*approximately 14-16 pairs*" could be supported within the south of Scotland. The Lowther Hills, where the Site is situated was estimated "*to be sufficient to support at least three breeding pairs*". In response to this feasibility study, the SSGEP was established with the aim to restore golden eagle populations in southern Scotland to a functioning and sustainable level. Golden eagle chicks were taken from nests within the core population and released at a confidential site in the Moffat Hills between 2018 and 2024. In addition to this, immature and sub-adult birds were also caught at baited locations in northern Scotland and translocated to a range of release sites in southern Scotland to bolster the breeding population. The translocated population now stands at around 50 individuals, comprised mostly of immature and sub-adult birds but also a few established breeding pairs in the Galloway Hills and Scottish Borders.

1.7.22 The NHZ 19 breeding population[37] (two breeding territories) was based on 2003 survey data, and as a result it is likely that this is an underestimate given the number of birds now present within the south of Scotland. Although much of the newly established population within the south of Scotland comprises immature and sub-adult birds which have not yet reached breeding age, there are at least 17 active territories present within the south of Scotland (Cat Barlow *pers comm*). Given that part of the Lowther Hills, and the entirety of the Carsphairn and Galloway Hills, are present within NHZ 19, it is likely that there are more than two breeding territories currently within NHZ 19. The NatureScot feasibility study[22] noted that the Galloway Hills currently support two pairs of golden eagles and historically supported four home ranges; the Carsphairn Hills have the potential to support 1-2 pairs; and the Lowther Hills is predicted to support a minimum of three home ranges (albeit two of these predicted ranges fall within NHZ 20).

Construction

Potential Disturbance and Displacement Impacts

1.7.23 Golden eagle is specially protected from disturbance throughout the year and their nest sites are also protected from reckless or intentional damage[40]. Golden eagle is a shy, scarce species which lives in remote areas of Scotland and is highly sensitive to human disturbance, particularly at roost sites and/or during the nesting period[18]. The recommended protection zones (e.g. a disturbance-free buffer) for golden eagle are: 750 m – 1 km around active nest sites during the breeding season; and 250 – 500 m around roost sites in the non-breeding season.

1.7.24 RUN provided information on a single nest site within 10 km of the Site.

1.7.25 Any construction activity within 1 km of any known golden eagle nest would be controlled via suspensive condition to ensure that no disturbance occurred.

1.7.26 The satellite tag datasets provided by RUN and Natural Research identified 83 and 112 potential nocturnal roost site locations within 1 km of the Proposed Phase 1 Development and Proposed Development respectively, of which 30 roost sites lie within 500 m of the Proposed Phase 1 Development and 62 within 500 m of the Proposed Development. Of the potential nocturnal roost sites recorded within 500 m of the Proposed Phase 1 Development, 18 of these were associated with the territory holding male, which accounts for 4.90% of the total number of roost locations (n=367). A total of 34 roost sites pertaining to the territory holding male fall within 500 m of the Proposed Development, which accounts for 9.26% of the total number of roost locations. This is not unexpected as territorial birds tend to roost in proximity to active nests (Watson, 2010[41]). In addition to this, a recent study by Ford *et al.* (2020)[42] which analysed the roosting behaviour of satellite-tagged golden eagles showed that the number of roost sites used was substantially greater than expected and that 70% of roost sites were only used for a single night (the territorial male only roosted at the exact same roost site twice). The 12 and 28 roost sites within 500 m of the Proposed Phase 1 Development and Proposed Development associated with dispersing golden eagles represent 1.19% and 2.78% of all roost sites pertaining to dispersing birds respectively (n=1,006). Therefore, the probability of disturbing golden eagles roosting at such transient roost sites is low as they will selectively choose roost sites away from sources of potential disturbance.

1.7.27 Embedded mitigation including pre-construction surveys for roosting golden eagles would be carried out to identify any roost sites within 500 m of the Proposed Phase 1 Development. Appropriate buffer zones would be established around active roost sites throughout the

[39] Fielding, A.H., Anderson, D.; Barlow, C.; Benn, S.; Reid, R., Tingay, R., Weston, E.D. & Whitfield, D.P. (2024) Golden Eagle Populations, Movements, and Landscape Barriers: Insights from Scotland. Diversity 2024, 16, 195. https://doi.org/10.3390/d16040195.

