

## VOLUME 5: CHAPTER 6: ORNITHOLOGY – ALTERNATIVE ALIGNMENT

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## 6. ORNITHOLOGY – ALTERNATIVE ALIGNMENT

### 6.1 Executive Summary

- 6.1.1 This Chapter considers the potential effects of the Proposed Development with the Alternative Alignment (hereafter referred to as the 'Alternative Alignment') described in **Volume 5: Chapter 3: The Proposed Development – Alternative Alignment** on ornithological features and reaches conclusions as to the predicted likely significance of effects on ornithology. It details the methods used to establish the bird species and populations present that may be affected by the Alternative Alignment, together with the process used to determine their importance. The ways in which birds might be affected (directly or indirectly) by the Alternative Alignment are explained and an assessment is made with regards to the significance of these effects.
- 6.1.2 Baseline ornithology field surveys of the Alternative Alignment and surrounding area were carried out between March and October 2023. Additionally, a desk study was completed to supplement the field survey results.
- 6.1.3 Based on the results of the field surveys and desk study, the following Important Ornithological Features (IOFs) were identified: Caithness and Sutherland Peatlands Special Protection Area (SPA) and Ramsar site, North Caithness Cliffs SPA, Caithness Lochs SPA and Ramsar site, West Halladale Site of Special Scientific Interest (SSSI), East Halladale SSSI, Lochan Buidhe Mires SSSI, greylag goose (*Anser anser*), whooper swan (*Cygnus cygnus*), common scoter (*Melanitta nigra*), golden plover (*Pluvialis apricaria*), curlew (*Numenius arquata*), red-throated diver (*Gavia stellata*), black-throated diver (*G. arctica*), osprey (*Pandion haliaetus*), golden eagle (*Aquila chrysaetos*), hen harrier (*Circus cyaneus*), white-tailed eagle (*Haliaeetus albicilla*), merlin (*Falco columbarius*), peregrine (*F. peregrinus*) and barn owl (*Tyto alba*).
- 6.1.4 An assessment of potential effects of the Alternative Alignment on each IOF during construction and operation was completed. Potential cumulative effects were also considered for relevant IOFs.
- 6.1.5 Ornithological sensitivities were taken into consideration during the design of the Alternative Alignment, with the layout designed to minimise potential effects on IOFs where possible. Embedded mitigation would comprise implementation of a Bird Protection Plan (BPP) to safeguard breeding birds, and roosting raptors listed on Schedule 1A to the Wildlife and Countryside Act 1981 (as amended) (W&CA).
- 6.1.6 Installation of line markers along sections of the overhead line (OHL) component of the Alternative Alignment is proposed as specific mitigation to reduce collision risk to breeding red-throated diver, where this species is considered to be at greatest risk of collision.
- 6.1.7 Additionally, installation of artificial nest rafts is proposed as specific mitigation to reduce potentially significant effects to breeding red-throated and black-throated divers due to displacement during construction of the Alternative Alignment. This would be delivered via a landscape scale Outline Habitat Management Plan (HMP) detailed in **Volume 4: Appendix V1-7.8: Connagill Cluster Outline Habitat Management Plan**, which aims to combine the HMPs for the 'Connagill Cluster Grid Connection' projects, and is being developed in consultation with NatureScot.
- 6.1.8 Although no significant effects were identified for any other IOFs, the Connagill Cluster Outline HMP (**Volume 4: Appendix V1-7.8**) includes habitat management measures to benefit nesting and foraging hen harrier, as well as other upland bird species such as breeding waders. Where feasible, additional enhancement measures, such as installation of artificial nest rafts for common scoter, would also be considered for inclusion within the (final) HMP.
- 6.1.9 It is also proposed that a programme of ornithological monitoring is undertaken by a suitably experienced and licensed ornithologist during construction of the Alternative Alignment, comprising surveys for breeding waders, raptors and divers, including checks of any artificial diver nest rafts installed.

- 6.1.10 Following implementation of embedded and targeted mitigation measures, no significant residual effects are predicted on any IOFs as a result of the Alternative Alignment.

## 6.2 Introduction

- 6.2.1 This Chapter considers the potential effects of the Alternative Alignment on ornithological interests during construction and operation, and reaches conclusions as to the predicted likely significance of effects on ornithology. The ways in which birds might be affected (directly or indirectly) by the Alternative Alignment are explained and an assessment is made with regards to the significance of these effects.
- 6.2.2 Additionally, the Chapter and Appendices set out information to allow Scottish Ministers to undertake an Appropriate Assessment of the effects of the Alternative Alignment on European sites of ornithological importance. Further information relating to the appropriate assessment process is provided in **Annex A of Volume 4: Appendix V1-8.3: Shadow Habitats Regulations Appraisal for European Sites of Ornithological Importance (Confidential)**.
- 6.2.3 The assessment reported in this Chapter is based on the key characteristics of the Alternative Alignment as detailed in **Volume 5: Chapter 3: The Proposed Development – Alternative Alignment**. This Chapter should be read in conjunction with **Volume 4: Appendix V1-8.1: Ornithology Technical Report** and **Volume 4: Appendix V1-8.2: Ornithology Confidential Annex (Confidential)**, which provide detailed information on the desk study and ornithology survey methods and results, as well as **Volume 4: Appendix V1-8.3: Shadow HRA for European Sites of Ornithological Importance - Annex A**, which considers potential effects of the Alternative Alignment on European sites designated for ornithological features, as part of a shadow Habitats Regulations Appraisal (HRA).
- 6.2.4 **Volume 5: Chapter 5 – Ecology** is also of particular relevance to this Chapter because it identifies and assesses potential effects of the Alternative Alignment on habitats, which support ornithological features, as is **Volume 4: Appendix V1-7.8: Connagill Cluster Outline Habitat Management Plan (HMP)**, which outlines a strategy to compensate and enhance habitat quality to benefit ecological and ornithological features, including red-throated diver, black-throated diver and hen harrier, all of which are IOFs identified in this Chapter.
- 6.2.5 The Proposed Development with the Proposed Alignment is discussed and assessed within Volume 1 of this EIA Report, and cross-reference is made to **Volume 1: Chapter 8 - Ornithology**, where relevant.
- 6.2.6 This assessment has been carried out by RPS Group. A table presenting relevant qualifications and experience of key staff involved in the preparation of this Chapter is included in **Volume 4: Appendix V1-5.1: EIA Team Details**.

## 6.3 Scope of Assessment

### *Study Area*

- 6.3.1 The study area varied according to the survey type and desk study dataset.
- 6.3.2 The desk study area comprised the Alternative Alignment and the following buffer areas around it:
- 20 km for statutory sites of international importance designated for one or more goose species;
  - 10 km for statutory sites of international importance designated for other species;
  - 6 km for records of breeding or roosting eagle species from the Highland Raptor Study Group (HRSG), Royal Society for the Protection of Birds (RSPB) and relevant surrounding developments;
  - 2 km for statutory sites of national importance, non-statutory sites of ornithological importance, records of breeding or roosting raptor species listed on Schedule 1 to the Wildlife and Countryside Act 1981 (as

amended) (W&CA) and/or Annex I of the Birds Directive from the HRSG, RSPB and relevant surrounding developments and records of other bird species of conservation concern from the RSPB;

- 1 km for breeding diver records from relevant surrounding developments; and
- 500 m for breeding territories of wildfowl and wader species from relevant surrounding developments.

6.3.3 These are shown in **Volume 2: Figure V5-6.1**. Note that the HRSG and RSPB data requests were based on buffers of the optimal routes at the time<sup>1</sup>, which were very similar to the Proposed Alignment and Alternative Alignment. All other buffer areas were based on the Alternative Alignment, including ancillary development such as access tracks.

