VOLUME 1: CHAPTER 8: ORNITHOLOGY

Appendix V1-8.3: Shadow Habitats Regulations Appraisal for European Sites of Ornithological Importance [CONFIDENTIAL]

8. ORNITHOLOGY

8.1 Executive Summary

8.1.1 This Chapter considers the potential effects of the Proposed Development with the Proposed Alignment (referred to hereafter within this chapter as the 'Proposed 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 Proposed Alignment, together with the process used to determine their importance. The ways in which birds might be affected (directly or indirectly) by the Proposed Alignment are explained and an assessment is made with regards to the significance of these effects. The Proposed Development with the Alternative Alignment (referred to hereafter within this Chapter as the 'Alternative Alignment') is assessed in **Volume 5: Chapter 6: Ornithology – Alternative Alignment**.

8.1.2 Baseline ornithology field surveys of the Proposed Alignment and surrounding area were carried out between May and August 2022. Additionally, a desk study was completed to supplement the field survey results.

8.1.3 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*).

8.1.4 An assessment of potential effects of the Proposed Alignment on each IOF during construction and operation was completed. Potential cumulative effects were also considered for relevant IOFs.

8.1.5 Ornithological sensitivities were taken into consideration during the design of the Proposed 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).

8.1.6 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 Proposed 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.

8.1.7 Additionally, line markers would be installed along sections of the overhead line (OHL) component of the Proposed Alignment to reduce collision risk to breeding red-throated divers, where these species are considered to be at greatest risk of collision.

8.1.8 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.

8.1.9 It is also proposed that a programme of ornithological monitoring is undertaken by a suitably experienced and licensed ornithologist during construction of the Proposed Alignment, comprising surveys for breeding waders, raptors and divers, including checks of any artificial diver nest rafts installed.

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

8.2 Introduction

8.2.1 This Chapter considers the potential effects, including cumulative effects, of the Proposed Alignment on ornithological interests during construction and operation, 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 Proposed Alignment, together with the process used to determine their importance. The ways in which birds might be affected (directly or indirectly) by the Proposed Alignment are explained and an assessment is made with regards to the significance of these effects.

8.2.2 Additionally, the Chapter and Appendices set out information to allow Scottish Ministers to undertake an Appropriate Assessment of the effects of the Proposed Alignment on European sites of ornithological importance. Further information relating to the appropriate assessment process is provided in **Volume 4: Appendix V1-8.3: Shadow Habitats Regulations Appraisal for European Sites of Ornithological Importance (Confidential)**.

8.2.3 The assessment reported in this Chapter is based on the key characteristics of the Proposed Alignment as detailed in **Volume 1: Chapter 3: The Proposed Development**. This Chapter should be read in conjunction with **Volume 4: Appendix V1-8.1: Ornithology Technical Report** and **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 Habitats Regulations Appraisal for European Sites of Ornithological Importance (Confidential),** which considers potential effects of the Proposed Alignment on European sites designated for ornithological features, as part of a shadow Habitats Regulations Appraisal (HRA).

8.2.4 **Volume 1: Chapter 7: Ecology** is also of particular relevance to this Chapter because it identifies and assesses potential effects 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.

8.2.5 The Alternative Alignment is discussed and assessed within Volume 5 of this EIA Report, and cross reference is made to this Chapter within **Volume 5: Chapter 6: Ornithology - Alternative Alignment**, where elements of the Alternative Alignment are as described in general terms for the Proposed Development.

8.2.6 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**.

8.3 Scope of Assessment

Study Area

8.3.1 The study area varied according to the survey type and desk study dataset.

8.3.2 The desk study area comprised the Proposed 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.

8.3.3 These are shown in **Volume 2: Figure V1-8.1**. Note that the HRSG and RSPB data requests were based on buffers of the optimal routes[1], at the time which were very similar to the Proposed Alignment and Alternative Alignment. All other buffer areas were based on the Proposed Alignment, including ancillary development such as access tracks.

8.3.4 In addition, any records of target species flights within 500 m of the Proposed 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[2];
- The operational Strathy North Wind Farm; and
- The consented Strathy Wood Wind Farm.

