# 7. Ornithology

## 7.1 Introduction

7.1.1 This chapter considers the potential for significant effects on ornithological features associated with the construction, operation and decommissioning of the Proposed Development.

7.1.2 The specific objectives of the chapter are to:

- describe the current ornithological baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- identify the potential significant effects upon ornithological features, including direct, indirect and cumulative effects;
- describe the mitigation measures proposed to address any potential significant effects;
- assess the residual effects remaining following the implementation of mitigation measures.

7.1.3 The assessment has been carried out by MacArthur Green in accordance with NatureScot and Chartered Institute of Ecology and Environmental Management (CIEEM, 2022) guidelines. All staff contributing to this chapter have undergraduate and/or postgraduate degrees in relevant subjects, have extensive professional ornithological impact assessment experience, hold professional CIEEM membership/abide by the CIEEM Code of Conduct.

7.1.4 The chapter is supported by:

- **Technical Appendix 7.1** – Ornithology (including Annexes A – E) (Volume 3); and
- **Technical Appendix 7.2** – Confidential Ornithology (Volume 5).
- **Figures 7.1 – 7.14** (Volume 2a) and **Confidential Figure 7.2.1** (Volume 5) are referenced in the text where relevant.

7.1.5 The information provided in Volume 5 relates to the breeding locations (and any other sensitive details) of bird species included on Schedule 1 of the Wildlife and Countryside Act 1981 (refer to Technical Appendix 7.1 Annex A for details) and its distribution will be restricted to relevant staff at the Energy Consents Unit (ECU), NatureScot, the Royal Society for the Protection of Birds (RSPB) Scotland and the South Strathclyde Raptor Study Group (SSRSG).

## 7.2 Legislation, Policy & Guidance

7.2.1 The assessment presented within this chapter has been undertaken with reference to the following key pieces of legislation, policy and industry guidance of relevance to ornithology.

### Legislation

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended); the 'EIA Regulations';
- Environmental Impact Assessment Directive 2014/52/EU;
- Directive 2009/147/EC on the Conservation of Wild Birds; the 'Birds Directive';
- The Conservation (Natural Habitats &c.) Regulations 1994 (as amended) and the Conservation of Habitats and Species Regulations 2017; hereafter the 'Habitat Regulations';
- The Wildlife and Countryside Act 1981; and
- The Nature Conservation (Scotland) Act 2004 (as amended).

### Planning Policy

**7.2.2** The Planning Statement associated with this Section 36 application sets out the planning policy framework that is relevant to the EIA. This section considers the relevant aspects of National Planning Framework 4 (NPF4), Planning Advice Notes, the East Ayrshire Local Development Plan (LDP) and other relevant guidance. Of relevance to the assessment presented within this chapter are the following policies:

- Scottish Government (2023a). Tackling the Nature Emergency – Scottish biodiversity strategy to 2045;
- Scottish Government (2023b). Draft Planning Guidance: Biodiversity;
- Scottish Government (2023c). National Planning Framework 4 ('NPF4');
- Scottish Government (2017). Planning Advice Note 1/2013-Environmental Impact Assessment, Revision 1.0;
- Scottish Government (2000). Planning Advice Note 60: Planning for Natural Heritage; and
- The Scottish Biodiversity List.

### Guidance

- Environmental impact assessment: NatureScot (SNH 2016a, 2018b, NatureScot 2020a, 2025a), CIEEM (2022).
- Designated sites: SNH (2016b).
- Collision risk modelling: SNH (2000, 2018c), Band (*et al.* 2007, 2024).
- Cumulative assessment: SNH (2018d).
- Bird populations/species-specific guidance: Stanbury *et al*. (2021, 2024), NatureScot (SNH 2017), Pearce-Higgins (2021), Wilson *et al.* (2015).
- Construction and birds: SNH (2016c), NatureScot (2024), Goodship & Furness (2022).

## 7.3 Consultation

7.3.1 In undertaking the assessment, consideration has been given to the scoping responses which were received in relation to ornithological matters, as detailed in **Table 7.1**.

**Table 7.1: Consultation Responses**

| Consultee | Consultation Response | Applicant Action |
|---|---|---|
| East Ayrshire Council<br>Scoping<br>22/05/2024 | The Planning Authority has no particular comments to make with regards to ornithological matters and would suggest the Applicant ensure the requirements and requests of NatureScot and RSPB and any other relevant body with information and records of relevant ornithological interests are taken into account to inform the assessment of these matters for reporting within the EIA Report. | Noted. See **Section 7.4 Desk Study** for sources of data. |
| NatureScot<br>Scoping<br>06/06/2024 | **Ailsa Craig Special Protection Area (SPA)**<br>The proposal could affect the Ailsa Craig SPA, classified for its migratory gannet and lesser black-backed gull and seabird assemblage. The proposal site is located approx. 43km from the SPA which is within the foraging distance of lesser black-backed gull and of herring gull.<br>The scoping report notes that herring gull (a component of the SPA's seabird assemblage) have been recorded during flight activity surveys. Based on the information provided it is not possible to exclude the possibility that these birds are associated with the SPA. Our advice is that this proposal is therefore likely to have a significant effect on the qualifying interests of this site. Consequently, Scottish Ministers, as competent authority, may be required to carry out an appropriate assessment in view of the site's conservation objectives for its qualifying interests.<br>To enable us to carry out an appropriate assessment, the following information is required as part of the EIA Report: An assessment of potential collision risk for herring gulls and how this may affect the viability of the relevant species' SPA population. We advise that this information should include showing flight lines from Vantage Point watches.<br>…the scoping report does not mention lesser black-backed gull records; in our view, there is insufficient information to determine whether the proposal is likely to have a significant effect on lesser black-backed gull qualifying interests of the site. In order for this to be determined, we recommend that the following additional information is obtained: An assessment of potential collision risk for lesser black backed gull and how this may affect the viability of the relevant species' SPA population. We advise that this information should include showing flight lines from Vantage Point watches if relevant.<br>**Ailsa Craig Site of Special Scientific Interest (SSSI)**<br>The proposed application site is within foraging distance of the herring gull and lesser black-backed gull of Ailsa Craig SSSI. The relevant protected natural feature of the SSSI is the breeding bird assemblage which includes herring gull and lesser black-backed gull. The assessment undertaken for the SPA can be used to assess impacts on the SSSI. | Refer to **Section 7.11** for a review of gull activity in relation to these sites and consideration of the comments provided by NatureScot. |

| Consultee | Consultation Response | Applicant Action |
|---|---|---|
| | **Solway Firth SPA**<br>The proposal site is located approx. 55km from the Solway Firth SPA which is within the foraging distance of non-breeding herring gulls. A conclusion of Likely Significant Effect would only be appropriate if herring gull flights are recorded in large numbers during the applicant's winter surveys. Otherwise, the requirements of the Habitats Regulations could be met by simply stating that the evidence provided by the applicant suggests that there will be no Likely Significant Effects on this species.<br>The scoping report notes that herring gull (a component of the SPA's seabird assemblage) have been recorded during flight activity surveys. Based on the information provided it is not possible to exclude the possibility that these birds are associated with the SPA. Our advice is that this proposal is therefore likely to have a significant effect on the qualifying interests of this site.<br>To enable us to carry out this appraisal, the following information is required as part of the EIA Report: An assessment of potential collision risk for herring gulls and how this may affect the viability of the relevant species' SPA population. We advise that this information should include showing flight lines from Vantage Point watches. | Refer to **Section 7.11** for a review of gull activity in relation to this SPA and consideration of the comments provided by NatureScot. |
| | **Bogton Loch SSSI**<br>The proposal could affect the Bogton Loch SSSI, classified for its breeding bird assemblage which includes a breeding colony of black-headed gulls. The proposal site is located approximately 5km from the SSSI which is within foraging distance of the black-headed gull colony.<br>We note the Scoping Report does not mention black-headed gull and recommends scoping out this protected area. As there is some suggestion that this breeding colony's presence has been sporadic in the past, we wish therefore to seek clarification that the black-headed gull colony was absent in all the breeding surveys that the applicants commissioned to inform their EIA. If absence is ascertained, Bogton Loch SSSI can be scoped out of the EIA. | Refer to **Section 7.11** for a review of gull activity in relation to this SSSI and consideration of the comments provided by NatureScot. |
| | …we agree with the methodology assessment described in section 6.4 [of the Scoping Report]. | Noted. |
| | … relevant guidance regarding our interests has been included in the scoping report ..we welcome the inclusion of data from RSPB Scotland and the South Strathclyde Raptor Study Group (SSRSG). | Noted. |
| RSPB | RSPB agrees [based on evidence provided in the Scoping Report] that, subject to further information becoming available from the field surveys and desk study, the scope of | Noted. |