6.3.4 In addition, any records of target species flights within 500 m of the Alternative Alignment (including ancillary development), and diver flights from or towards confirmed/potential diver breeding territories to the south, recorded during surveys for the following surrounding developments were also considered as part of the desk study:

- The proposed Melvich Wind Energy Hub;
- The proposed Kirkton Energy Park;
- The proposed Strathy Wood Wind Farm Grid Connection;
- The Armadale Wind Farm Grid Connection<sup>2</sup>;
- The operational Strathy North Wind Farm; and
- The consented Strathy Wood Wind Farm.

6.3.5 Ornithology field surveys of the Alternative Alignment (comprising flight activity surveys, a moorland breeding bird survey (MBBS), breeding raptor surveys and breeding diver surveys) were completed between March and October 2023. The study area for these field surveys was based on the footprint of the optimal alternative route option<sup>1</sup> at that time, which was similar to the Alternative Alignment, and the following buffer areas around it:

- 500 m for flight activity surveys and the MBBS;
- 1 km for breeding diver surveys; and
- 2 km for breeding raptor surveys.

6.3.6 Note that the field survey areas for the Alternative Alignment did not include the eastern or western ends of the alignment, which are the same as the Proposed Alignment and were therefore included in the 2022 surveys for the Proposed Alignment (see below). Surveys instead focussed on the central area of the Alternative Alignment where it deviates from the Proposed Alignment.

6.3.7 The vantage point (VP) locations, viewsheds and survey areas are shown on **Volume 2: Figure V5-6.3**.

6.3.8 Relevant ornithology survey data<sup>3</sup> for the Proposed Alignment, collected by Blairbeg Consulting Ltd between May and August 2022, was also reviewed as part of the desk study for the Alternative Alignment. The ornithology survey areas are shown in **Volume 2: Figure V5-6.2**.

## 6.4 Consultation

6.4.1 Full details of the consultation process and responses are included in **Volume 1: Chapter 4: Scope and Consultation** and associated appendices. Responses of relevance to ornithology are summarised in **Section 8.4 in Volume 1: Chapter 8 - Ornithology**. Where consultation responses included sensitive information

<sup>1</sup> The optimal route and optimal alternative route are discussed in **Volume 1: Chapter 2 – The Routeing Process and Alternatives** and **Volume 5: The Routeing Process and Alternatives – Alternative Alignment**, respectively, within this EIA Report

<sup>2</sup> Note that, as the S36 application for the proposed Armadale Wind Farm has been withdrawn, there is no longer a requirement for a grid connection to it

<sup>3</sup> Defined as records within the desk study areas defined in paragraph 6.3.2

(redacted from the Scoping Opinion), these are included in **Table 1** of **Volume 4: Appendix V1-8.2: Ornithology Confidential Annex**.

- 6.4.2 Note that consultee comments on ornithology were generally applicable to both the Proposed Alignment and Alternative Alignment, and in most cases no distinction was made between the two alignments. An exception specifically relating to the Alternative Alignment was a comment from NatureScot (dated 26<sup>th</sup> April 2024) confirming their agreement that the breeding peregrine qualifying interest feature of the North Caithness Cliffs SPA should be scoped into the OIA.

## **6.5 Effects Scoped Out of the Assessment**

- 6.5.1 Although decommissioning may cause disturbance to breeding, foraging and/or roosting birds, the magnitude of effect would depend on the bird species assemblage present at the time and cannot be reliably predicted at this stage. Therefore, potential effects on ornithological features during the decommissioning phase of the Alternative Alignment are not assessed. However, as decommissioning activities are generally of a similar nature to construction activities, it is considered that the potential effects of decommissioning would be comparable to the potential effects of construction, with the exception that habitat would likely be restored, and birds would be able to return to abandoned territories.
- 6.5.2 All IOFs identified as being of Local or lower importance in **Table V1-8.3** within **Section 8.10** of **Volume 1: Chapter 8 – Ornithology** were scoped out of the ornithological impact assessment (OIA).
- 6.5.3 Due to the designs used for both the L7c and L8c steel lattice towers, which have phase conductors which are at least 3.8 m and 7.1 m apart, respectively, the risk of a significant number of mortality events due to electrocution is considered to be negligible and therefore the potential for mortality/injury due to electrocution has been scoped out of the OIA.

## **6.6 Legislation, Policy and Guidance**

- 6.6.1 This assessment has been undertaken with reference to relevant legislation, policy and guidance, which is listed in **Section 8.6** in **Volume 1: Chapter 8 - Ornithology**. Additional sources of information are referenced in the text where relevant.

## **6.7 Methodology**

- 6.7.1 Ornithology field surveys of the Alternative Alignment were carried out by RPS between March and October 2023. Additionally, a desk study was completed to supplement the field survey results. Further details are provided below.

### *Desk Study*

- 6.7.2 A comprehensive desk study of published data was undertaken between July and November 2024. As part of this, designated sites of ornithological importance within the study area were identified. Records of protected and sensitive species were also requested from the RSPB and HRSG.
- 6.7.3 Ornithology field surveys of the Proposed Alignment were carried out by Blairbeg Consulting Ltd between May and August 2022. Although the datasets collected were primarily used to inform the assessment of potential impacts on IOFs from the Proposed Alignment, due to the proximity of the survey areas to the Alternative Alignment, relevant records also informed the OIA for the Alternative Alignment.
- 6.7.4 Additionally, existing datasets from surrounding developments were reviewed to identify relevant records. These are listed in **Section 8.7** in **Volume 1: Chapter 8 – Ornithology**.
- 6.7.5 Full details of the desk study methods are presented in **Volume 4: Appendix V1-8.1**.

### *Field Surveys*

6.7.6 Ornithology field surveys of the Alternative Alignment were carried out by RPS between March and October 2023 and comprised the following:

- Flight activity surveys (March to October 2023 inclusive);
- MBBS (April to July 2023);
- Breeding raptor surveys (April to July 2023); and
- Breeding diver surveys (May to July 2023).

6.7.7 The VP locations and viewsheds for the flight activity surveys and survey areas area are shown on **Volume 2: Figure V5-6.3**. Note that the survey areas were based on the optimal alternative route option at that time<sup>1</sup>, which was similar to the Alternative Alignment, and standard survey-specific buffer areas (in accordance with NatureScot (2017) guidance).

6.7.8 Details of the survey methods are presented in **Volume 4: Appendix V1-8.1**.

### *Assessment of Effects*

6.7.9 This assessment has been undertaken in accordance with the guidance produced by the Chartered Institute of Ecology and Environmental Management (CIEEM) (2024) and NatureScot (2018). Full details are provided in **Section 8.6 in Volume 1: Chapter 8 - Ornithology**.

## **6.8 Baseline Conditions**

### *Designations*

6.8.1 A summary of designated sites within the study area is presented in **Section 8.8 of Volume 1: Chapter 8 – Ornithology**. With the exception of the North Caithness Cliffs SPA, which is located approximately 1.4 km to the north of the Alternative Alignment, the separation distances between the designated sites and the Alternative Alignment are the same as for the Proposed Alignment.

6.8.2 Further details of these sites are presented in **Volume 4: Appendix V1-8.1** and locations are shown in **Volume 2: Figure V5-6.4**.

### *Desk Study*

#### Review of Survey Data from Surrounding Alignments

6.8.3 A summary of key survey results from surrounding developments is presented in **Volume 4: Appendices V1-8.1 and V1-8.2**.

6.8.4 Single golden plover and snipe breeding territories were recorded within 500 m of the Alternative Alignment (including ancillary development) during 2021 surveys for Strathy North Wind Farm. These are shown in **Volume 2: Figure V5-6.5a**. Additionally, single possible territories of oystercatcher, snipe lapwing and curlew were identified within 500 m of the Alternative Alignment during 2020 surveys for Kirkton Energy Park, while a single potential curlew territory was identified within 500 m of the Alternative Alignment during 2021 surveys for Kirkton Energy Park. As breeding wader territory location data were not available for this development, the locations are not included in **Volume 2: Figure V5-6.5a**. No other breeding wader territories were identified within the study area during the review of data from surrounding developments completed as part of the desk study.