8.3.5 Ornithology field surveys of the Proposed Alignment (comprising flight activity surveys and a scarce breeding bird survey (SBBS)) were completed between May and August 2022. The study area for these field surveys was based on the footprint of the optimal route option[1] at that time, which was similar to the Proposed Alignment, and a surrounding 500 m buffer area.

8.3.6 The SBBS area covered the eastern and western sections of the Proposed Alignment, with the western section of the survey area extending south to include the footprint of the proposed Strathy Wood Wind Farm Grid Connection.

8.3.7 The vantage point (VP) locations, viewsheds and SBBS area are shown on **Volume 2: Figure V1-8.2**.

8.3.8 Relevant ornithology survey data[3] for the Alternative Alignment, collected by RPS between March and October 2023, was also reviewed as part of the desk study for the Proposed Alignment. The ornithology survey areas for the Alternative Alignment are shown in **Volume 2: Figure V1-8.3**.

8.4 Consultation

8.4.1 To inform the scope of the assessment for the Proposed Alignment, consultation was undertaken with statutory and non-statutory bodies. **Table V1-8.1** summarises the scoping responses relevant to ornithology and provides details of where/how these have been addressed in this EIA.

[1] The optimal route and optimal alternative route is 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

[2] 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

[3] Defined as records within the desk study areas defined in paragraph 8.3.2

8.4.2 Further details on the consultation responses and scoping opinion can be reviewed in **Volume 1: Chapter 4: Scope and Consultation**, and associated appendices. Where consultation responses included sensitive information (redacted from the Scoping Opinion), these are included in **Volume 4: Appendix V1-8.2: Ornithology Confidential Annex (Confidential)**.

Table V1-8.1: Summary of Scoping Responses

Organisation & Date	Summary of Consultation Response	EIA/Design Response to Consultee
NatureScot 26th April 2024	Advised that the Proposed Development could have adverse impacts on site integrity for European Protected Areas.	Potential impacts of the Proposed Alignment on qualifying features of European sites are considered in sections 8.10 and 8.12.1 of this Chapter and, where relevant, proposed mitigation is presented in section 8.11. Potential effects on qualifying ornithological features of European sites are also considered in a Shadow Habitats Regulations Appraisal (HRA), see **Volume 4: Appendix V1-8.3 (confidential)**.
	Highlighted that the Proposed Development falls within the Flow Country World Heritage Site (WHS).	Potential impacts of the Proposed Alignment on the bird populations within the proposed WHS are considered in **Volume 4: Appendix V1-7.7: World Heritage Site Assessment**.
	Advised that the key issues to address within the Environmental Impact Assessment (EIA) Report include impacts to certain qualifying features of the Caithness & Sutherland Peatlands Special Protection Area (SPA)/Ramsar site and the Flow Country WHS. Additional details of redacted consultee comments are included in **Volume 4: Appendix V1-8.2**.	See above responses.
	Advised that impacts to protected sites is a key issue and the Proposed Development has the potential to significantly affect the Caithness and Sutherland Peatlands SPA as it abuts the boundary. The Proposed Development also lies directly adjacent to the West Halladale Site of Special Scientific Interest (SSSI).	Potential impacts of the Proposed Alignment on qualifying/ features of designated sites are considered in sections 8.10 and 8.12.1 of this Chapter and, where relevant, proposed mitigation is presented in section 8.11. Potential effects on qualifying ornithological features of relevant European sites, including the Caithness and Sutherland Peatlands SPA are also considered in **Volume 4: Appendix V1-8.3 (confidential)**.
	Recommended that, in addition to collision risk, potential barrier and displacement effects to certain SPA species should be scoped into the assessment. Further recommended that pylon dimensions are clarified, including any range variability with maximum height provided as part of SPA appraisals.	Potential impacts of the Proposed Alignment on IOFs, including diver species and other qualifying features of the Caithness and Sutherland Peatlands SPA, due to disturbance/displacement and collision risk are discussed in sections 8.10 and 8.12.1 of this Chapter and, where