| Consultee | Consultation Response | Applicant Action |
|---|---|---|
| Scoping<br>04/06/2024 | ornithological features (including designated sites) to be included in the assessment is appropriate. | |
| | Vantage Points and Viewsheds [shown in Figure 6.1of Scoping Report] suggests that turbines 25 and 26 are not visible from any of the Vantage Points (VPs) in any of the survey years. In addition, section 6.2.1 of the Scoping Report states that VP 3 was not surveyed during the 2020 breeding season. Based on this information, the proposed locations for turbines 13, 16, and 19-24 have only been surveyed during one breeding season, and turbines 25 and 26 have not been covered by any VP survey effort thus far. These issues with survey coverage may significantly underestimate the impacts of the Proposed Development on breeding bird species in the area.<br>We recommend that the methodologies outlined in the NatureScot guidance on bird survey methods for onshore wind farms are followed to ensure that VP survey effort is sufficient to allow proper assessment of the ornithological status of this site and any potential impacts to birds which may occur as a result of this proposal. | Refer to **paragraph 7.4.27** for a review of viewshed coverage against the finalised turbine layout. |
| | Section 6.5.4 of the Scoping report states that "*any target species not identified to be breeding within the relevant study area will be scoped out of the assessment*". However, we are concerned that this approach does not account for species that may use the site during the non-breeding season. We recommend that all potential ornithological impacts should be assessed for the relevant species, both breeding and non-breeding.<br>We disagree with the proposal to scope out non-breeding bird species outwith the collision risk assessment. We recommend that all potential ornithological impacts should be assessed for the relevant species, both breeding and non-breeding, including both disturbance and displacement of birds at construction and operational stages, as per NatureScot guidance. | All target species recorded during the baseline survey period have been detailed in the baseline section of this chapter and consideration as to whether each species is scoped in or out of the assessment has been based on all activity recorded for that species (i.e. both breeding and non-breeding activity has been considered). |
| | Q6.4 Do consultees believe that there are any further species, or any designated sites which need to be considered in the assessment?<br>No. | Noted. |
| | The South West Scotland Environmental Information Centre (SWSEIC) and the local branch of the Scottish Ornithologists Club (SOC) may hold further relevant records for this site, and we recommend contacting these groups to inform the ornithology assessment. | Data requests were issued to the RSPB Data Unit, Forestry & Land Scotland and SSRSG, and the desk study is considered sufficient to compliment the baseline survey data. |

## 7.4 Assessment Methods & Significance Criteria

### Scope of Assessment

7.4.1 This chapter considers the following potential impacts upon ornithological features associated with the Proposed Development:

- Direct temporary and permanent habitat loss for birds through construction and operation of the Proposed Development;
- Displacement of birds from the Proposed Development and its surrounding area due to construction disturbance, turbine operation, maintenance, and visitor disturbance. This also includes potential barriers to commuting or migrating birds due to the presence of the Proposed Development turbines;
- Habitat modification due to change in land type or changes in hydrological regime, and consequent impacts on bird populations; and
- Death or injury of birds through collisions with turbine blades, or fences (if any) associated with the Proposed Development.

7.4.2 The chapter also assesses the potential for additional cumulative impacts when considered in addition to other consented or proposed developments which are subject to EIA.

7.4.3 The assessment is based on the Proposed Development description in **Chapter 2: Proposed Development**.

### Study Area

7.4.4 The ornithology assessment considers the following study areas (as defined by NatureScot guidance) which are based on the final turbine layout and associated infrastructure (**Figure 7.1**):

- Designated sites – the Proposed Development and a 20 km study area buffer (based on the greatest foraging range for any species, as provided in SNH 2016b) (**Figure 7.2**);
- Collision risk modelling – a Collision Risk Analysis Area ('CRAA') has been created using a 500 m buffer around the proposed turbine locations to create a wind farm area (as per relevant guidance, SNH 2017) (**Figure 7.3**);
- Scarce[1] breeding birds – the Proposed Development and a 2 km study area buffer (6 km for eagles) (SNH 2017; **Figure 7.1**);
- Black grouse – the Proposed Development and a 1.5 km study area (SNH 2017; **Figure 7.1**);
- Breeding upland waders and wintering waders, raptors, owls and wildfowl – the Proposed Development and a 500 m study area (SNH 2017; **Figure 7.1**); and

[1] Scarce breeding birds are those listed on Annex 1 of the EU Birds Directive and/or Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and in the case of the Proposed Development consists of raptor and owl species.

- Cumulative assessment – the Natural Heritage Zone (NHZ) level, as per NatureScot guidance (SNH 2018d).

### Desk Study

7.4.5 The following data sources have been consulted as part of the assessment:

- NatureScot SiteLink website for designated site information;
- Data on breeding raptors and owls provided by the South Strathclyde Raptor Study Group (SSRSG);
- Data provided by RSPB Scotland's Data Unit;
- Information provided by Forestry & Land Scotland (FLS); and
- The baseline surveys, pre-construction surveys and ongoing ornithological monitoring associated with the adjacent North Kyle Energy Project (currently under construction).

### Field Surveys

7.4.6 Baseline field surveys were undertaken from April 2020 to August 2024. All surveys were undertaken in line with the appropriate guidance (SNH 2017, Hardey *et al.* 2013, Gilbert *et al.* 1998) and survey areas are detailed below (refer to **Technical Appendix 7.1: Ornithology Annex B** for details of the survey methodologies). All survey areas were created using survey-specific buffers based on the application boundary provided at the time of survey commencement. It should be noted that across the baseline survey period the Proposed Development area has been subject to revisions and survey areas were adapted to accommodate these changes as they occurred.

- Flight activity surveys (minimum of 36 hours per season as per SNH 2017): two VP locations (VPs 1 and 2) during the 2020 breeding season, three VP locations (VPs 1, 2 and 3) during the 2020/2021 non-breeding, 2021 breeding and 2021/2022 non-breeding seasons (**Figure 7.3**);
- Scarce breeding bird surveys: 2 km survey area (**Figure 7.4**), 2020, 2021 and 2024 breeding seasons.
- Black grouse surveys: 1.5 km survey area (**Figure 7.5**), May and June 2020, April and May 2021, and April and May 2024.
- Winter walkover surveys: 500 m survey area (**Figure 7.6**), 2020/2021 and 2021/2022 non-breeding seasons.

### Assessment of Significance

7.4.7 The assessment uses the following process:

- Identifying the potential impacts associated with the Proposed Development on an ornithological feature;
- Considering the likelihood of occurrence of potential impacts on an ornithological feature;
- Defining the sensitivity of a feature from its Nature Conservation Importance ('NCI') and conservation status;
- Establishing the extent and duration of the magnitude of the impact;

- Based on the above criteria, making a judgement as to whether or not the resultant effect on an ornithological feature is significant with respect to the EIA Regulations;
- If a potential effect is determined to be significant, outlining measures proposed to mitigate or compensate the effect where required; and
- Considering residual effects after mitigation, compensation and/or enhancement.

### Sensitivity Criteria

7.4.8 The sensitivity of ornithological features on or near to the Proposed Development is assessed in line with best practice guidance, legislation, statutory designations and/or professional judgement.

7.4.9 Determination of the level of sensitivity of an ornithological feature is based on a combination of the feature's NCI and conservation status. There are three levels of NCI as detailed in **Table 7.2.**

**Table 7.2: Determining Factors of a Feature's NCI**

| Importance | Description |
|---|---|
| High | Populations receiving protection by an SPA, Ramsar Site, SSSI or which would otherwise qualify under selection guidelines.<br>Species present in nationally important numbers (>1 % national breeding or wintering population). |
| Medium | The presence of breeding species listed in Schedule 1 of the Wildlife and Countryside Act 1981.<br>The presence of species listed in Annex I of the Birds Directive (but population does not meet the designation criteria under selection guidelines).<br>The presence of nationally rare, Red-listed breeding species noted on the latest Birds of Conservation Concern ('BoCC') Red list (Stanbury *et al.* 2021).<br>Regularly occurring migratory species, which are either rare or vulnerable, or warrant special consideration on account of the proximity of migration routes, or breeding, moulting, wintering or staging areas in relation to the Proposed Development.<br>Species present in regionally important numbers (>1 % regional breeding population). |
| Low | All other species' populations not covered by the above categories. |

7.4.10 Important Ornithological Features ('IOFs', as per CIEEM 2022) to be assessed for the purposes of the EIA Report, are taken to be those species of high or medium NCI.