6.8.5 During surveys for surrounding developments (listed in paragraph 6.8.6), multiple red-throated and black-throated diver territories, two merlin territories and single territories of hen harrier and barn owl were also recorded within the study areas. Additionally, there were incidental records of an osprey breeding territory and



white-tailed eagle roost within the study area in 2023. Further details are presented within **Volume 4: Appendix V1-8.2**.

6.8.6 The review of flight activity data identified that red-throated diver sometimes commuted over the Alternative Alignment. With the exception of greylag goose, pink-footed goose (*Anser brachyrhynchus*), curlew and peregrine, flight activity within 500 m of the Alternative Alignment (including ancillary development) by target species<sup>4</sup> was generally low, with no evidence of regular commuting routes. Flight lines of target species, except diver species, recorded within 500 m of the Alternative Alignment during flight activity surveys of the developments listed below are shown in **Volume 2: Figure V5-6.5**:

- Melvich Wind Energy Hub (collected between September 2020 and August 2022);
- Kirkton Energy Park (collected between September 2019 and August 2021);
- Strathy Wood Wind Farm Grid Connection (collected between October 2018 and August 2019);
- Armadale Wind Farm Grid Connection (collected between September 2021 and August 2022); and
- Strathy North Wind Farm (collected between January and August in 2016, between April and August in 2017-19 and between March and August in 2021).

6.8.7 Note that flight line data for Strathy Wood Wind Farm and red-throated diver flight data from Kirkton Energy Park were not available, but figures of target species flight lines included within the Further Environmental Information Reports for the former (Atmos Consulting 2015; 2019) and EIA Report for the later (Atmos Consulting, 2022) were reviewed as part of the desk study.

6.8.8 Where available, flight lines of diver species within 500 m of the Alternative Alignment (including ancillary development), as well as regular diver commuting flights recorded in the wider area where these were towards or crossing the Alternative Alignment, are included within **Volume 4: Appendix V1-8.2**.

#### Data Requests

6.8.9 A summary of records received from the RSPB and HRSG is provided in **Section 8.8 of Volume 1: Chapter 8 – Ornithology**, with full details, including locations, presented within **Volume 4: Appendix V1-8.2**.

#### Survey Data for the Proposed Alignment

6.8.10 An overview of the field survey results for the Proposed Alignment (which informed the desk study for the Alternative Alignment) is provided below. Further details are presented in **Volume 4: Appendices V1-8.1 and V1-8.2**.

6.8.11 A total of 135 flights by 14 identified species were recorded during the 2022 flight activity surveys for the Proposed Alignment, along with a further three flights by unidentified gulls. Note, however, that the majority of flights were by gull species, which are typically considered to be secondary rather than target species.

6.8.12 Of the remaining 70 flights by nine target species, oystercatcher (*Haematopus ostralegus*) was recorded most frequently (19 flights) followed by golden plover (15 flights) and curlew (13 flights). The remaining target species, namely greylag goose, lapwing, snipe, red-throated diver, osprey and hen harrier were recorded infrequently (seven or fewer flights of each species). Some target species were occasionally recorded in small flocks of up to 12 birds, but the majority of flights were of 1-2 birds. Flight lines are shown in **Volume 2: Figure V5-6.6a**.

6.8.13 During the 2022 scarce breeding bird survey (SBBS), 18 breeding territories of six wader species, namely oystercatcher (three territories), lapwing (three territories), golden plover (five territories), curlew (two territories), snipe (three territories) and common sandpiper (two territories), were recorded. However, both

<sup>4</sup> i.e., species identified as 'target' species for flight activity surveys at surrounding developments due to potential collision risk



common sandpiper territories, two of the snipe territories and single territories of oystercatcher and golden plover were located more than 500 m from the Alternative Alignment. Two mallard (*Anas platyrhynchos*) territories were also recorded. The locations of all aforementioned territories are shown in **Volume 2: Figure V5-6.6b**.

6.8.14 Survey results also indicated that a possible red-throated diver breeding territory was present within 2 km of the Alternative Alignment, although no evidence of nesting was observed. Further details are presented in **Volume 4: Appendix V1-8.2**.

6.8.15 Additionally, during the 2022 flight activity surveys for the Proposed Alignment there was an incidental record of an adult greylag goose, with two juveniles on Loch Earcha to the east of the southeastern end of the Proposed Alignment. This waterbody is more than 500 m from the LoD of the Alternative Alignment OHL but is within 500 m of ancillary infrastructure.

#### *Field Surveys*

6.8.16 An overview of the field survey results for the Alternative Alignment is provided below. Further details are presented in **Volume 4: Appendices V1-8.1 and V1-8.2**.

6.8.17 During the 2023 breeding season flight activity surveys for the Alternative Alignment, a total of 50 flights by 17 species were recorded. Note, however, that this included a single flight by red grouse, which is typically considered to be a secondary rather than target species. Pink-footed goose was the species recorded most frequently (11 flights), followed by hen harrier (nine flights) and golden eagle (six flights). Flight activity by the remaining species was very low, with 1-5 flights per species. Numbers of birds were generally low (1-3 per flight), although some goose and wader species were occasionally recorded in larger flocks. Flight lines are shown in **Volume 2: Figure V5-6.7a**.

6.8.18 Of the breeding wader territories recorded during the 2023 MBBS for the Alternative Alignment, three curlew territories, two common sandpiper (*Actitis hypoleucos*) territories, and single territories of golden plover, lapwing (*Vanellus vanellus*) and snipe (*Gallinago gallinago*) were recorded within 500 m (note that this includes ancillary development such as access tracks – some of the territories were more than 500 m from the OHL and towers). The locations of these territories (as well as those recorded in the wider survey area, more than 500 m from the Alternative Alignment) are shown in **Volume 2: Figure V5-6.7b**.

6.8.19 During the 2023 breeding raptor survey for the Alternative Alignment, hen harrier was the only target raptor species breeding within 2 km (a single territory). Further details are presented in **Volume 4: Appendix V1-8.2**.

6.8.20 A black-throated diver summering territory was identified within 2 km of the Alternative Alignment during the 2023 breeding diver surveys, but there was no evidence of nesting. Further details are presented in **Volume 4: Appendix V1-8.2**. There was no evidence of breeding or territory occupancy by red-throated diver within the survey area.

## **6.9 Mitigation by Design and Embedded Mitigation**

6.9.1 In accordance with CIEEM (2024) guidance, a sequential process has been adopted to avoid, mitigate and compensate adverse effects on IOFs (often referred to as the 'mitigation hierarchy'). Details of mitigation by design and embedded mitigation are presented in **Section 8.9 of Volume 1: Chapter 8 – Ornithology**, while further mitigation measures are detailed in Section 6.11. In addition, opportunities for enhancements that will benefit IOFs have been identified where possible and are also outlined in section 6.11.

## 6.10 Assessment of Likely Significant Effects

### *Identification of IOFs*

- 6.10.1 The same IOFs have been scoped into the assessment for the Alternative Alignment as for the Proposed Alignment, and the justification is the same as that presented in **Table V1-8.3** in **Section 8.10** of **Volume 1: Chapter 8: Ornithology**.