[40] Schedule 1 of the Wildlife and Countryside Act (1981) (as amended) protects golden eagles from intentional or reckless disturbance while it is building a nest or is in, on or near a nest containing eggs or young; or disturb dependent young. Schedule 1A protects golden eagles from intentional or reckless harassment year-round. Schedule A1 protects habitually used golden eagle nests from intentional or reckless damage, destruction or interference.

[41] Watson, J. (2010). *The Golden Eagle*. T. & A.D. Poyser, London.

[42] Ford, A., Taylor, J., & Jardine, D. C. (2019). Observations on the roosting behaviour of adult male Golden Eagles from satellite telemetry. Ringing & Migration, 34(1), 38–44. https://doi.org/10.1080/03078698.2019.1768662

construction phase with the occupancy of such sites monitored by a project ornithologist on a regular basis (see **Embedded Mitigation paragraph 1.7.7**). Any works scheduled in the vicinity to known roost sites would be limited to the period between two hours after sunrise and two hours before sunset.

1.7.28 Breeding pairs are sedentary and usually remain within 6 km of nesting sites, which they will defend throughout the year, particularly during certain parts of the breeding season. However, the territory in which the Site partly lies extends to 14 km from the known nest site, with parts of the core range (e.g. 50% of territory usage) 9 km from the known nest.

1.7.29 Non-breeding immatures and sub-adults that have not yet settled into a breeding territory range far more widely and may utilise habitats within occupied territories over the non-breeding season. Golden eagles can cover over 300 km in a single day, and on average travel around 10,000 – 15,000 km per year before they settle on territory, with some birds settling at two years of age and other individuals still in the 'dispersal stage' at nine years old (Phil Whitfield *pers comm*). Both dispersing golden eagles and a range holding pair could therefore be displaced from suitable foraging habitat due to construction phase disturbance. However, both dispersing and territory holding golden eagle activity in proximity to the Site is considerably lower in comparison to the area to the west and south of the Site.

Table 16: Effect of construction phase displacement on breeding and non-breeding golden eagles

Feature	Area (ha)	Area of open GET 6+ (ha)	Area of open GET 6+ within 500 m (ha)	Percentage of open GET 6+ within 500 m (%)	Total no. of satellite fixes	No. of interpolated satellite tag fixes within 500 m	Percentage of interpolated satellite tag fixes within 500 m (%)
Proposed Development							
Home range	8,819	5,313	323	6.08	9,143	1,079	11.80
Dispersing golden eagles (within 20 km)	157,289	53,402	543	1.02	316,047	7,539	2.39
Proposed Phase 1 Development							
Home range	8,819	5,313	268	5.04	9,143	83	0.91
Dispersing golden eagles (within 20 km)	156,035	53,283	484	0.91	316,047	6,364	2.01

Source: Natural Power

1.7.30 As detailed earlier, unpublished data (Alan Fielding *pers comm*) has shown that males and females in a pair have similar range use, so data from one individual of a pair is still considered to be representative of the pair's range. Tracking data provided by Natural Research covers over one year of temporal data during which this individual was settled into its' home range. As a result, there is high confidence around the extent of this range (Phil Whitfield *pers comm*). Therefore, the tag data is likely to provide a more accurate picture of range usage than the GET model in this instance.

1.7.31 However, the GET model assumes a conservative operational displacement of 300 m around proposed turbine locations, although disturbance due to construction activity is considered to extend further than this (Fielding and Haworth, 2015)[43]. The exact distance over which an impact occurs is largely unknown but will likely be affected by the type and frequency of the construction activity and influenced by environmental factors such as weather conditions and topography. A precautionary 500 m displacement distance has therefore been considered in this assessment. The potential effect of construction phase displacement from potential foraging habitat is quantified in **Table 16** for the territorial pair, as well as non-breeding dispersing golden eagles.