*7.4.11* As defined by NatureScot (2025a), *"[a] species' conservation status is defined by the sum of the influences acting on it which may affect its long-term distribution and abundance, within the geographical area of interest (which for the purposes of this guidance is Scotland), and that a species' conservation status is favourable when:*

- *population dynamics indicate that the species is maintaining itself on a long-term basis and is therefore likely to persist in the habitat it occupies; and*
- *the natural range of the species is not being reduced, nor is likely to be reduced for the foreseeable future; and*

- *there is (and will probably continue to be) a sufficiently large habitat to maintain its populations on a long-term basis."*

*7.4.12* NatureScot's response to any development proposal *"is guided by maintaining a viable population across the species' natural range along with a sufficient area of suitable habitat. An effect should therefore be judged as of concern where it would adversely affect the existing favourable conservation status of a species or prevent a species recovering or maintaining its favourable conservation status in Scotland."*

7.4.13 The relevant regional context for many breeding species is considered to be the appropriate NHZ (SNH 2002) which the Site falls within, which in this case is NHZ 19 (Western Southern Uplands and Inner Solway). Other geographical extents may however be more relevant, for example if there has been a specific reintroduction programme, if there is a clear extent of a metapopulation which crosses NHZs, or if national censuses for a species have consistently evaluated particular areas.

7.4.14 For wintering or migratory species, the national UK population or flyway population is considered to be the relevant scale for determining effects on the conservation status.

### Impact Magnitude

7.4.15 A material impact is defined here as a change of magnitude to the abundance and/or distribution of a population as a result of the Proposed Development. Impacts can be adverse, neutral, or beneficial.

7.4.16 In determining the magnitude of impacts, the resilience of a population to recover from temporary adverse conditions is considered in respect of each potentially affected population.

7.4.17 The behavioural responses of individual species to anthropogenic activities are considered when determining the extent and duration of an impact and are assessed using guidance described by Goodship & Furness (2022) and other relevant sources.

7.4.18 Impacts are judged in terms of magnitude in extent and duration. The levels of extent and duration are detailed in **Table 7.3** and **Table 7.4** respectively.

**Table 7.3: Magnitude of impact – extent**

| Magnitude | Description |
|---|---|
| High | Major change in the conservation status, trajectory or distribution of a bird population due to mortality or displacement or disturbance.<br>Guide: >20 % of population lost or increase in additive mortality. |
| Medium | Partial change in the conservation status, trajectory or distribution of a bird population due to mortality or displacement or disturbance.<br>Guide: 6-20 % of population lost or increase in additive mortality. |
| Low | Small but discernible change in the conservation status, trajectory or distribution of a bird population due to mortality or displacement or disturbance.<br>Guide: 1-5 % of population lost or increase in additive mortality. |

| Magnitude | Description |
|---|---|
| Negligible | Very slight (or no discernible) change in the conservation status, trajectory or distribution of a bird population due to mortality or displacement or disturbance. Reduction barely discernible, approximating to the "no change" situation.<br>Guide: <1 % of population lost or increase in additive mortality. |

**Table 7.4: Magnitude of impact – duration**

| Magnitude | Description |
|---|---|
| Permanent | Effects continuing indefinitely beyond the span of one human generation (taken as approximately 25-30 years), except where there is likely to be substantial improvement after this period. Where this is the case, long-term may be more appropriate. |
| Long-term | Approximately 5-25 years or longer (see above). |
| Medium-term | Approximately 3-5 years. |
| Short-term | Up to approximately 2 years. |
| Negligible | <12 months. |

### Significance Criteria

7.4.19 The potential significance of effects is determined through a standard method of assessment based on professional judgement, considering both sensitivity and magnitude of impact as detailed in **Table 7.5**.

7.4.20 Major and moderate effects are considered 'Significant' in the context of the EIA Regulations.

**Table 7.5: Determining significance of effects**

| Significance of Effect | Description |
|---|---|
| Major | The impact is likely to result in a long-term significant effect on the conservation status of a feature. |
| Moderate | The impact is likely to result in a partial (e.g. delay in attaining favourable conservation status), and/or temporary and reversible significant effect on the conservation status of a feature. |
| Minor | The impact is likely to affect a feature at an insignificant level by virtue of its limitations in terms of duration or extent, but there will probably be no effect on its conservation status. |
| Negligible | No material impact on conservation status. |

### Assessing Cumulative Impacts

7.4.21 The potential for significant cumulative impacts is considered in **Section 7.10**, which assesses predicted residual impacts arising from the Proposed Development combined with impacts predicted for other operational, consented or proposed projects located within NHZ 19.

7.4.22 NatureScot (2025a) has provided guidance on assessing the cumulative effects on birds. This assessment follows the principles set out in that guidance.

7.4.23 Cumulative effects may include cumulative disturbance-displacement, collision mortality, habitat loss or barrier effects. Some cumulative effects, such as collision risk, may be summed quantitatively, but according to NatureScot (2025a) "*In practice, however, some effects such as disturbance or barrier effects may need considerable additional research work to assess impacts quantitatively. A more qualitative process may have to be applied until quantitative information becomes available for developments in the area, e.g., from post-construction monitoring or research*".

## Project Assumptions

7.4.24 The assessment of potential effects is based on the Proposed Development description (outlined in **Chapter 2: Proposed Development**.). In relation to describing impacts on ornithological features, the relevant specifications used to determine the 'worst-case' Proposed Development involve:

- Up to 20 turbines with a maximum tip height of 149.9 m/maximum rotor diameter of 136 m.
- The associated infrastructure will include a battery energy storage system (BESS), turbrine foundations, access tracks, crane hardstands, underground cabling, on-site substation and control building, temporary construction compounds, and borrow pits.
- Approximately 130 ha of advance forest felling required to accommodate Proposed Development infrastructure. Where the age, species and/or structure of the crop permits, the crop will have 'keyhole felling', whereby trees from only the footprint of the infrastructure and associated buffers will be removed.
- Existing access tracks have been incorporated into the track layout where possible.
- All electrical cabling between the proposed turbines and the associated infrastructure will be underground in shallow trenches which would be reinstated post-construction and, in most cases, follow the proposed access tracks.
- Any disturbance areas around permanent infrastructure during construction will be temporary and land will be reinstated or restored before the construction period ends. The only excavation in these areas will be for cabling as noted above and otherwise may only be periodically used for side-casting of spoil until reinstatement.
- Borrow pits will be excavated during the construction period and will be reprofiled at the end of the construction period.
- The construction period will last for between 18 and 24 months, comprising a construction programme as described in **Chapter 2: Proposed Development**. The number of bird breeding seasons potentially disrupted would depend on the month in which construction commences and the breeding season of the potentially affected species. The main breeding season of most birds at the Site extends from March to August. For the purposes of this assessment, it is assumed that, for any given species of bird, construction activities would commence during the breeding season and would therefore potentially affect up to three breeding seasons. The assessment has also taken account of the longer (24-month) period of construction.

## Limitations, Difficulties and Uncertainties

7.4.25 Survey effort either met or exceeded the minimum requirements stipulated in NatureScot guidance (SNH 2017[2]). In general, weather conditions were appropriate for the surveys, but where not, surveys were suspended (or additional surveys were undertaken) (refer to **Technical Appendix 7.1: Ornithology**).

7.4.26 As a result of wider design constraints, changes to the extent of the site boundary have occurred over the baseline survey period. Survey buffers described above were revised to take into account the majority of these changes and **Figure 7.4, Figure 7.5** and **Figure 7.6** show the comparison between the various years' survey areas and the associated study areas used in the assessment. Whilst there is a small strip of the study areas to the north that is not covered by the survey buffers for any year, considering the relatively small size of this additional area, the comparable habitats present within the survey areas, and the general low ornithological sensitivity of the Site, the data gathered during baseline surveys from 2020 to 2024 are considered sufficiently representative to allow a robust assessment.

7.4.27 As discussed in consultation **Table 7.1**, it is acknowledged that turbines T1, T2, T3, T4, T16 and T17 are just outside of the 2 km viewshed coverage (shown at 20 m above ground level, **Figure 7.3**).