### *Construction Effects*

- 6.10.2 The potential impacts resulting from construction of the Alternative Alignment are considered to be the same as those resulting from construction of the Proposed Alignment (see **Section 8.10** of **Volume 1: Chapter 8: Ornithology**).
- 6.10.3 Similarly, the magnitude of potential impacts and significance of effects on IOFs resulting from construction of the Alternative Alignment are generally considered to be the same as those resulting from construction of the Proposed Alignment, detailed in **Section 8.10** of **Volume 1: Chapter 8: Ornithology**, with the following exceptions:
- The OHL and tower components of the Alternative Alignment would have a larger footprint than the Proposed Alignment (58 towers for the former compared with 46 for the latter), resulting in a greater extent of total habitat loss (50.71 ha for the Alternative Alignment versus 41.54 ha for the Proposed Alignment). It is therefore possible that the magnitude of impacts from habitat loss resulting from construction of the Alternative Alignment could be higher in comparison to construction of the Proposed Alignment. Note, however, that this is limited to raptor and wader species, since the extent of habitat loss within designated sites would be the same for the Proposed Alignment and Alternative Alignment, and the habitats that would be lost are considered unsuitable for other IOFs (i.e. common scoter and diver species). It should also be noted that the extent of permanent<sup>5</sup> habitat loss would be slightly lower for the Alternative Alignment (33.71 ha) than for the Proposed Development (36.26 ha).
  - The Alternative Alignment would be located approximately 1.4 km from the North Caithness Cliffs SPA, which is closer than the Proposed Alignment and within the core foraging range of breeding peregrine (2 km; NatureScot, 2016a), one of the qualifying features of the SPA. Levels of peregrine flight activity around the Alternative Alignment (recorded during surveys for surrounding developments) were also higher than those around the Proposed Alignment. As such, potential disturbance to foraging peregrine due to construction of the Alternative Alignment (and associated impacts on the North Caithness Cliffs SPA) could be of higher magnitude compared to construction of the Proposed Alignment.
  - The section of the Alternative Alignment that deviates from the Proposed Alignment would be further away from the northern Caithness and Sutherland Peatlands SPA lochs, where common scoter and diver species could breed. As such, the magnitude of potential disturbance impacts on breeding common scoter, red-throated diver and black-throated diver due to construction of the Alternative Alignment could be lower compared to construction of the Proposed Alignment.
  - The Alternative Alignment would be located in closer proximity than the Proposed Alignment to one of the hen harrier breeding territories identified within 2 km. As such, the magnitude of potential disturbance impacts on breeding hen harrier due to construction of the Alternative Alignment could be higher compared to construction of the Proposed Alignment.
- 6.10.4 The assessment of potential construction effects presented below focusses on the aforementioned impacts. All other impacts and resulting effects on IOFs resulting from construction of the Alternative Alignment are considered to be the same as those for the Proposed Alignment (detailed in **Section 8.10** of **Volume 1: Chapter 8: Ornithology**).

<sup>5</sup> Total direct and indirect permanent habitat loss

#### North Caithness Cliffs SPA

- 6.10.5 The North Caithness Cliffs SPA, which is located approximately 1.4 km to the north of the Alternative Alignment (at the closest point), is designated for breeding populations of the following species: kittiwake (*Rissa tridactyla*), common guillemot (*Uria aalge*), razorbill (*Alca torda*), puffin (*Fratercula arctica*), fulmar (*Fulmarus glacialis*) and peregrine as well as its breeding bird assemblage.
- 6.10.6 NatureScot (2016a) guidance gives a core foraging range for breeding peregrine of 2 km. As the Alternative Alignment is within 2 km of the North Caithness Cliffs SPA and there is functionally linked foraging habitat between the SPA and the Alternative Alignment site, it is possible that construction of the Alternative Alignment could have potential impacts on nesting and/or foraging birds from the SPA population. These are discussed below under the species assessment.
- 6.10.7 As there is no functionally linked foraging habitat between the North Caithness Cliffs SPA and the Alternative Alignment site for qualifying seabird features of the SPA, there is not considered to be any potential for disturbance/displacement of foraging seabird features of the SPA.
- 6.10.8 The potential for LSEs on the SPA is considered separately in **Volume 4: Appendix V1-8.3**, which provides information to inform the HRA of the SPA to be undertaken by Scottish Ministers as competent authority for the consideration of the Alternative Alignment.

#### Common Scoter

- 6.10.9 Breeding common scoter is a qualifying feature of the Caithness and Sutherland Peatlands SPA and Ramsar site. It is also included on Schedule 1 to the W&CA, the UK Birds of Conservation Concern (BoCC) Red list (Stanbury *et al.*, 2021) and the Scottish Biodiversity List (SBL).
- 6.10.10 The SPA breeding population was estimated at a minimum of 21 pairs in 2007 (NatureScot, 2023), although a spreadsheet of collision rates for developments in North Highland (dated 29/05/2024) provided by NatureScot (2024a) to inform the cumulative assessment cites an SPA population of 26 common scoter breeding pairs based on 2007 Site Condition Monitoring (SCM)<sup>6</sup>. The latest assessed condition of the population (on 3<sup>rd</sup> June 2013) was 'Unfavourable Declining' (NatureScot, 2024b).
- 6.10.11 There were no observations of common scoter during the 2023 surveys for the Alternative Alignment and no records of breeding birds within 500 m were identified during the desk study. Furthermore, as there are no waterbodies within 500 m of the Alternative Alignment, the extent of potentially suitable nesting habitat within disturbance distance of the Alternative Alignment is very limited and it is considered unlikely that common scoter would nest in the vicinity of the Alternative Alignment.
- 6.10.12 Additionally, the BPP outlined in **Section 8.9 of Volume 1: Chapter 8: Ornithology** includes measures to protect any breeding species listed on Schedule 1 to the Wildlife and Countryside Act 1981 (as amended) (W&CA) and/or Annex I to the Birds Directive, including common scoter, from disturbance due to construction of the Alternative Alignment. As such, potential effects on the Caithness and Sutherland Peatlands SPA breeding common scoter population due to disturbance/displacement during construction of the Alternative Alignment are considered to be of negligible magnitude and **not significant** under the EIA Regulations.

#### Golden Plover

- 6.10.13 Breeding golden plover is a qualifying feature of the Caithness and Sutherland Peatlands SPA and Ramsar site. Golden plover is also included on Annex I to the Birds Directive and the SBL.

<sup>6</sup> A monitoring programme completed by NatureScot to determine the condition of the natural features within designated sites and determine whether a natural feature is likely to maintain itself in the medium to longer term under the current conditions.

- 6.10.14 The SPA population was estimated at 1,064 pairs in 1993 and 1994 (NatureScot, 2023). However, a spreadsheet of collision rates for developments in North Highland (dated 29 May 2024) provided by NatureScot (2024a) to inform the cumulative assessment cites 1,922 golden plover breeding pairs as the most recent SPA population estimate, based on 2009 SCM.
- 6.10.15 The same golden plover breeding territories identified within 500 m of the Proposed Alignment (described in **Section 8.10 of Volume 1, Chapter 8: Ornithology**) were also within 500 m of the Alternative Alignment. As such, potential effects on breeding and foraging golden plover due to disturbance/displacement of nesting and foraging birds is considered to be the same for both alignments.
- 6.10.16 As one of the 2022 breeding territories is within the Limit of Deviation (LoD) of both the Alternative Alignment and the Proposed Alignment, there is some potential for a nest site to be lost. The loss of a single territory would represent a negligible proportion of the Caithness and Sutherland Peatlands SPA population. Some of the additional habitat that would be lost could also be suitable for nesting and/or foraging golden plover and, as noted above, the Alternative Alignment has a larger footprint than the Proposed Alignment, and is likely to result in loss of a greater extent of potentially suitable habitat for nesting and foraging golden plover (although the extent of habitat that would be permanently lost would be slightly lower).
- 6.10.17 However, golden plover breeding densities within 500 m of the Alternative Alignment were low and there is no evidence to suggest the areas being lost are particularly valuable or exceptional as nesting or foraging habitat for this species. Furthermore, given the relatively large core foraging range of breeding birds (3 km; NatureScot, 2016a) and presence of extensive suitable habitat within the wider area, including the Caithness and Sutherland Peatlands SPA, the effects of habitat loss on the SPA breeding golden plover population are considered to be of low magnitude and **not significant** under the EIA Regulations.