1.7.32 Approximately 69.62% of habitat within 500 m of the Proposed Development (i.e. 1,245.09 ha of 1,788.31 ha) is of relatively low modelled suitability for golden eagles (e.g. GET score of <6). During the construction phase dispersing individuals and/or range-holding adults would therefore be displaced from a relatively small amount of high-quality habitat in comparison to the wider area or the home range of the territorial pair.

1.7.33 The area of GET 6+ habitat within 500 m of the Proposed Development and Proposed Phase 1 Development translates to 6.08% and 5.04% respectively of the total GET 6+ open habitat within the home range of the territory holding pair (i.e. 5,313.33 ha). Given the fragility of the southern Scotland golden eagle population, any significant damage to a range would be regionally significant. A loss of 5% in the availability of suitable breeding habitat was considered significant within the now replaced PAT modelling approach, as that level of range loss was considered sufficient to lead to potential adverse effects on the viability of the range through effects on survival and breeding success. During consultation NatureScot provided information that some golden eagle home ranges have lost 30% of their territory to forestry/wind farms and continue to be occupied. The short-term and temporary loss of 5.04 – 6.08% of high-quality habitat is still unlikely to compromise the viability of this extensive breeding range, whether the Proposed Phase 1 Development or Proposed Development was built out.

[43] Fielding, A. H. and Haworth, P. F. (2015) *Edinbane Windfarm: Ornithological Monitoring 2007-2014 A review of the spatial use of the area by birds of prey*. Haworth Conservation.

1.7.34 This is further reinforced by satellite-tag evidence which shows that although ~5% of high-quality habitat within the home range lies within 500 m of the Proposed Phase 1 Development, this area is not used as regularly as predicted by the model. The number of satellite tag fixes within 500 m of the Proposed Phase 1 Development for the range holding male, accounts for 0.91% of all fixes, which suggests that this area is not as important as other parts of the home range. However, this increases to 11.80% of all fixes within 500 m of the Proposed Development for the range holding male, even though high-quality habitat within the home range within 500 m of the Proposed Development increases to ~6%. This is suggestive that the area close to the nest site is regularly utilised, which is not unexpected[44]. The Proposed Development and Proposed Phase 1 Development lies on the very edge of the large swathe of contiguous high-quality golden eagle habitat to the south and west of the Site, which forms the main part of this territory.

1.7.35 Although a suspensive condition could be used to restrict construction activities within 1 km of any nest site, certain activities are less likely to result in disturbance, especially where works are proposed during the non-breeding season or are screened by topography. Therefore, it is highly unlikely that construction of the access track within 1 km of the nest would pose a disturbance risk to golden eagles if works were undertaken within the non-breeding season.

1.7.36 For dispersing golden eagles, any proportional loss of habitat due to construction activities would be further reduced, given the larger ranges occupied by these individuals throughout the year, and the extensive areas of far more suitable habitat that occurs locally and in the wider region (e.g. 0.91 – 1.02% of GET 6+ habitat falls within 500 m of the Proposed Development and Proposed Phase 1 Development respectively, in comparison to a 20 km buffer around the two layouts as outlined in **Table 16**).

1.7.37 It should also be noted that the construction of any wind farm development is carried out on a phased approach in that the entire development would not be constructed at the same time. Therefore, the area of displacement presented in **Table 16** is highly unlikely to be realised.

1.7.38 It is expected that potential disturbance and resultant displacement effect during the construction and decommissioning phases of the Proposed Development and Proposed Phase 1 Development would be over a small spatial scale, short-term and temporary in duration. Therefore, disturbance and displacement impacts on the regional population (including the territorial golden eagle pair and dispersing individuals) during the construction and decommissioning phases are considered to be **low negative** and therefore **Not Significant**.