7.4.28 Whether this would affect the robustness of the collision risk modelling depends on how similar the flight activity rates in the un-surveyed areas are to the flight activity rates recorded in the viewshed areas. In this case, the six aforementioned turbines are located in similar habitat and on similar topography to the remaining 14 turbines covered by the viewsheds. Additionally, no target species were recorded breeding in the vicinity of these turbine locations. It is therefore likely that flight activity would be similar around these six turbines, compared to that recorded within the viewsheds.

7.4.29 It is therefore considered that the viewshed coverage provides a sufficient sample extent of flight activity across the wind farm, and that the mean flight activity rates per unit area (hectare) used in the collision model inputs are considered to be appropriate, and unlikely to result in unrepresentative collision rates.

7.4.30 Limitations exist with regard to the knowledge base on how some species, and the populations to which they belong, react to impacts associated with onshore wind farms and associated construction activities. A precautionary evaluation approach is taken in these circumstances, and as such it is considered that these limitations do not affect the robustness of this assessment.

[2] It is noted that this guidance was updated in March 2025 (NatureScot 2025b), however in consultation with NatureScot after this updated version was released, it was clarified that there had been no major changes to the recommended survey requirements, however it is noted that all gull species were to now be considered as target species during flight activity surveys.

## 7.5 Baseline

### Current Baseline

#### Designated Sites

7.5.1 There are no statutory designations within the Site, however the Proposed Development is within 20 km of one SPA and three SSSIs, as listed below and shown in **Figure 7.2**.

- Muirkirk and North Lowther Uploads SPA (underpinned by Muirkirk Uplands SSSI), approximately 15 km from the nearest Proposed Development turbine and designated for breeding golden plover, hen harrier, merlin, peregrine falcon and short-eared owl; non-breeding hen harrier; and a breeding bird assemblage (SSSI only).
- Bogton Loch SSSI, approximately 5.3 km from the nearest Proposed Development turbine and designated for a breeding bird assemblage.
- Merrick Kells SSSI, approximately 18 km from the nearest Proposed Development turbine and designated for a breeding bird assemblage.

7.5.2 The foraging ranges of the qualifying features listed as breeding on the Muirkirk and North Lowther Uplands SPA range from between 2 km to 11 km (SNH 2016b). On the basis of distance, there is considered to be no potential connectivity with the Proposed Development and the SPA is therefore scoped out of the assessment due to a lack of likely significant effects. For similar reasons Merrick Kells SSSI can also be scoped out of the EIA assessment.

7.5.3 In their response to the Scoping Report (**Table 7.1**), NatureScot indicated that they were of the opinion that there was potential for connectivity between the Ailsa Craig SPA (and associated SSSI), Solway Firth SPA (approximately 55km away) and Bogton Loch SSSI, on the basis of gull species recorded during baseline surveys that are qualifying features of these designations. Section 7.11 assesses the potential for likely significant effects on these three designated sites within a Habitat Regulations Assessment (HRA) or EIA context.

#### Flight Activity Summary

7.5.4 A summary of all target species recorded during flight activity surveys at the Site is presented in **Table 7.6**. This summarises all flights observed during the baseline survey period regardless of the location of the flights in relation to proposed wind turbine locations. For further details of the flight activity surveys, refer to **Technical Appendix 7.1: Ornithology**.

7.5.5 A summary of the collision risk model results is presented in **Table 7.7** (refer to **Technical Appendix 7.1: Ornithology Annex E** for detailed results). Note that whilst whooper swan were recorded during flight activity surveys (**Table 7.6**), they

were not identified to be 'at-risk'[3] and so were not included in the collision risk model (and are not presented in **Table 7.7**).

**Table 7.6: Target species recorded during flight activity surveys, 2020-2022**

| Species | Total number of flights recorded | Total number of birds recorded | Total bird seconds[4] recorded |
|---|---|---|---|
| Curlew | 4 | 4 | 164 |
| Golden plover | 4 | 14 | 751 |
| Goshawk | 16 | 16 | 872 |
| Hen harrier | 2 | 2 | 110 |
| Herring gull | 3 | 3 | 63 |
| Hobby | 1 | 1 | 120 |
| Merlin | 1 | 1 | 20 |
| Osprey | 4 | 4 | 124 |
| Peregrine falcon | 4 | 4 | 145 |
| Whooper swan | 1 | 2 | 12 |

**Table 7.7: Predicted collision rates**

| Species | Mean breeding season | Mean non-breeding season | Mean annual | Number of years per collision |
|---|---|---|---|---|
| Curlew | 0.0137 | 0.0057 | 0.0195 | 51.3 |
| Golden plover | 0.0000 | 0.0373 | 0.0373 | 26.8 |
| Goshawk | 0.0339 | 0.0077 | 0.0416 | 24.0 |
| Hen harrier | 0.0000 | 0.0018 | 0.0018 | 561 |
| Herring gull | 0.0001 | 0.0000 | 0.0001 | 13550 |
| Hobby | 0.0021 | 0.0000 | 0.0021 | 478 |
| Merlin | 0.0000 | 0.0004 | 0.0004 | 2670 |
| Osprey | 0.0028 | 0.0000 | 0.0028 | 361 |
| Peregrine falcon | 0.0014 | 0.0016 | 0.0030 | 335 |

### Black Grouse

7.5.6 Surveys during 2020, 2021 and 2024 lekking seasons did not identify any black grouse leks within the Site, however black grouse lek activity was recorded at three leks in the wider survey area in 2020 (**Table 7.8, Figure 7.7**). Searches in 2021 and

[3] 'At-risk' is defined as – a flight having at least part of its duration (i) at Potential Collision Height (PCH), 13.9 m to 149.9 m being rotor height range for the Proposed Development; (ii) within the CRAA; and (iii) recorded within the 2 km viewshed of the associated VP.

[4] Bird seconds are calculated for each observation as the product of flight duration and number of individuals. This has then been summed to provide the total bird seconds for each species recorded over the entire survey period.

2024 did not record any lekking activity at these known leks or at any other locations.

**Table 7.8: Black grouse lek activity**

| Lek* | Distance to nearest turbine | Distance to nearest infrastructure | 2020 | 2021 | 2024 |
|---|---|---|---|---|---|
| 3 | 2.1km | 400m (access track) | 2 males (five records) | 0 males | 0 males |
| 4 | 1.4km | 1.1km (access track) | 1 male (one record) | 0 males | 0 males |
| 6 | 2.2km | 250m (access track) | 1 male (one record) | 0 males | 0 males |

* Note that the lek numbers are consistent with the lek numbers used in the North Kyle Energy Project EIA (with lek 6 being a new location identified in 2020).

### Raptors and Owls

***Goshawk***

7.5.7 Goshawk were occasionally recorded across the baseline survey period (eight records, **Figure 7.8**) but were not identified to be breeding within the study area. A goshawk territory was historically located within the Site in 2018 (GI_1, **Confidential Figure 7.2.1**, identified during North Kyle Energy Project baseline surveys), however ongoing commercial harvesting in the years since 2018 has resulted in this area being partially felled, and may currently be unsuitable. A goshawk call was heard in a suitable area of windblow in early 2024 (GI_1.1, **Confidential Figure 7.2.1**), however no further activity was recorded in the area and searches of the area (towards the end of the breeding season) did not locate any evidence of a nest.

7.5.8 Flight activity surveys recorded 16 flights (**Table 7.6, Figure 7.9**), and collision risk modelling predicted a mean collision rate of one bird every 24 years (**Table 7.7**).

***Osprey***

7.5.9 An osprey pair established a nest within the North Kyle Energy Project site during construction in 2023. Following the 2023 breeding season the forest coupe in which the nest was located was felled as part of the construction requirements for North Kyle Energy Project, however an alternative nest site was identified (with the consideration of both the North Kyle Energy Project and the Proposed Development), and a nest platform was built during the 2023/2024 non-breeding season (OP_1, **Confidential Figure 7.2.1**, just under 1 km from the closest North Kyle turbine and 820 m from the nearest Proposed Development turbine location). This nest was used by ospreys in 2024, with successful breeding.

7.5.10 Prior to a breeding pair being present, baseline flight activity surveys recorded four flights (**Table 7.6, Figure 7.10**), and collision risk modelling predicted a mean collision rate of one bird every 361 years (**Table 7.7**).

***Peregrine Falcon***

7.5.11 Baseline surveys undertaken in 2017 and 2018 for North Kyle Energy Project identified three breeding territories for peregrine falcon in the wider area (PE_2, PE_3 and PE_4[5]; **Confidential Figure 7.2.1**), over 5 km from the Proposed Development.

7.5.12 PE_2 (the closest breeding site, over 3 km from the nearest turbine and approximately 550 m from the access route) was confirmed to be occupied in 2024 with two juveniles fledged.