#### Red-throated and Black-throated Divers

- 6.10.18 Breeding red-throated and black-throated divers are both qualifying features of the Caithness and Sutherland Peatlands SPA and Ramsar site. Both species are also included on Schedule 1 to the W&CA, Annex I to the Birds Directive and the SBL. Additionally, black-throated diver is included on the UK BoCC Amber list (Stanbury *et al.*, 2021).
- 6.10.19 The SPA populations were estimated at 46 red-throated diver pairs in 2006 and 26 black-throated diver pairs in 1994 (NatureScot, 2023). A more recent estimate for the SPA breeding black-throated diver population was 29 pairs in 2006 (Stroud *et al.*, 2016). However, the spreadsheet of collision rates for developments in North Highland (NatureScot, 2024a) that informed the cumulative assessment, cites 20 black-throated diver breeding pairs as the most recent SPA population estimate, based on 2018 SCM.
- 6.10.20 Three red-throated diver breeding territories (two confirmed and one potential) and one confirmed black-throated diver breeding territory were identified within potential disturbance distance of the Alternative Alignment. An assessment of the potential effects of disturbance/displacement on breeding diver species during construction is presented in **Volume 4: Appendix V1-8.2**.

#### Golden Eagle

- 6.10.21 There were no records of breeding golden eagle territories within 6 km of the Alternative Alignment and as there was no evidence that the area within and around the Alternative Alignment site was of particular importance to foraging golden eagle, effects on the Caithness and Sutherland Peatlands SPA breeding golden eagle population due to disturbance/displacement during construction are assessed as being of negligible magnitude and **not significant** under the EIA Regulations.
- 6.10.22 Although construction of the Alternative Alignment could result in the permanent loss of a larger extent of suitable foraging habitat for golden eagle, this would represent an insignificant proportion of the species 6 km

core foraging range (NatureScot, 2016a). There is not considered to be any potential for disturbance of nesting birds.

6.10.23 As such, the effects of habitat loss on the Caithness and Sutherland Peatlands SPA breeding golden eagle breeding populations due to construction of the Alternative Alignment are considered to be of negligible magnitude and **not significant** under the EIA Regulations.

#### Hen Harrier and Merlin

6.10.24 Breeding hen harrier and merlin are both qualifying features of the Caithness and Sutherland Peatlands SPA. They are both also included on Schedule 1 to the W&CA, Annex I to the Birds Directive, the UK BoCC Red list (Stanbury *et al.*, 2021) and the SBL. Additionally, hen harrier is included on Schedule 1A to the W&CA.

6.10.25 The SPA populations were estimated at 14 hen harrier pairs in 1993 to 1997 and 54 merlin pairs in 1993 and 1994 (NatureScot, 2023). More recent estimates for the SPA breeding populations were 19 hen harrier pairs in 2003 and 11 merlin pairs in 2006 (Stroud *et al.*, 2016). However, the cumulative collision risk dataset provided by NatureScot (2024b) cites 13 hen harrier pairs as the most recent SPA breeding population estimate, based on 2016 SCM.

6.10.26 During 2023 surveys for the Alternative Alignment, a single hen harrier breeding territory was identified within potential disturbance distance. An additional hen harrier breeding territory within potential disturbance distance was identified during the desk study; this was active during surveys in 2018 and 2019 but was abandoned following a wildfire in 2019 and there was no evidence of breeding in 2021, 2022 or 2023. An assessment of the potential effects of construction disturbance/displacement on breeding hen harrier is presented in **Volume 4: Appendix V1-8.2**.

6.10.27 Three merlin breeding territories within 2 km of the Alternative Alignment were identified during the desk study, each of which was active during a single survey year (2022, 2021 and 2019). The separation distances between the 2022 and 2019 territories from the Alternative Alignment are the same as those from the Proposed Alignment. The exact location of the 2021 territory, which was recorded during surveys for the proposed Melvich Wind Energy Hub is unknown but will be the same distance from the existing OHL and wood poles to be dismantled and is likely to be a similar distance to the two alignments, but is likely to be further away from ancillary infrastructure and OHL associated with the Alternative Alignment compared with the Proposed Alignment. However, since effects on this individual territory from the Alternative Alignment are likely to be the same or lower compared with those from the Proposed Alignment the overall effects on breeding merlin due to disturbance/displacement during construction are considered to be the same for both alignments, i.e., of low magnitude and **not significant**.

6.10.28 As none of the identified hen harrier or merlin territories are within the LoD of the Alternative Alignment, there is not considered to be any potential for loss of any identified nest sites. However, potentially suitable habitat for nesting and foraging hen harrier and merlin would be lost due to construction of the Alternative Alignment which, as noted above, has a larger footprint than the Proposed Alignment and would result in loss of a larger extent of habitat. However, the extent of habitat that would be permanently lost would be slightly lower and represents a small proportion of the core foraging range of breeding birds (within 2 km and 5 km of the nest site for hen harrier and merlin respectively; NatureScot, 2016a), and extensive suitable nesting and foraging habitat for both species is present within the wider area, including the Caithness and Sutherland Peatlands SPA.

6.10.29 The effects of habitat loss on the Caithness and Sutherland Peatlands SPA breeding hen harrier and merlin populations due to construction of the Alternative Alignment are therefore considered to be of low and negligible magnitude respectively and **not significant** under the EIA Regulations.

### Peregrine

- 6.10.30 Breeding peregrine is a qualifying feature of the North Caithness Cliffs SPA and is listed as part of the breeding bird assemblage of East Halladale SSSI (NatureScot, undated a) and Lochan Buidhe Mire SSSI (NatureScot, undated b). Peregrine is also included on Schedule 1 to the W&CA, Annex I to the Birds Directive and the SBL.
- 6.10.31 The SPA population was estimated at six pairs (NatureScot, 2018c). However, the cumulative collision risk dataset provided by NatureScot (2024a) cites two<sup>7</sup> as the most recent SPA breeding peregrine population estimate, based on 2014 SCM.
- 6.10.32 The HRSG provided the location of a historic peregrine breeding territory within 2 km of the Alternative Alignment. As the separation distance from the Alternative Alignment is the same as that from the Proposed Alignment, the effects on breeding peregrine due to disturbance/displacement during construction are considered to be the same for both alignments.
- 6.10.33 Peregrine flight activity recorded during surveys for Melvich Wind Energy Hub (between September 2020 and August 2022) appeared to be concentrated in an area around the eastern section of the Alternative Alignment, between Creagan Reamhar and Achridigill (but the species was not considered to be nesting in this area), suggesting that the potential for disturbance of foraging peregrine during construction of the Alternative Alignment could be greater in comparison to the Proposed Alignment.
- 6.10.34 However, the level of flight activity was still low (15 flights during 125 hours of surveys spread across a two-year period). Furthermore, peregrines are highly adaptable (Hardey *et al.*, 2013) and can take a wide variety of prey (Forrester *et al.*, 2007). Given the species has a core foraging range of 2 km (NatureScot, 2016a) and the variety of habitats present in the local area, it is considered highly unlikely that temporary disturbance during the construction phase will have a notable effect on foraging peregrine.
- 6.10.35 Similarly, although the footprint of the Alternative Alignment is larger than that of the Proposed Alignment and would result in loss of a larger extent of habitat, the total extent of habitat that would be permanently lost due to construction of the Alternative Alignment would be slightly lower than for the Proposed Alignment and is unlikely to have a detectable effect on foraging peregrine.
- 6.10.36 The effects of habitat loss on the North Caithness Cliffs SPA breeding peregrine populations due to construction of the Alternative Alignment are therefore considered to be of low magnitude and **not significant** under the EIA Regulations.