Operation

Potential Disturbance and Displacement Impacts

1.7.39 It is considered above that potential disturbance and displacement during the construction and decommissioning phases of the Proposed Development and/or the Proposed Phase 1 Development would be not significant. The level of disturbance during the operational phase of any wind farm is considered to be greatly reduced from that during the construction phase. In addition, mitigation outlined within the OEMP would ensure compliance with relevant environmental legislation, including lower speed limits, temporary restrictions on the use of flashing beacons, and no stopping and exiting vehicles, when within 1 km of any active golden eagle nest sites. As outlined within Paragraph 1.7.14, the OEMP would also be updated with mitigation measures aimed at the public, including signage to inform people to stay on designated paths and keep dogs on leads during the bird breeding season. Therefore, it is considered that disturbance impacts on the regional population during the operational phases are also considered to be **negligible** and **Not Significant**.

1.7.40 However, the potential displacement effect during the operational phase is greater than that during construction, given it is permanent (i.e. more than 25 years) rather than temporary in duration. The displacement from potential foraging habitat is quantified in **Table 17** for the territorial pair of golden eagles, as well as for dispersing eagles. As outlined earlier, the GET model assumes a conservative operational displacement of 300 m around proposed turbine locations (Fielding and Haworth, 2015)[43].

Table 17: Effect of operational phase displacement on breeding and non-breeding golden eagles

Feature	Area (ha)	Area of open GET 6+ (ha)	Area of open GET 6+ within 300 m (ha)	Percentage of open GET 6+ within 300 m (%)	Total no. of satellite fixes	No. of interpolated satellite tag fixes within 300 m	Percentage of interpolated satellite tag fixes within 300 m (%)
Proposed Development							
Home range	8,819	5,313	276	5.19	9,143	833	9.11
Dispersing golden eagles (within 20 km)	157,289	53,402	439	0.82	316,047	6,275	1.99
Proposed Phase 1 Development							
Home range	8,819	5,313	220	4.14	9,143	67	0.73

[44] A proportion of these satellite tag fixes relate to nocturnal fixes, while the male would be roosting, so diurnal usage of the area for foraging potentially could be less than the figures presented.

Feature	Area (ha)	Area of open GET 6+ (ha)	Area of open GET 6+ within 300 m (ha)	Percentage of open GET 6+ within 300 m (%)	Total no. of satellite fixes	No. of interpolated satellite tag fixes within 300 m	Percentage of interpolated satellite tag fixes within 300 m (%)
Dispersing golden eagles (within 20 km)	156,035	53,283	379	0.71	316,047	5,172	1.64

Source: Natural Power

1.7.41 Approximately 70% of habitat within 300 m of the Proposed Phase 1 Development turbine layout (i.e. 874.46 ha of 1,253.08 ha) is of relatively low modelled suitability for golden eagles (e.g. open GET score of <6).

1.7.42 The area of open GET 6+ habitat within 300 m of the turbine layouts of the Proposed Development and Proposed Phase 1 Development forms 5.19% and 4.14% respectively of the total GET 6+ open habitat that also falls within the range of the territory holding pair (i.e. 5,313.33 ha). As stated earlier, more than 5% loss of high-quality habitat could be deemed to compromise the viability of a breeding range. Even though the potential permanent loss of 4.14 – 5.19% of high-quality habitat would reduce the breeding range of this pair of golden eagles, it is highly unlikely to compromise its viability given its large size.

1.7.43 This is again supported by satellite-tag evidence which shows that although 4.14% of high-quality habitat within the home range lies within a 300 m convex hull of the outermost turbines of the Proposed Phase 1 Development, this area is not used as regularly as predicted by the GET model. The number of satellite tag fixes within a 300 m convex hull of the outermost turbines of the Proposed Phase 1 Development for the range holding male, accounts for 0.73% of all fixes, which suggests that this area is not as important as other parts of the home range. As outlined above, the Proposed Phase 1 Development lies on the very edge of the large swathe of contiguous high-quality golden eagle habitat to the south and west, which forms the main part of this territory.