7.5.13 Peregrine falcon were also infrequently recorded roosting at another location in 2017 and 2018 (PE_1; **Confidential Figure 7.2.1**), within 500 m of the closest Proposed Development infrastructure, although this location appears to be no longer suitable.

7.5.14 Flight activity surveys recorded four flights (**Table 7.6, Figure 7.10**), and collision risk modelling predicted a mean collision rate of one bird every 335 years (**Table** 7.7).

***Other Raptors***

7.5.15 A male **hen harrier** was recorded to the northwest of the Proposed Development on one occasion in May 2021 (**Figure 7.8**). No evidence of breeding or roosting was recorded. Flight activity surveys recorded two flights (**Table 7.6, Figure 7.10**), and collision risk modelling predicted a mean collision rate of one bird every 561 years (**Table 7.7**).

7.5.16 Flight activity surveys recorded one **hobby** flight (**Table 7.6, Figure 7.10**), and collision risk modelling predicted a mean collision rate of one bird every 478 years (**Table 7.7)**.

7.5.17 A single juvenile **merlin** was recorded to the east of the Proposed Development on one occasion in November 2020 (**Figure 7.8**). No evidence of breeding was recorded. Flight activity surveys recorded one flight (**Table 7.6, Figure 7.10**), and collision risk modelling predicted a mean collision rate of one bird every 2,670 years (**Table 7.7).**

### Waders

***Golden Plover***

7.5.18 Baseline North Kyle Energy Project surveys undertaken during the 2016/2017 and 2017/2018 non-breeding seasons identified wintering golden plover (flocks of between five and 108 birds) roosting in areas of scrub habitat/bare ground

[5] It should be noted that as part of the ongoing surface mining works at House of Water, the quarry face on which PE_4 was located was dug out in early 2018 (in consultation with licenced ornithologists) and this nest site no longer exists.

associated with the recently restored or unrestored surface mine workings in the wider area.

7.5.19 Activity within the Site was focussed around the waterbody at Gibsons Hill (**Figure 7.12**) which is over 700 m from the nearest proposed turbine location.

7.5.20 Flight activity surveys recorded four flights (**Table 7.6, Figure 7.11**), and collision risk modelling predicted a mean collision rate of one bird every 26.8 years (**Table** 7.7).

***Ringed Plover***

7.5.21 Baseline surveys undertaken in 2018 for North Kyle Energy Project identified ringed plover breeding activity concentrated around the various waterbodies associated with the former opencast mine.

7.5.22 Baseline surveys during 2021, 2022 and 2024 continued to record breeding ringed plover with up to three pairs recorded within the Site, at the waterbody near Gibson's Hill. **Table 7.9** provides a summary of ringed plover activity at the three former opencast mining areas on/near the Site with 2020-2024 activity shown on **Figure 7.12**.

**Table 7.9: Ringed plover breeding activity**

| Area | 2018 | 2020 | 2021 | 2024 |
|---|---|---|---|---|
| North – opencast area to the south east of Stannery Knowe | Up to 4 pairs | 1-2 pairs | 1 pair | Area not monitored |
| West – opencast area around the waterbody at Gibson's Hill | 1 pair | 2-3 pairs | 1 pair | 2 pairs |
| South – opencast area to the north west of Benbain | Up to 6 pairs | 1 pair | 1 pair | Area not monitored |

***Curlew***

7.5.23 No curlew breeding activity was recorded within the study area. Flight activity surveys recorded four flights (**Table 7.6, Figure 7.11**), and collision risk modelling predicted a mean collision rate of one bird every 51.3 years (**Table 7.7)**.

### Gulls

7.5.24 Black-headed, common, herring, lesser black-backed and great black-backed gulls were noted to be present across the baseline survey period (a combination of 51 records across the 30 months of baseline surveys). Activity was almost exclusively (bar two records) associated with the waterbody at Gibson's Hill and birds were not noted to be breeding (likely loafing/roosting and birds were noted to be commuting to forage at a nearby recycling centre to the north of the Site).

7.5.25 The gull activity recorded during the North Kyle Energy Project baseline survey period also showed a strong association between gull activity and the various waterbodies present in the wider area (of which the Gibson's Hill waterbody is one such location). Surveys in 2018 recorded breeding colonies of black-headed gull,

common gull and herring gull (approximately 84, 20, five pairs respectively) on the islands present on Gibson's Hill waterbody.

7.5.26 In line with the guidance available from NatureScot, at the time of baseline surveys (which finished in August 2024), only herring gull (as a Red-listed species, Stanbury *et al.* 2021), was considered to be a target gull species and therefore included in flight activity surveys. Three herring gull flights were recorded around the waterbody at Gibson's Hill (**Table 7.6, Figure 7.13**), and collision risk modelling predicted a mean collision rate of one bird every 13,550 years (**Table 7.7**).

#### Whooper Swan

7.5.27 An adult and juvenile were recorded on one occasion on the Gibson's Hill waterbody in December 2021. Flight activity surveys recorded one flight (**Table 7.6, Figure 7.13**), which was not identified to be 'at-risk' and therefore no risk of collision was predicted.

### Future Baseline

7.5.28 In the absence of the Proposed Development the bird assemblage is likely to remain similar to that described in the baseline, although numbers and distributions within the Site may fluctuate depending on the extent of mature forestry, clearfell, open ground, and conditions within and around waterbodies at any point in time. The Site will continue to be managed as conifer plantation (combination of newly planted and older stock) which would be subject to a future felling plan and may create temporary localised habitat changes until replanting and canopy closure. In addition to this, Forestry Land Scotland (FLS) are currently developing their Land Management Plan (Forestry and Land Scotland, 2025) for Breezy Hill which includes the planting of a biodiverse range of native tree species and non-native conifers.

7.5.29 Changes in numbers and diversity of species are also likely to be a reflection of their wider population trends and influences such as climate change (e.g., delayed breeding, reduced or increased breeding success depending on the species, Pearce-Higgins (2021)).

## 7.6 Scope of the Assessment

### Features Requiring Assessment

7.6.1 All ornithological features recorded during baseline surveys, as summarised in **Section 7.5**, have been considered, where appropriate, in the assessment. These medium NCI species (**Table 7.2**) are taken to be the IOFs, as per CIEEM (2022) guidance.

7.6.2 In some cases, where there has been very infrequent activity recorded and no evidence of breeding (e.g. hobby, curlew), it should be assumed that unless specified otherwise, impacts are likely to be negligible or none, and therefore *Not Significant*.

7.6.3 Within an HRA context, the potential for likely significant effects on SPAs is considered separately in **Section 7.11**. This also takes into consideration the impacts on related SSSIs, and Bogton SSSI within an EIA context.

## Environmental Measures Embedded into the Development Proposals

### Ecological Clerk of Works

7.6.4 To ensure all reasonable precautions are taken to comply with environmental legislation relating to safeguarding breeding birds, prior to construction and decommissioning the Applicant will appoint a suitably qualified Ecological Clerk of Works (ECoW) who will advise the Applicant and the Contractor on all ornithological matters (with the assistance of a suitably qualified/licenced ornithologist if required). The ECoW will be required to be present on Site during the construction and decommissioning periods and will carry out monitoring of works and briefings with regards to any ornithological sensitivities on the Site to the relevant staff within the Contractor and subcontractors.

### Bird Disturbance Management Plan

7.6.5 A Bird Disturbance Management Plan (BDMP) will be implemented during construction of the Proposed Development and will form part of the Construction Environmental Management Plan (CEMP). The BDMP will detail measures to ensure legal compliance and safeguard breeding birds known to be in the area and will include species-specific guidance, such as works exclusion buffers and temporal restrictions if appropriate. This will include avoiding disturbance to lekking black grouse if required.

7.6.6 The BDMP shall include pre-construction surveys and good practice measures during construction. Pre-construction surveys will be undertaken to check for any new breeding bird activity in the vicinity of the construction works. The ECoW will oversee the implementation of the above measures.

7.6.7 The BDMP will also be used for reference and implemented where, and if, appropriate during the operational period of the Proposed Development, where maintenance activities may result in disturbance to breeding Schedule 1 species, nest destruction, or disturbance to lekking black grouse.

### Biodiversity Enhancement Management Plan

7.6.8 The chapter has been prepared in view of the requirements of NPF4 Policy 3 and the finalisation and implementation of a Biodiversity Enhancement Management Plan (BEMP) as part of the Proposed Development, based on the Outline BEMP submitted as **Technical Appendix 6.6**.