### Curlew

- 6.10.37 Although curlew is not a notified/qualifying feature of any nationally or internationally designated site with potential connectivity to the Alternative Alignment, it is included on both the UK BoCC Red list and the SBL. Additionally, while not mentioned in the SSSI citation (NatureScot, undated c), curlew is included on the list of "Upland moorland with water bodies" species in Drewitt *et al.* (2023), which NatureScot advised is the breeding bird assemblage species list to be considered with regards to the West Halladale SSSI (see **Table V1-8.1** in **Volume 1: Chapter 8: Ornithology**). The NHZ 5 breeding curlew population has been estimated at 1,737 pairs (Wilson *et al.*, 2015).
- 6.10.38 The same curlew breeding territories identified within 500 m of the Proposed Alignment (described in **Section 8.10** of **Volume 1: Chapter 8: Ornithology**) were also within 500 m of the Alternative Alignment. As such, potential effects on breeding and foraging curlew due to disturbance/displacement of nesting and foraging birds is considered to be the same for both alignments.

<sup>7</sup> It does not specify whether this refers to pairs or individual birds.



6.10.39 As both of the 2022 breeding territories (but none of the 2023 territories) are within the LoD of both the Alternative Alignment and the Proposed Alignment, there is potential for nest sites to be lost. Some of the additional habitat that would be lost could also be suitable for nesting and/or foraging curlew and, as the Alternative Alignment has a larger footprint than the Proposed Alignment, its construction is likely to result in loss of a greater extent of potentially suitable habitat for nesting and foraging curlew (although the extent of habitat that would be permanently lost would be slightly lower than for the Proposed Alignment).

6.10.40 However, curlew breeding densities within 500 m of the Alternative Alignment were low and there is no evidence to suggest the areas that would be lost due to construction of the Alternative Alignment are particularly valuable or exceptional as nesting or foraging habitat for this species. Furthermore, extensive suitable nesting and foraging habitat for curlew is present within the wider area, including the Caithness and Sutherland Peatlands SPA. The effects of habitat loss on the SPA breeding curlew population are therefore considered to be of low magnitude and **not significant** under the EIA Regulations.

#### Osprey and White-tailed Eagle

6.10.41 Osprey and white-tailed eagle are not designated features of any statutory sites with potential connectivity to the Alternative Alignment. However, they are both also included on Schedule 1 to the W&CA, Annex I to the Birds Directive, the UK BoCC Amber list (Stanbury *et al.*, 2021) and the SBL. Additionally, white-tailed eagle is included on Schedules 1A and A1 to the W&CA.

6.10.42 The NHZ 5 breeding osprey population was estimated at eight pairs in 2013 (Wilson *et al.*, 2015). However, there has been a significant (4.9 %), increase in the numbers of breeding osprey pairs in the Highland region and in 2022, 28 osprey breeding sites in Sutherland were checked by Scottish raptor workers, of which 21 were occupied by pairs, with a further two occupied by single birds. Two additional breeding sites (both occupied by pairs) were reported in Caithness in 2022 (Challis *et al.*, 2023).

6.10.43 In 2023, there were incidental records of an osprey nest and white-tailed eagle roost site within 2 km of the Alternative Alignment, although neither location is within potential disturbance distance. As the separation distances between these locations and the Alternative Alignment are the same as for the Proposed Alignment, the effects on osprey and white-tailed eagle due to disturbance/displacement during construction are considered to be the same for both alignments.

6.10.44 Neither the osprey nest nor the white-tailed eagle roost site is within the LoD of the Alternative Alignment. As such, there is not considered to be any potential for loss of any identified nest or roost sites. The extent of losses of potentially suitable nesting and roosting habitat for osprey and white-tailed eagle is very small and would be the same for both alignments.

6.10.45 Although construction of the Alternative Alignment could result in the loss of a larger extent of suitable foraging habitat for white-tailed eagle (but not ospreys, which are predominantly piscivorous), this would represent an insignificant proportion of the species' 5 km core foraging range (NatureScot, 2016a) and there was no evidence of regular foraging around any part of the Alternative Alignment.

6.10.46 The effects of habitat loss on the NHZ 5 osprey and white-tailed eagle breeding populations due to construction of the Alternative Alignment are therefore considered to be of negligible magnitude and **not significant** under the EIA Regulations.

#### Summary

6.10.47 A summary of construction phase effects of the Alternative Alignment on IOFs is presented in **Table V5-6.1**.



**Table V5-6.1: Summary of Construction Phase Effects on IOFs**

IOF	Importance Level	Potential Effect	Magnitude of Effect	Potentially Significant Effect?	Targeted Mitigation Required?
Caithness and Sutherland Peatlands SPA and Ramsar site	International	Habitat loss	Low	No	No
		Habitat degradation	Low	No	No
		Disturbance/displacement of qualifying features identified as IOFs	Negligible to Medium	Yes (diver species only)	Yes (diver species only)
		Disturbance/displacement of qualifying features not identified as IOFs	Low	No	No
North Caithness Cliffs SPA	International	Habitat loss	Negligible	No	No
		Habitat degradation	Negligible	No	No
		Disturbance/displacement of qualifying features identified as IOFs	Low	No	No
		Disturbance/displacement of qualifying features not identified as IOFs	Negligible	No	No
Caithness Lochs SPA and Ramsar site	International	Habitat loss	Negligible	No	No
		Habitat degradation	Negligible	No	No
		Disturbance/displacement of qualifying features identified as IOFs	Negligible	No	No
		Disturbance/displacement of qualifying features not identified as IOFs	Negligible	No	No
Greylag goose	International	Habitat loss	Negligible	No	No
		Disturbance/displacement	Negligible	No	No
Common scoter	International	Habitat loss	Negligible	No	No
		Disturbance/displacement	Negligible	No	No
	International	Habitat loss	Low	No	No

IOF	Importance Level	Potential Effect	Magnitude of Effect	Potentially Significant Effect?	Targeted Mitigation Required?
Golden plover		Disturbance/displacement	Low	No	No
Red-throated diver	International	Habitat loss	Negligible	No	No
		Disturbance/displacement	Low to Medium	Yes	Yes
Black-throated diver	International	Habitat loss	Negligible	No	No
		Disturbance/displacement	Low to Medium	Yes	Yes
Golden eagle	International	Habitat loss	Negligible	No	No
		Disturbance/displacement	Negligible	No	No
Hen harrier	International	Habitat loss	Low	No	No
		Disturbance/displacement	Low	No	No
Merlin	International	Habitat loss	Negligible	No	No
		Disturbance/displacement	Low	No	No
Peregrine	International	Habitat loss	Negligible	No	No
		Disturbance/displacement	Low	No	No
West Halladale SSSI	National	Habitat loss	Low	No	No
		Habitat degradation	Low	No	No
		Disturbance/displacement of notified features <sup>8</sup> identified as IOFs	Negligible to Medium	Yes (diver species only)	Yes (diver species only)
		Disturbance/displacement of notified features <sup>8</sup> not identified as IOFs	Low	No	No
East Halladale SSSI	National	Habitat loss	Negligible	No	No
		Habitat degradation	Negligible	No	No
		Disturbance/displacement of notified features <sup>8</sup> identified as IOFs	Negligible to Medium	Yes (diver species only)	Yes (diver species only)
		Disturbance/displacement of	Low	No	No

<sup>8</sup> Including component species of the breeding bird assemblage feature.

IOF	Importance Level	Potential Effect	Magnitude of Effect	Potentially Significant Effect?	Targeted Mitigation Required?
		notified features <sup>8</sup> not identified as IOFs			
Lochan Buidhe Mires SSSI	National	Habitat loss	Negligible	No	No
		Habitat degradation	Negligible	No	No
		Disturbance/ displacement of notified features <sup>8</sup> identified as IOFs	Negligible to Medium	Yes (diver species only)	Yes (diver species only)
		Disturbance/ displacement of notified features <sup>8</sup> not identified as IOFs	Low	No	No
Whooper swan	National	Habitat loss	Negligible	No	No
		Disturbance/ displacement	Negligible	No	No
Curlew	Regional	Habitat loss	Low	No	No
		Disturbance/ displacement	Low	No	No
Osprey	Regional	Habitat loss	Negligible	No	No
		Disturbance/ displacement	Negligible	No	No
White-tailed eagle	Regional	Habitat loss	Negligible	No	No
		Disturbance/ displacement	Negligible	No	No
Barn owl	Regional	Habitat loss	Negligible	No	No
		Disturbance/ displacement	Negligible	No	No

### *Operational Effects*

6.10.48 The potential impacts resulting from operation of the Alternative Alignment are considered to be the same as those resulting from operation of the Proposed Alignment (see **Section 8.10 of Volume 1: Chapter 8: Ornithology**).