1.7.44 However, satellite-tag evidence shows that 5.19% of high-quality habitat within the home range lies within a 300 m convex hull of the outermost turbines of the Proposed Development, this area is not used as regularly as predicted by the GET model. The number of satellite tag fixes within a 300 m convex hull of the outermost turbines for the range holding male, accounts for 9.11% of all fixes, which suggests that the area closer to the nest site is potentially of far greater importance than other parts of the home range. A large proportion of fixes reflect roosting activity in proximity to the nest site, which potentially overestimates the importance of this area with respect to the home range.

1.7.45 Range loss resulting from wind farm developments and afforestation should not just account for spatial losses but also potential barrier effects between different parts of the range. A barrier between two important parts of a range could result in increased energy expenditure by the birds as they navigate the turbine array potentially on a regular basis. Interpolated flight lines in **FEIR Confidential Figure 1.6** should be treated with caution as joining two satellite tag fixes several hours apart do not give an accurate picture of flight activity. However, it indicates that the range holding male uses ridge lines to move between the nest site and favoured foraging areas. The area around three of the Proposed Development turbines appear to fall within a flight path, although this is reduced to one turbine for the Proposed Phase 1 Development. Therefore, this could potentially create a barrier between the nest site to foraging areas. However, the satellite tag data indicates that a broad corridor outside of the Proposed Development and Proposed Phase 1 Development is already used by the range holding male, so a total barrier to movement between the nest site and other core parts of the home range is not anticipated while the known nest is in use.

1.7.46 Dispersing individuals are likely to be displaced from a negligible amount of high-quality habitat during the operational phase, given their larger ranges, and the extensive areas of far more suitable habitat that occurs locally and in the wider region. The area within a 300 m convex hull around the outermost turbines of the Proposed Phase 1 Development forms 0.71% of the total available open GET 6+ habitat within a 20 km buffer for example (this increases to 0.82% for the Proposed Development).

1.7.47 The satellite tag datasets identified a total of 16 and 43 potential nocturnal roosts within a 300 m convex hull around the outermost turbines of the Proposed Phase 1 Development and Proposed Development respectively. Of the potential nocturnal roost sites recorded within 300 m of the outermost turbines of the Proposed Phase 1 Development, ten of these were associated with the territory holding male (one of these roosts was used for two nights). Of those potential nocturnal roosts within 300 m of the outermost turbines of the Proposed Development, 19 were associated with the territory holding male. This is not surprising given the proximity of the known nest site. Given that the nesting attempt was successful in 2025, there is a high potential that the nest site will be used again in 2026. As a result, it is likely that the male will continue to utilise the same roost sites in proximity to the nest if is used in subsequent years. The potential displacement of the territorial male from 10 – 19 roost locations (with respect to the Proposed Phase 1 Development and Proposed Development respectively) is not considered to be significant however this only forms 2.72 – 5.17% of the total number of roost sites used (n=367). The dataset provided by RUN showed that dispersing golden eagles roosted within 300 m of the outermost turbines of the Proposed Phase 1 Development on six occasions and within 300 m of the outermost turbines of the Proposed Development on 24 occasions, representing a negligible number of the total of 1,006 roost locations used in the wider area.

1.7.48 It is expected that the effect of displacement during the operational phase of the Proposed Development and Proposed Phase 1 Development would be over a small spatial scale but would be permanent in duration (albeit the Proposed Development and Proposed Phase 1 Development would be fully restored during the decommissioning phase). Therefore, displacement impacts on

both breeding and non-breeding golden eagles during the operational phase are considered to be **low negative** and therefore **Not Significant**.

Potential Collision Impacts

1.7.49 Golden eagles established their presence in the area in which the Site is situated after baseline surveys had ended. Therefore, there is no flight activity data with which to utilise for collision risk modelling (CRM). However, satellite tag data shows that golden eagles do use airspace in the vicinity of the Proposed Development, but this is generally associated with the resident pair making flights between the nest site, roost sites and foraging areas. The removal of two turbines from the Proposed Development would act to reduce collision risk in this area of higher flight activity, although it is likely that this area would not have such high levels of flight activity if the pair nested in another part of their home range.