7.6.9 The BEMP will be in place throughout the operational and decommissioning phases, and will be finalised in consultation with NatureScot, relevant landowners and other stakeholders and submitted to East Ayrshire Council for approval by way of a suitably worded planning condition prior to the commissioning of the Proposed Development.

## 7.7 Assessment of Potential Effects

### Construction Effects

7.7.1 **Impact:** Breeding, foraging, roosting or lekking IOFs may be displaced from the Site during construction, either by disturbance or direct habitat loss.

#### Breeding Raptors

7.7.2 In general, the Site (excluding main access route) mainly comprises commercial conifer plantation habitat which is of low suitability for most IOFs. The Site is subject to ongoing operational forestry activities (felling and restocking), and therefore species that are present are, to some degree, accustomed to the presence of human activity.

7.7.3 There are two IOFs which have been recorded breeding within commercial forestry within the Site: **goshawk** (at least historically), and **osprey**, both of which are afforded additional protection from disturbance to breeding being Schedule 1 species, and are considered to be of medium sensitivity, based on their generally favourable conservation status, nationally, and likely within the NHZ.

7.7.4 Although the historic goshawk nesting location within the Site appears to be no longer used due to commercial forestry activities, goshawks appear to be adept at relocating breeding locations between years in response to felling and maturation of forestry, and as such, the direct habitat loss associated with the Proposed Development (considering that the long term forest plan developed by FLS (2025) is clear that the Site will continue to be predominately managed as conifer plantation) is unlikely to impact upon the overall number of available territories in the local area or NHZ over the long-term, compared to the future baseline which assumes that commercial forestry felling and restock continues as per forestry plans (FLS 2025).

7.7.5 As outlined above, the BDMP will be implemented during the construction period (and operational period if required) to ensure that no active goshawk nesting attempts (within up to 500 m of construction activities, as advised by Goodship & Furness, 2022), as recorded during pre-construction checks, would be affected. This would therefore allow breeding to continue within and around the Site.

7.7.6 The osprey nest used in 2024 is around 820 m from the closest proposed turbine location, and therefore just outside of the upper range of the recommended breeding disturbance buffer zone of 350-750m (Goodship & Furness, 2022). The pair bred successfully despite ongoing construction activities associated with the North Kyle Energy Project (just under 1 km away at its closest point). The construction of the North Kyle Energy Project was subject to similar measures as prescribed via the Proposed Development's BDMP, and it is anticipated that information would be gathered from the ECoW reports for North Kyle Energy Project and utilised by the Proposed Development in order to ensure that breeding attempts can continue undisturbed.

7.7.7 The Proposed Development would not result in any habitat loss impacts on osprey because the nest site is outside of the required felling area, and the habitat within the Site is unsuitable for foraging.

7.7.8 Outside of the main Site, a peregrine falcon pair bred successfully in 2024 at a location (PE_2) approximately 550 m from the access route. Although this track has already been constructed/upgraded as part of the North Kyle Energy Project, construction of the Proposed Development would increase the number of vehicular movements compared to the future baseline situation. This nest site would be covered as part of the BDMP to ensure that any breeding would continue undisturbed, and again it is anticipated that information would be gained from 2024 ECoW reports for North Kyle Energy Project to understand what, if any, restrictions may be required to avoid disturbance. Loss of suitable habitat within the Site for foraging is considered to be negligible, as commercial forestry is likely to be suboptimal for prey species, at least away from forest edges.

### Black Grouse

7.7.9 The black grouse activity recorded in 2020 comprised lekking activity at three locations, two of which (leks 3 and 6, **Figure 7.7**) were within 750 m of the access route to the Site, and therefore potentially within the disturbance range advised by Goodship & Furness (2022). No, or negligible, loss of suitable black grouse lekking, foraging or nesting habitat is predicted.

7.7.10 Black grouse is considered to be of medium-high sensitivity due to its unfavourable conservation status at a national and NHZ level. The BDMP would include provisions to avoid disturbance to lekking black grouse, should pre-construction checks confirm their presence within potential disturbance range (i.e. up to 750 m). This may involve restrictions to vehicular movements or personnel within two hours of dawn during the core lekking period of March to May but the exact timing of restrictions and/or extent of any disturbance-free zone, within which any construction activity that is considered to be potentially disturbing, would be determined by the ECoW.

### Other IOFs

7.7.11 The main focus of activity of IOFs recorded during baseline surveys was around the waterbody at Gibson's Hill, which is around 700 m from the nearest proposed turbine location and 650 m from the substation compound, but would be close to where existing tracks would be upgraded for the access route.

7.7.12 The IOFs most commonly recorded using the waterbody were breeding **ringed plover** and **gull species**.

7.7.13 Ringed plover is considered by Goodship & Furness (2022) to have a high sensitivity to disturbance, and they recommend a disturbance buffer of 100-200 m. Baseline survey results have suggested that one or two pairs of ringed plovers may be found within that disturbance range of the access route. Although not a Schedule 1 species, the ECoW would aim to minimise disturbance risks to breeding birds where possible (e.g., via toolbox talks or information signs telling personnel to

avoid unnecessary access in that area) and avoid any direct destruction of eggs or chicks. No direct loss of suitable habitat for nesting or foraging ringed plover is anticipated.

7.7.14 Gulls were not included as any of the 65 bird species that were selected by NatureScot to be part of the Goodship & Furness (2022) review of disturbance distances. This is likely to be a reflection of their general tolerance of humans and low susceptibility to disturbance. Despite this, it is possible that in future years gulls may again nest on or adjacent to the Gibson's Hill waterbody, and it would be the case that the ECoW would determine whether any measures are required as part of the BDMP to avoid destruction to nests, eggs or young, and minimise disturbance where possible. No direct loss of suitable habitat for nesting or foraging gulls is anticipated.

7.7.15 **Golden plover** was prescribed a non-breeding season disturbance buffer zone of 200-500m by Goodship & Furness (2022) and it is possible that birds occasionally roosting or foraging at the Gibson's Hill waterbody may be disturbed by construction activities. However, due to the infrequency and short-term duration of this occurrence (based on recorded activity during baseline surveys) it is considered that these disturbance events are unlikely to impact upon fitness or survival levels within the non-breeding population.

#### Conclusions

7.7.16 Due to the largely unsuitable habitat within the Site, direct loss of habitat is considered to be of negligible, short-term magnitude for all IOFs.

7.7.17 Although it is possible that some IOFs identified above may attempt to breed or lek within potential disturbance distances of construction activities, the embedded mitigation measures associated with the BDMP would mean that disturbance would be minimised to a level for all IOFs that could be considered of negligible, short-term magnitude within the context of their respective NHZ populations.

7.7.18 As such, it can be reasonably concluded that a **negligible** and *Not Significant* effect due to construction activities would result for all IOFs.

### Operational Effects - Displacement

7.7.19 **Impact:** IOFs may be subject to displacement from, or reduced access to, breeding or foraging habitats due to the presence of turbines or other infrastructure, thereby impacting on breeding success, productivity or survival rates.

#### Breeding Raptors

7.7.20 Based on the distances of known nest sites to the closest operational infrastructure, it is considered unlikely that breeding **osprey** (820 m from nearest turbine) or **peregrine falcon** (over 3 km from the nearest turbine) would be displaced by the Proposed Development. Although the closest peregrine falcon nest site is within the potential disturbance distance of the access route, operational maintenance movements are likely be of a much lower frequency than during construction, and unlikely to impact upon a breeding attempt. Should any prolonged works, e.g., track

repair, be required within 750 m of the nest, then the BDMP would be used to avoid disturbance and ensure legal compliance.

7.7.21 For both osprey and peregrine falcon, there would be a negligible, if any, amount of displacement from suitable foraging habitat, or barrier effects to movement, due to the presence of operational turbines, with both species having large maximum foraging ranges.

7.7.22 There is little scientific evidence to show how sensitive goshawk is to the presence of operational turbines, but it is possible that birds may avoid nesting in proximity to them due to a combination of the turbines themselves or increased human presence. Conversely, the opening of forestry due to the Proposed Development may provide enhanced foraging opportunities along forest edges. Overall, it is considered possible that the presence of the Proposed Development may impact upon the likelihood of a goshawk territory being established within the Site over the long-term, although the result is most likely to be a relocation to other nearby areas of mature forestry rather than a loss to the NHZ population, with exact nesting locations dependent upon the status of the long-term forest plan in the local area.