6.10.49 Similarly, the magnitude of potential impacts and significance of effects on IOFs resulting from operation of the Alternative Alignment are generally considered to be the same as those resulting from operation of the Proposed Alignment, detailed in **Section 8.10 of Volume 1: Chapter 8: Ornithology**,

6.10.50 As the level of human activity and associated disturbance during operational works is expected to be infrequent and of limited duration and extent, with the exception of the IOFs listed below (which were nesting, or could potentially nest, in closer proximity to one of the alignments compared with the other), it is considered that

operational disturbance/displacement impacts from both alignments would be of the same magnitude, with no potential for significant effects at the population level:

- Common scoter;
- Red-throated and black-throated divers; and
- Hen harrier.

6.10.51 The OHL element of the Alternative Alignment is longer than the Proposed Alignment (approximately 10.5 km for the former compared with approximately 13.5 km for the latter), which could increase collision risk to birds. However, for most IOFs, levels of flight activity around both alignments were low, with no notable differences and, with the exceptions of the species listed below, it is considered that collision risk from both alignments would be of the same magnitude, with no potential for significant effects at the population level:

- Red-throated and black-throated divers;
- Hen harrier;
- Peregrine; and
- Barn owl.

6.10.52 The assessment of potential operational effects presented below focusses on the aforementioned impacts. All other impacts and resulting effects on IOFs resulting from operation of the Alternative Alignment (including barrier effects) are considered to be the same as those for the Proposed Alignment (detailed in **Section 8.10 of Volume 1: Chapter 8: Ornithology**).

#### Common Scoter

6.10.53 As noted above under construction effects, there were no observations of common scoter during the 2023 surveys for the Alternative Alignment and no desk study records of breeding birds within 500 m were identified. Furthermore, as there are no waterbodies within 500 m of the Alternative Alignment, the extent of potentially suitable nesting habitat within disturbance distance of the Alternative Alignment is very limited and it is considered unlikely that common scoter would nest within potential disturbance distance of the Alternative Alignment.

6.10.54 Additionally, the BPP outlined in **Section 8.9 of Chapter 8 – Ornithology** includes measures to protect any breeding species listed on Schedule 1 to the Wildlife and Countryside Act 1981 (as amended) (W&CA) and/or Annex I of the Birds Directive, including common scoter (if present), from disturbance during any major operational works.

6.10.55 As such, potential effects on the SPA breeding common scoter population due to disturbance/displacement during operation of the Alternative Alignment are considered to be of negligible magnitude and **not significant** under the EIA Regulations.

#### Red-throated and Black-throated Divers

6.10.56 As described above under construction effects, three red-throated diver breeding territories (two confirmed and one possible) and one confirmed black-throated diver breeding territory were identified within potential disturbance distance of the Alternative Alignment.

6.10.57 An assessment of the potential effects of disturbance/displacement and collision on breeding diver species during operation of the Alternative Alignment is presented in **Volume 4: Appendix V1-8.2**.

#### Hen Harrier

6.10.58 As described above under construction effects, two hen harrier breeding territories were identified within potential disturbance distance of the Alternative Alignment.

6.10.59 An assessment of the potential effects of disturbance/displacement and collision on breeding hen harrier during operation of the Alternative Alignment is presented in **Volume 4: Appendix V1-8.2**.

#### Peregrine

6.10.60 As described above under construction effects, peregrine flight activity recorded during surveys for Melvich Wind Energy Hub (between September 2020 and August 2022) appeared to be concentrated in an area around the eastern section of the Alternative Alignment, between Creagan Reamhar and Achridigill (peregrine was not considered to be nesting in this area), suggesting that there could be greater potential for collision risk to foraging peregrine during operation of the Alternative Alignment compared to the Proposed Alignment.

6.10.61 However, as noted under construction effects, the level of flight activity was still low and, given their visual acuity, it is anticipated that foraging peregrines will be familiar with the landscape, including the presence of the existing Strathy North 132 kV trident 'H' wood pole OHL, and are likely to detect and avoid the Alternative Alignment.

6.10.62 The effects of collision risk on the North Caithness Cliffs SPA breeding peregrine population due to operation of the Alternative Alignment are therefore considered to be of low magnitude and **not significant** under the EIA Regulations.

#### Barn Owl

6.10.63 A single barn owl nest/roost site was identified within the Study Area, during surveys for the proposed Melvich Wind Energy Hub. Although barn owl records from this development were confidential and not available for review as part of the desk study, the approximate location was described in the EIA Report (ITP Energised, 2023) and based on this information, possible locations were identified through inspection of aerial imagery to identify suitable sites (although the exact location could not be confirmed).

6.10.64 An assessment of the potential effects of collision on breeding barn owl during operation of the Alternative Alignment is presented in **Volume 4: Appendix V1-8.2**.

#### Summary

6.10.65 A summary of operational phase effects of the Alternative Alignment on IOFs is presented in **Table V5-6.2**.

**Table V5-6.2: Summary of Operational Phase Effects on IOFs**

IOF	Importance Level	Potential Effect	Magnitude of Effect	Potentially Significant Effect?	Targeted Mitigation Required?
Caithness and Sutherland Peatlands SPA and Ramsar site	International	Disturbance/displacement of qualifying features identified as IOFs	Negligible to Low	No	No
		Disturbance/displacement of qualifying features not identified as IOFs	Low	No	No
		Collision risk to qualifying features identified as IOFs	Low to Medium	Yes (diver species only)	Yes (diver species only)
		Collision risk to qualifying features not identified as IOFs	Low	No	No

IOF	Importance Level	Potential Effect	Magnitude of Effect	Potentially Significant Effect?	Targeted Mitigation Required?
North Caithness Cliffs SPA	International	Disturbance/displacement of qualifying features identified as IOFs	Low	No	No
		Disturbance/displacement of qualifying features not identified as IOFs	Negligible	No	No
		Collision risk to qualifying features identified as IOFs	Low	No	No
		Collision risk to qualifying features not identified as IOFs	Negligible	No	No
Caithness Lochs SPA and Ramsar site	International	Disturbance/displacement of qualifying features identified as IOFs	Negligible	No	No
		Disturbance/displacement of qualifying features not identified as IOFs	Negligible	No	No
		Collision risk to qualifying features identified as IOFs	Low	No	No
		Collision risk to qualifying features not identified as IOFs	Negligible	No	No
Greylag goose	International	Disturbance/displacement	Negligible	No	No
		Collision risk	Low	No	No
Common scoter	International	Disturbance/displacement	Negligible	No	No
		Collision risk	Negligible to Low	No	No
		Barrier effects	Negligible	No	No
Golden plover	International	Disturbance/displacement	Low	No	No
		Collision risk	Low	No	No
Red-throated diver	International	Disturbance/displacement	Low	No	No
		Collision risk	Low to Medium	Yes	Yes
		Barrier effects	Negligible	No	No
	International	Disturbance/displacement	Low	No	No