1.7.50 Satellite tag data provided by Natural Research indicates that there is low usage of the area in which the Proposed Phase 1 Development is located by the range holding male. The results of the GET model also show that there is limited good quality golden eagle habitat within the 300 m buffer of the outer turbines of the Proposed Phase 1 Development with respect to the wider area. The percentage of satellite tag fixes of the range holding male within 300 m of the outer turbines and 500 m of all infrastructure of the Proposed Phase 1 Development is 0.73% and 0.91% respectively, whereas the number of fixes is considerably higher within 300 m of the outer turbines and 500 m of all infrastructure of the Proposed Development, at 9.11% and 11.80%. This is related to the fact that the number of fixes are inflated by the amount of time the male will spend around the nest site loafing and roosting, when individuals are not at risk of collision mortality.

1.7.51 Additionally, satellite tag data also shows that dispersing eagles make use of the area in which the Proposed Development (and Proposed Phase 1 Development) are located, although the proportion of total fixes within 300 m of the outer turbines and 500 m of all infrastructure of the Proposed Phase 1 Development is 1.64% and 2.01% respectively (of all fixes within a ~10 km buffer around the Site). However, there is little difference between the Proposed Development and Proposed Phase 1 Development with reference to dispersing golden eagles, where the number of fixes are only marginally lower within a 300 m and 500 m buffer around the respective developments turbines and/or infrastructure (e.g. a reduction of 0.35% and 0.38% for a 300 m buffer around the outer turbines and 500 m buffer around all infrastructure of the Proposed Development to the Proposed Phase 1 Development). Most fixes are associated with forest edge habitat, which is suggestive of birds using roost (or perching) sites within the margins of plantation forest, when they will not be at risk of collision mortality.

1.7.52 Although golden eagles occasionally collide with turbines[45], they exhibit clear avoidance behaviour in relation to turbine arrays, and in general do not utilise suitable habitat within or immediately surrounding a turbine array[31,32,33]. In one study where satellite-tagged eagles were recorded passing through wind farms, 75% of the flight activity was above the upper sweep height and less than 1% of flights were within a rotor blade width of the hub[33]. As golden eagles are more likely to be impacted by the effects of displacement from suitable habitat within turbine arrays rather than collision, collision mortality estimates are not likely to be realised.

1.7.53 The potential collision mortality estimated to occur as a result of the Proposed Development and Proposed Phase 1 Development, despite its long-term duration, is predicted to have a low spatial magnitude, and overall effects are considered to be **low negative** and therefore **Not Significant**.

1.8 FURTHER MITIGATION AND RESIDUAL EFFECTS

1.8.1 As no significant effects are predicted during any phase of the Proposed Phase 1 Development and/or Proposed Development (with the suspensive condition in place), no species-specific mitigation is required for golden eagle. A variety of embedded measures (described in **Section 1.7**) would be implemented to ensure compliance with legislation, and to follow good practice guidance with regard to protecting golden eagles. In addition, an outline HMP would be prepared which includes measures for habitat enhancements and ornithological monitoring would be detailed within an OEMP.

1.9 SUMMARY OF EFFECTS

Table 18: Summary of pre-mitigation effects and residual effects on each IOF, and the residual significance of effects of the Proposed Phase 1 Development and Proposed Development (with the suspensive condition in place)

IOF	Conservation importance	Nature of potential pre-mitigation effect	Magnitude of pre-mitigation effect	Significance of pre-mitigation effect	Specific mitigation/enhancement measure	Magnitude of residual impact	Residual significance
Construction (and Decommissioning)							
Golden eagle	Regional	Disturbance	Low negative	Not significant	No specific mitigation/enhancement required	Low negative	Not significant
		Displacement	Low negative	Not significant	No specific mitigation/enhancement required	Low negative	Not significant
Operation							
Golden eagle	Regional	Disturbance	Negligible	Not significant	No specific mitigation/enhancement required	Negligible	Not significant
		Displacement	Low negative	Not significant	No specific mitigation/enhancement required	Low negative	Not significant

[45] https://www.goldeneaglessouthofscotland.co.uk/blog/sparky-b31-sad-news-from-galloway