#### Black Grouse

7.7.23 Vehicular movements along the access track during the operational period are unlikely to be of a frequency, duration or timing that would prevent black grouse from lekking during the lekking season. Should any more prolonged maintenance activities be required within 750 m of known lekking areas during the lekking season, then the BDMP would be referred to in order to avoid disturbance, most likely by avoiding works around dawn.

7.7.24 The low suitability of habitat for black grouse within the Site suggests that the risks of displacement from lekking, nesting or foraging habitats are small, and overall, with the implementation of the BEMP, which would create habitats more suitable for black grouse, then no displacement impacts are predicted.

#### Other IOFs

7.7.25 The substation and BESS compounds would be located approximately 650 m from the Gibson's Hill waterbody, but at the start of a separate track spur leading away from the waterbody, to where the majority of turbines would be. Maintenance vehicular movements along the track adjacent to the waterbody are therefore likely to be of a sufficiently low frequency as to avoid any disturbance to IOFs, in particular breeding ringed plover and gulls, and non-breeding golden plover. The substation and BESS are also likely to be beyond disturbance range of the waterbody for all IOFs.

#### Conclusions

7.7.26 Based on the baseline survey results, no IOF breeding activity is likely to take place within potential displacement range of proposed turbine locations or other permanent infrastructure, with the possible exception of goshawk, depending on the status of the forestry plans at any time. In this, and all other cases however, a reduction in NHZ population is unlikely to occur as a consequence of displacement.

7.7.27 For black grouse, disturbance to lekking activity near the access route is generally unlikely, but if required, would be avoided by implementation of the BDMP, and overall, more habitats would become suitable over the long-term through the BEMP.

7.7.28 The impacts of operational displacement on all IOFs can therefore be considered to be of negligible, long-term magnitude within the context of their respective NHZ populations.

7.7.29 As such, it can be reasonably concluded that a **negligible** and *Not Significant* effect due to operational displacement would result for all IOFs.

### Operational Effects – Collision Risk

7.7.30 **Impact:** birds flying within the Site may be subject to a collision risk with turbines, thereby increasing the annual mortality rate of the population above background levels.

7.7.31 **Table 7.7** presents the results of the CRM, which shows that, as a reflection of the low flight activity rates recorded across the Site, the probability of a collision occurring during the operational lifespan of the Proposed Development is very low for all IOFs. Only golden plover (one every 27 years) and goshawk (one every 24 years) have a predicted collision frequency within the operational lifespan, and in both cases, this level of additional mortality is very unlikely to result in an impact at a population level.

7.7.32 It is acknowledged that because an osprey pair has used a nest within the Site after baseline flight activity surveys ended in 2022, flight activity rates over the Site, and therefore collision rates may be underestimated.

7.7.33 It is not clear where this osprey pair are most likely to commute to fish, however OS mapping suggests that most waterbodies in the wider area are to the north and east (e.g. River Nith), away from the Site, although some are to the south (River Doon, Bogton Loch) which may mean that ospreys would naturally fly over the Site to reach them, albeit likely on an infrequent basis.

7.7.34 Ospreys have been recorded colliding with turbines in Scotland (a total of 14 collisions were known by NatureScot, from 2014 up to December 2024[6]), and so it is possible that although not likely to be frequent, collisions may occur due to the Proposed Development.

7.7.35 There was an estimated mean of 242 osprey breeding pairs in the UK over the five-year period 2015–2019 (Eaton *et al.* 2021). According to the BTO's BirdFacts website[7], "*This is considered to be an under-estimate of the true population as coverage is no longer complete in the core part of the range in Scotland. The range of the species across the UK has also expanded, mostly as a result of successful reintroduction schemes*." The Scottish Raptor Monitoring Scheme's (Challis *et al.* 2023) monitoring in the South Strathclyde and Lothian & Borders regions is

[6] https://www.nature.scot/doc/freedom-information-request-deaths-birds-prey-scotland-windfarms

[7] https://www.bto.org/understanding-birds/birdfacts/osprey

relatively low (e.g. five and 17 pairs respectively in 2022), and total numbers of pairs are likely to be greater than this.

7.7.36 Infrequent collision mortality associated with the Proposed Development is therefore unlikely to reach significance at a national level, but within the context of the smaller NHZ population, may have some measurable impact upon growth rates. A low, long-term impact magnitude on the NHZ population is predicted.

#### Conclusions

7.7.37 Based on the results of the CRM, collision risk is predicted to have a **negligible**, and therefore *Not Significant* effect on all IOFs, with the exception of osprey.

7.7.38 Osprey is considered to be in favourable conservation status at a national level, and although the NHZ trend is unclear, a long-term gradual increase in numbers and distribution is likely. Overall, a medium level sensitivity is given for the species, which, combined with a low impact magnitude, results in a **Minor Adverse** effect (*Not Significant*) on the NHZ population.

### Decommissioning Effects

7.7.39 It is anticipated that embedded mitigation during construction (BDMP, ECoW and pre-construction surveys) would also be applied during decommissioning. These measures will aim to ensure that no breeding activity is disrupted by decommissioning activities.

7.7.40 Although decommissioning activities are likely to be of smaller extent and shorter duration than construction activities, the conclusions of the assessment of construction impacts above can be considered a reasonable worst-case scenario.

7.7.41 As such, **no significant effects** during decommissioning are predicted for any IOF (**Negligible** significance).

## 7.8 Mitigation

7.8.1 With negligible effects predicted during construction and decommissioning, no additional mitigation other than the embedded mitigation already outlined (BDMP, ECoW and pre-construction surveys) is required.

7.8.2 No additional mitigation is also required during the operational phase due to a predicted lack of significant effects, when taking into account the continued usage of the BDMP where relevant, and the implementation of the BEMP.

7.8.3 In order to reduce any collision risks to black grouse (and potentially other species such as goshawk), the following good practice would be implemented:

- Fencing related to the Proposed Development will be kept to a minimum and any fencing used will be ‘marked’ using suitable materials and methods (Trout and Kortland 2012);
- Any wires/guy-lines associated with met masts will also be marked with suitable bird flight diverters/line markers (NatureScot 2025c); and

- Consideration of marking particular turbine towers/railings associated with the steps leading to the tower access point to increase their visibility.

## 7.9 Assessment of Residual Effects

7.9.1 The predicted significance of construction, operational, and decommissioning effects for all IOFs remain unchanged, i.e., **Negligible or Minor Adverse** and *Not Significant.*

## 7.10 Assessment of Cumulative Effects

7.10.1 Based on the lack of, or negligible effects predicted during all phases on IOFs, it can be reasonably concluded that the Proposed Development would not make a material contribution to cumulative effects caused by wind farms on their NHZ 19 populations, and as such no cumulative assessment is required.

7.10.2 The exception to this relates to cumulative collision risk for osprey. Although this risk cannot be accurately quantified because of the change in baseline conditions within the Site since flight activity surveys ceased (i.e., emergence of an osprey breeding pair) and therefore possible under-recording of flight activity, a qualitative assessment is possible.

7.10.3 In NatureScot's national database of reported bird collisions from 2014 to 2024[6], one of the 14 known osprey collisions was recorded at a wind farm in East Ayrshire, with all others found north of the Central Belt (mainly in Highlands) or in Argyll. According to The Wind Power website[8], there are over 100 wind farms in East Ayrshire, South Ayrshire, South Lanarkshire and Dumfries & Galloway, and although the number of osprey collisions in southern Scotland (and nationally) is very likely to be under-recorded, the proportion of NHZ 19 wind farms within proximity to nesting ospreys, or on a well-used flightpath, is likely to be low.

7.10.4 The last five Scottish Raptor Monitoring Scheme annual reports[9] indicate that five-year mean productivity within the South Strathclyde, Lothian & Borders and Dumfries & Galloway regions are around the national average (c. 1.5 to 1.6 young fledged per pair occupied home range monitored), and overall it does not appear that wind farms are likely to be a significant threat for impeding the growth of the NHZ 19 population over the long-term.