IOF	Importance Level	Potential Effect	Magnitude of Effect	Potentially Significant Effect?	Targeted Mitigation Required?
Black-throated diver		Collision risk	Low	No	No
		Barrier effects	Negligible	No	No
Golden eagle	International	Disturbance/displacement	Negligible	No	No
		Collision risk	Low	No	No
Hen harrier	International	Disturbance/displacement	Low	No	No
		Collision risk	Low	No	No
Merlin	International	Disturbance/displacement	Low	No	No
		Collision risk	Low	No	No
Peregrine	International	Disturbance/displacement	Low	No	No
		Collision risk	Low	No	No
West Halladale SSSI	National	Disturbance/displacement of notified features identified as IOFs	Negligible to Low	No	No
		Disturbance/displacement of notified features not identified as IOFs	Low	No	No
		Collision risk to qualifying notified identified as IOFs	Low to Medium	Yes (diver species only)	Yes (diver species only)
		Collision risk to notified features not identified as IOFs	Low	No	No
East Halladale SSSI	National	Disturbance/displacement of notified features identified as IOFs	Negligible to Low	No	No
		Disturbance/displacement of notified features not identified as IOFs	Negligible	No	No
		Collision risk to qualifying notified identified as IOFs	Low to Medium	Yes (diver species only)	Yes (diver species only)
		Collision risk to notified features not identified as IOFs	Negligible	No	No
	National	Disturbance/displacement of	Negligible to Low	No	No



IOF	Importance Level	Potential Effect	Magnitude of Effect	Potentially Significant Effect?	Targeted Mitigation Required?
Lochan Buidhe Mires SSSI		notified features identified as IOFs			
		Disturbance/displacement of notified features not identified as IOFs	Negligible	No	No
		Collision risk to qualifying notified identified as IOFs	Low to Medium	Yes (diver species only)	Yes (diver species only)
		Collision risk to notified features not identified as IOFs	Negligible	No	No
Whooper swan	National	Disturbance/displacement	Negligible	No	No
		Collision risk	Low	No	No
Curlew	Regional	Disturbance/displacement	Low	No	No
		Collision risk	Low	No	No
Osprey	Regional	Disturbance/displacement	Negligible	No	No
		Collision risk	Negligible	No	No
White-tailed eagle	Regional	Disturbance/displacement	Negligible	No	No
		Collision risk	Negligible	No	No
Barn owl	Regional	Disturbance/displacement	Negligible	No	No
		Collision risk	Negligible to Low	No	No

## 6.11 Mitigation, Enhancements and Monitoring

### *Mitigation*

#### Line Marking

6.11.1 As advised in NatureScot (2016b) guidance, line marking remains the most common and practical form of mitigation for power lines worldwide, and research shows that it can reduce bird collisions by 50-94% (reviewed in Prinsen *et al.*, 2011).

6.11.2 Line markers would be installed along key sections of the Alternative Alignment OHL (on the Optical Ground Wire) where breeding red-throated diver are considered to be at increased risk of collision. The following key areas for line marker deployment have been identified:

- Between Towers 19 and 20 (as per the Proposed Alignment);
- Between Towers A11 and A14;
- Between Towers A17 and A23; and
- Between Towers A26 and 47.

6.11.3 Although collision risk to hen harrier and curlew were assessed as not significant, as a precautionary approach, it is proposed that line markers are also installed between the following towers to minimise collision risk to hen harrier and curlew:

- Between Towers 21 and 26 (as per the Proposed Alignment);
- Between Towers A22 and A26; and
- Between Towers 54 and 61 (as per the Proposed Alignment).

6.11.4 Implementation of line markers along these sections of the OHL is also expected to reduce collision risk to other IOFs, including common scoter.

6.11.5 It is proposed that the most suitable line marker model and optimal spacing would be determined post-submission in consultation with NatureScot. An outline of line marker design and deployment characteristics to maximise detectability is provided in **Section 8.11 of Volume 1: Chapter 8: Ornithology**.

6.11.6 As an example, the 'Hawk Eye' line marker designed by Power Line Sentry could potentially be a suitable model.

6.11.7 In line with NatureScot (2016b) guidance, the line markers would be monitored at regular intervals, with maintenance or replacement completed at regular intervals to ensure markers remain functional and in the correct position throughout the lifetime of the OHL component of the Alternative Alignment.

#### Artificial Nest Rafts for Breeding Divers

6.11.8 It is proposed that artificial nest rafts are installed at one or more suitable lochs within the wider area to provide additional nesting opportunities for breeding red-throated and black-throated divers and that these are maintained over the lifetime of the Alternative Alignment.

6.11.9 The use of such rafts has been shown to increase red-throated diver breeding success and help mitigate the effects of human disturbance (Nummi *et al.*, 2013; Piper *et al.*, 2002). Artificial nest rafts are also increasingly used by black-throated divers (Balmer *et al.*, 2013); their use may moderate effects of fluctuating water levels and human disturbance and have been shown to increase productivity of the Scottish breeding population by 44% (Hancock, 2000).

#### Enhancements

6.11.10 Although no significant effects were identified for any other IOFs, as part of the Connagill Cluster Outline HMP (**Volume 4: Appendix V1-7.8**), it is proposed that upland habitat in the wider area (more than 500 m from the Alternative Alignment to minimise collision risk) will be appraised to identify one or more potential areas where habitats can be managed to improve quality for hen harrier, by increasing foraging resource and providing additional nesting sites.

6.11.11 When identifying suitable areas, consideration will be given to historic hen harrier breeding territories. Relevant existing and proposed HMPs for other developments in the surrounding area will also be reviewed so that, where possible, opportunities to create corridors or mosaics of good quality hen harrier habitat (rather than small, isolated pockets) can be identified.

6.11.12 In addition to hen harrier, the targeted habitat mitigation measures are likely to benefit a range of other upland breeding bird species, such as wader species and red grouse (*Lagopus lagopus*).

6.11.13 Additionally, where feasible, potential enhancements for common scoter, such as installation of artificial nest rafts, will also be considered for inclusion within the (final) HMP.

6.11.14 It is proposed that suitable area(s) and management measures would be agreed in consultation with NatureScot and the RSPB. The success of the HMP measures would be monitored and reviewed at regular intervals throughout the lifetime of the Alternative Alignment.

#### *Monitoring*

6.11.15 In addition to monitoring of the habitat enhancements for breeding hen harrier as part of the Connagill Cluster Outline HMP, and the pre-construction surveys that would be completed as part of the BPP, it is proposed that a programme of ornithological monitoring around the Alternative Alignment is undertaken by a suitably experienced ornithologist during construction of the Alternative Alignment. It is likely that the monitoring programme would include surveys for breeding waders, raptors, and divers, including annual checks of any diver nest rafts installed.

6.11.16 Surveys would include the Alternative Alignment and appropriate species-specific buffers around it, with the aim of assessing how IOFs and other sensitive bird species respond to the construction of the Alternative Alignment.

### **6.12 Residual Effects**

6.12.1 It was considered that there could be potentially significant effects on red-throated diver and black-throated diver due to disturbance during construction of the Alternative Alignment as well as collision risk. With these exceptions, potential effects of the Alternative Alignment on IOFs were predicted to be of negligible to low magnitude and not significant.

6.12.2 Following installation of artificial nest rafts to offset potential displacement of diver species during construction and line markers to reduce collision risk to red-throated divers (outlined above in section 6.11), residual effects on the Caithness and Sutherland Peatlands SPA breeding red-throated and black-throated diver populations are assessed as being of low magnitude and **not significant** under the EIA Regulations.

### **6.13 Cumulative Effects**

6.13.1 The potential for the Alternative Alignment to make a material contribution to cumulative effects on IOFs is considered to be the same as that for the Proposed Alignment, which is assessed in **Section 8.13 of Volume 1: Chapter 8: Ornithology**.

### **6.14 Summary and Conclusions**

6.14.1 An assessment has been made of the potential for significant effects of the Alternative Alignment on Important Ornithological Features (IOFs). By implementing the embedded measures detailed in Section 6.9 and specific mitigation for red-throated and black-throated divers outlined in Section 6.11, the magnitude of effects of the Alternative Alignment on IOFs both alone and in combination with other schemes are assessed as being of negligible to low magnitude, and thus not significant in terms of the EIA Regulations.

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