IOF	Conservation importance	Nature of potential pre-mitigation effect	Magnitude of pre-mitigation effect	Significance of pre-mitigation effect	Specific mitigation/enhancement measure	Magnitude of residual impact	Residual significance
		Collision risk	Low negative	Not significant	No specific mitigation/enhancement required	Low negative	Not significant

1.10 CUMULATIVE IMPACTS ASSESSMENT

1.10.1 The following section assesses the predicted cumulative adverse effects on territorial golden eagle only from the Proposed Development / Proposed Phase 1 Development, along with all other plans or projects within the home range of the territory holding pair (tag identification numbers 181544 and 1027).

1.10.2 The overall spatial magnitude of impact of the Proposed Development and Proposed Phase 1 Development was classed as low negative to negligible. Effects are largely associated with the indirect loss of part of a golden eagle breeding range during the operational phase. This golden eagle range also partially overlaps with turbines from the proposed Rivox Wind Farm.

1.10.3 Cumulative effects on the wider regional population may be anticipated if the Proposed Development / Proposed Phase 1 Development contributed substantially to losses of suitable habitat for dispersing birds. However, this is not anticipated due to territorial occupation limiting the use of good golden eagle habitat by dispersing birds. The 300 m buffer around the of the outer turbines of the Proposed Phase 1 Development / Proposed Development represents 0.71 – 0.82% of good golden eagle habitat within a wider 20 km buffer. A total of 179 – 213 ha of open GET 6+ habitat falls within 300 m of the outer turbines of the Proposed Phase 1 Development and Proposed Development respectively, that is also outwith the home range of the territorial pair. This area of highly suitable habitat forms 0.34 – 0.40% of good golden eagle habitat within a wider 20 km buffer that is not occupied by the territorial pair. In addition, these areas of good golden eagle habitat are not contiguous within the Proposed Development and are therefore less likely to be utilised by dispersing birds.

1.10.4 The total area of open GET 6+ habitat within the home range was predicted as 5,313 ha. The loss of good GET 6+ habitat within the home range was estimated at 276 ha for the Proposed Development, which would be reduced to 220 ha for the Proposed Phase 1 Development. The Rivox Wind Farm SEI report[46] estimated the loss of 17 – 24 ha of open GET 6+ habitat within the home range, depending on the extent of the development constructed.

1.10.5 The southern Scotland golden eagle population is in its early stages of recolonisation and therefore is a fragile population, so any significant damage to a range would be regionally significant. As outlined earlier, a loss of 5% in the availability of suitable breeding habitat was considered significant within the now replaced PAT modelling approach, as that level of range loss was considered sufficient to lead to potential adverse effects on the viability of the range through effects on survival and breeding success. With the proposed suspensive condition in place, the indirect habitat loss through displacement would equate to 237 of 5,313 ha (e.g. 4.46%). This level of loss is considered to be **Not Significant**.

1.10.6 However, should both Daer Wind Farm and Rivox Wind Farm be built out in full, the indirect loss of open GET 6+ habitat within the home range through operational displacement would equate to 300 of 5,313 ha (e.g. 5.65%). However, this home range is extensive and the indirect loss of 300 ha of good quality habitat is also considered to be **Not Significant**.

1.10.7 Satellite-tag data is considered to present a more realistic assessment of range use than via predictive models like the GET, however. Therefore, an assessment of range loss has also been undertaken by calculating the proportion of satellite tag fixes for the range holding male within 300 m of the of the outer turbines of the Proposed Development and Proposed Phase 1 Development. A total of 9,143 satellite tag records were provided by Natural Research for the range holding male, of which 833 (e.g. 9.11%) were within 300 m of the outer turbines of the Proposed Development. As noted earlier, it is likely that a high percentage of these fixes accounted for roosting/loafing activities around the nest site. Accounting for the suspensive condition, 67 of 9,143 satellite tag fixes fell within 300 m of the outer turbines of the Proposed Phase 1 Development (e.g. 0.73%). This analysis includes all satellite fixes, whereas the Rivox Wind Farm SEI[46] filtered out all nocturnal fixes, where it was argued that fixes associated with roosting over emphasized the value of the area and the potential impact of displacement. The Rivox Wind Farm SEI[46] determined that a 4.6% loss of home range would be predicted using satellite tag data for the 29 turbine development, which would be reduced to 1.3% for a 26-turbine development (i.e. accepting the suspensive condition).