7.10.5 Thus, although collisions are likely to occur, the current cumulative effect, when including the Proposed Development, is considered to be **Minor Adverse** and *Not Significant.*

[8] https://www.thewindpower.net/zones_en_8_728.php

[9] https://raptormonitoring.org/annual-report

## 7.11 Likely Significant Effects on SPAs

### Habitats Regulations Appraisal (HRA) Process

7.11.1 The method for assessing the likely significant effects on a European site (in this context, an SPA) is different from that outlined above for wider-countryside ornithological interests. This is based on the Habitats Directive, which is transposed into domestic legislation by the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) Regulation 48 and includes a number of steps to be taken by the competent authority before granting consent (these are referred to here as an HRA). In order of application, the first four are:

- Step 1: consider whether the proposal is directly connected to or necessary for the management of the SPA (Regulation 48(1)(b)).
- if not, Step 2: consider whether the proposal (alone or in combination) is likely to have a significant effect on the SPA (Regulation 48(1)(a)).
- if so, Step 3: make an Appropriate Assessment of the implications for the SPA in view of that SPA's conservation objectives (Regulation 48(1)(a)).
- Step 4: consider whether it can be ascertained that the proposal will not adversely affect the integrity of the SPA ("Integrity Test") having regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which they propose that the consent, permission or other authorisation should be given (Regulation 48(5) and 48(6)).

7.11.2 It can clearly be established that the Proposed Development does not meet the criteria for Step 1. Where likely significant effects have been identified (Step 2), the results of baseline surveys and scientific information presented in this chapter can be used to inform the HRA process, and allow the competent authority, in this case the Scottish Ministers, to conduct an Appropriate Assessment (Step 3), and to conclude whether any adverse effects on site integrity can be ascertained (Step 4) if required.

### Determination of HRA Likely Significant Effects

7.11.3 In their scoping response (**Table 7.1**), NatureScot indicated their opinion that there may be the potential for connectivity between the Proposed Development and the Solway Firth SPA (55 km away) for non-breeding herring gull (listed as a qualifying feature of the SPA and noted to be in 'favourable maintained' condition in February 2006) and Ailsa Craig SPA (45 km away) for breeding herring gull and lesser black-backed gull (both listed as qualifying features of the SPA and noted to be of 'unfavourable no change' condition in June 2017).

7.11.4 For a likely significant effect on an SPA to be concluded, both theoretical connectivity with the Proposed Development and an impact pathway (via at least one of the SPA's qualifying features) needs to be identified. Potential impact pathways due to the Proposed Development may take the form of those identified for ornithological features, in **Section 7.5**, during construction and/or operation.

7.11.5 Qualifying features of an SPA are protected both within and outwith the SPA throughout the year, irrespective of the season for which they qualified as feature,

and as such, any HRA requires an assessment of SPA populations both during the breeding and non-breeding season.

7.11.6 All herring gulls recorded within the Site during the baseline surveys were present between March and June and activity was associated with Gibson's Hill waterbody (**Figure 7.13**), which, as established from baseline surveys for the Proposed Development and North Kyle Energy Project, has been used by both breeding and non-breeding gulls during the breeding season.

7.11.7 Lesser black-backed gulls were also infrequently recorded in summer months only during baseline surveys (five occasions of individuals/a few birds), and again records were associated with Gibson's Hill waterbody. There was no indication of breeding (during either recent surveys or during the baseline surveys for North Kyle Energy Project).

7.11.8 In NatureScot's (2023) Guidance to support Offshore Wind applications, it is advised that use of breeding season foraging ranges provides a suitable method for assessing geographical overlap, and thus theoretical connectivity, between SPA breeding sites and proposed developments.

7.11.9 The recommended breeding season foraging ranges (using the mean maximum +1SD distance determined from satellite tagging studies) advised by NatureScot for use in determining connectivity with SPAs during the breeding season are 85.6 km for herring gull, and 236 km for lesser black-backed gull. This indicates that there is theoretical connectivity between the Proposed Development and the two SPAs, albeit that the likelihood of birds being found at a particular location will generally decrease as distance from source becomes greater. Indeed, the source paper of the NatureScot guidance (Woodward *et al.* 2019) found a mean foraging range of 14.9 ± 7.5 km for herring gull, and a mean of 43.3 ± 18.4 km for lesser black-backed gull, which puts both SPAs outside of the mean foraging range for herring gull, and Ailsa Craig SPA close to the mean foraging range of lesser black-backed gull.

7.11.10 Gulls were not included as any of the 65 bird species that were selected by NatureScot to be part of the Goodship & Furness (2022) review of disturbance distances, and Furness *et al.* (2013) rated herring gull and lesser-blacked backed gull as being of low sensitivity to disturbance (albeit in the marine environment, although the species are likely to exhibit similar behavioural characteristics on land). As Gibson's Hill waterbody is over 750 m from the nearest proposed turbine, it is considered very unlikely that the presence of the Proposed Development would prevent herring gulls or lesser black-backed gulls from using the waterbody during construction or operation, either due to disturbance-displacement or barrier effects. Furthermore, it should be noted that the embedded mitigation of pre-construction surveys and the ECoW's enforcement of the BDMP would check for breeding gull activity at Gibson's Hill waterbody and ensure that any breeding activity was safeguarded during the construction phase (with pre-construction checks undertaken by the ECoW or suitably qualified ornithologist to locate any breeding activity).

7.11.11 With similar presence and distribution within the Site, the negligible predicted collision risk for herring gull is also likely to be appropriate for lesser black-backed

gull to render the risk of impacts trivial. As such there is considered to be **no likely significant effects on the Ailsa Craig SPA** herring gull or lesser black-backed gull breeding populations.

7.11.12 NatureScot's (2023) guidance also states that "*During the non-breeding season, marine bird species are migratory or disperse away from the colony, tending to range more widely and are not fixed to a single geographical area*." In this case, it is possible that herring gulls found within the Proposed Development Site during the breeding season could be part of the Solway Firth SPA non-breeding population, and therefore theoretical connectivity exists. However, as noted above, the risks of impacts to birds during the breeding season, when present on Site, are considered to be sufficiently low to allow conclusion of **no likely significant effects on the Solway Firth SPA**.

### EIA Assessment Conclusions for SSSIs

7.11.13 Based on the information provided above, it can reasonably be concluded that the effects on the gull populations of the Ailsa Craig SSSI are **Negligible,** and therefore *Not Significant*.

7.11.14 In their scoping response (**Table 7.1**), NatureScot indicated their opinion that there may be the potential for connectivity between the Site and Bogton Loch SSSI with regards to breeding black-headed gull. Bogton Loch SSSI includes a designation for a 'breeding bird assemblage' (noted to be of 'favourable maintained' condition in June 2009). The SSSI citation notes that there is "*sporadically, a small colony of black-headed gulls*" as part of the breeding bird assemblage.

7.11.15 Black-headed gulls were identified to be breeding on the islands within Gibson's Hill waterbody in 2018 but in more recent years (2020, 2021 and 2024) were only noted to be present during the baseline surveys.

7.11.16 Furness *et al.* (2013) rated black-headed gull as being of low sensitivity to disturbance (albeit in the marine environment, although the species are likely to exhibit similar behavioural characteristics on land). Considering the Gibson's Hill waterbody is over 750 m from the nearest proposed turbine, and based on the assessment for gull species in section 7.7, it is not considered that the presence of the Proposed Development would prevent black-headed gulls (whether or not associated with the Bogton Loch SSSI) from using the waterbody and as such the effects on the sporadic black-headed gull breeding population and overall breeding bird assemblage associated with Bogton Loch SSSI are considered to be **negligible** and *Not Significant*.

## 7.12 Summary

7.12.1 Baseline conditions to inform the design and assessment of the Proposed Development have been established through desk study and ornithological field surveys in accordance with industry standard guidance and consultation with nature conservation bodies and specialist species recording groups.

7.12.2 Baseline studies have established that the ornithology study area is used by breeding goshawk, peregrine falcon and osprey, and black grouse was identified to

be lekking. Breeding wader activity is limited to ringed plover (associated with the opencast mine bare ground). Gibson's Hill waterbody (on the eastern edge of the Site) was identified to be used by various gull species (for loafing/roosting and breeding for some species) however the Site and immediate area was not identified as being suitable for foraging gulls.

7.12.3 Embedded mitigation in the form of pre-construction checks (as directed by an appointed suitably qualified ECoW and a BDMP will enable the protection of birds during construction works associated with the Proposed Development.

7.12.4 In addition to habitat reinstatement following the cessation of construction works, the Proposed Development also provides an opportunity to deliver long-term beneficial habitat enhancement measures for bird species, in particular black grouse.

7.12.5 Impacts during construction, operation and decommissioning are predicted as being negligible for all species, with the possible exception of collision risk to osprey, where a minor adverse effect was predicted.

7.12.6 Residual effects upon all IOFs are predicted to be *Not Significant* as a result of the Proposed Development alone, or cumulatively with any other wind farm development.

7.12.7 The Site does not form part of any statutory designated site and no likely significant effects are predicted on any SPA within an HRA context, or on any SSSI in an EIA context.

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