1.10.8 Therefore, the worst-case scenario of the Proposed Development and the 29-turbine layout for Rivox Wind Farm predicts an indirect loss of 13.71% of the home range when using satellite tag data. This level of loss is potentially considered to be **Significant**, albeit a proportion of satellite tag fixes relate to roosting/loafing activities around the nest site and this area unlikely to be as important for foraging. However, with the suspensive condition, and the removal of two turbines from the Proposed Development and three turbines from the original 29-turbine Rivox Wind Farm, indirect habitat loss equates to 2.03% of the home range. This level of loss is considered to be **Not Significant**.

1.10.9 As outlined earlier, range loss resulting from wind farm developments and afforestation should not just account for spatial losses but also potential barrier effects between different parts of the range. It is unlikely that the Rivox Wind Farm would create any barrier to movement from the nest site to

[46] Rivox Wind Energy Hub Ltd (2025). RIVOX WIND ENERGY HUB. Supplementary Environmental Information. Ornithology. Final report February 2025.

other core parts of the home range, so cumulatively this would not have additive effect to that predicted as a result of the Proposed Development nor Proposed Phase 1 Development.

1.10.10 Cumulative effects on the wider regional population (e.g. dispersing individuals) are likely to be negligible as the Proposed Development nor Proposed Phase 1 Development does not contribute substantially to regional losses in good quality golden eagle habitat. Much of the Proposed Phase 1 Development / Proposed Development open GET 6+ habitat falls within the occupied golden eagle territory (220 ha of 399 ha / 276 ha of 489 ha, respectively).

1.10.11 In summary, this CIA is limited to the consideration of additive operational impacts with respect to range loss as a result of the Proposed Development and the proposed Rivox Wind Farm. The predicted home range loss, expressed as a percentage of the home range (e.g. 95% kernel density analysis of all satellite-tag fixes) varies from 2.03 – 13.71%.

1.10.12 Whether using GET modelling data or satellite tag data, two scenarios exceed the 5% range loss outlined earlier in the text that may result in a home range becoming unviable. Both these scenarios assume that all turbines become operational at the Proposed Development and the Rivox Wind Farm. With the suspensive condition in place, whether GET modelling data or satellite tag data is used in the assessment, both situations result in a range loss of less than 5%, namely 2.03% and 4.46% respectively.

1.10.13 Cumulative effects on range holding golden eagle as a result of the Proposed Development and the 29-turbine Rivox Wind Farm are predicted to be of a moderate negative magnitude. However, considering the suspensive condition and embedded mitigation, despite the effect being permanent, it is ultimately considered to have a low negative magnitude. The cumulative effects on the regional population of golden eagle are judged to be **low negative** and therefore **Not Significant** under the EIA Regulations.

1.11 STATEMENT OF SIGNIFICANCE

1.11.1 An assessment has been made of the predicted significance of effects of the Proposed Development and Proposed Phase 1 Development on golden eagle. The Proposed Development and Proposed Phase 1 Development includes for a 50 m micrositing allowance where the environmental impacts would be assessed and signed off by the Environmental Clerk of Works.

1.11.2 By applying the suspensive condition, effective embedded mitigation measures and following good practice guidelines during construction, the magnitude of residual effects of the Proposed Development on golden eagle is assessed as being **low negative** magnitude, and thus **Not Significant** in the professional judgment of the author.

1.11.3 During all phases of the Proposed Development and Proposed Phase 1 Development, potential negative effects in terms of disturbance/displacement are predicted for golden eagle. With respect to other developments in NHZ 19, the CIA predicted that with the suspensive condition, cumulative negative effects on range holding golden eagle would be **Not Significant** under the EIA Regulations.