Organisation & Date	Summary of Consultation Response	EIA/Design Response to Consultee
	Additional details of redacted consultee comments are included in **Volume 4: Appendix V1-8.2**.	relevant, proposed mitigation is presented in section 8.11. Additional details are included in **Volume 4: Appendix V1-8.2 (confidential)**. Potential effects on qualifying ornithological features of the Caithness and Sutherland Peatlands SPA, including diver species, are also considered in **Volume 4: Appendix V1-8.3 (confidential)**.
	Stated that it was unclear if Vantage Point (VP) surveys were undertaken as part of the overall survey work and that no viewshed map was provided.	As detailed in paragraph 8.7.6, flight activity (VP) surveys were completed for the Proposed Alignment. VP locations and viewsheds are included in **Volume 2: Figure V1-8.2**. Additional flight activity data from surrounding developments was also used to inform the ornithological impact assessment (OIA). Further details are provided in **Volume 4: Appendix V1-8.1**.
	Noted that compared, to collision potential, the effects of disturbance and displacement effects from power line developments is poorly understood. Further noted that best practice measures recommend that Protected Areas for birds should be avoided through careful routing to minimise impacts wherever possible. Referred the Applicant to guidance on assessment and mitigation of impacts from powerlines and guyed meteorological (met) masts on birds (NatureScot, 2016a).	As outlined in section 8.9, statutory sites of ornithological importance and other IOFs were taken into consideration as far as possible when designing the layout and route of the Proposed Alignment. As noted in section 8.6, the NatureScot (2016a) guidance on assessing and mitigating impacts of powerlines and met masts on birds was a key guidance document for the OIA and was used to inform the assessment of potential effects on OIAs detailed in sections 8.10 and 8.12.1.
	Advised that common scoter and their breeding lochans are thoroughly assessed through the HRA process. Additional details of redacted consultee comments are included in **Volume 4: Appendix V1-8.2 (confidential)**.	Potential impacts of the Proposed Alignment on common scoter, are discussed in sections 8.10 and 8.12.1 of this Chapter and, where relevant, proposed mitigation is presented in section 8.11. Additional details are included in **Volume 4: Appendix V1-8.2 (confidential)**. Potential effects on qualifying ornithological features of the Caithness and Sutherland Peatlands SPA, including common scoter, are also considered in **Volume 4: Appendix V1-8.3 (confidential)**.
	Advised that potential impacts to all notified features of the West Halladale SSSI (including black-throated diver, common scoter and breeding bird assemblage), should be assessed and presented within the EIAR), indicating any potential impacts and the likely duration of these. Further advised that the breeding bird assemblage species list to be considered is “Upland	Potential impacts of the Proposed Alignment on qualifying/notified features of designated sites, including the West Halladale SSSI, are considered in sections 8.10 and 8.12.1 of this Chapter. As advised, the assessment of potential effects on the breeding bird assemblage was based on the relevant species list in Drewitt *et al*. (2023).

Organisation & Date	Summary of Consultation Response	EIA/Design Response to Consultee
	moorland with water bodies", referencing Drewitt *et al*. (2023). Noted that, at present, with the exception of common scoter, all notified features of the SSSI have favourable condition status. Stated that avoidance and mitigation measures to reduce any potential impacts to nationally important interests would be welcomed.	Where relevant, proposed mitigation is presented in section 8.11.
	Highlighted that the latest published research (in December 2023) on breeding common scoter (SPA/SSSI) identifies 'lowering predation risk' to nesting females as being an important factor to help healthy scoter populations. Noted that other ground nesting peatland breeding birds (SSSI), such as divers, hen harrier, golden plover and curlew, may also benefit from similar outcomes.	Relevant published studies, including Mitchell *et al*. (2023) and Hughes *et al*. (2024) were reviewed as part of the desk study to inform the assessment of potential impacts of the Proposed Alignment on common scoter, which is presented in sections 8.10 and 8.12.1 of this Chapter. Where relevant, proposed mitigation is presented in section 8.11.
	Advised that survey work from the neighbouring wind farm developments mentioned within the Scoping Report will likely form a useful baseline assessment (including relevant confidential information). Further advised that this will also provide slightly wider spatial context along the linear route for ornithological sensitivity, ensuring a better understanding of certain breeding species. Additional details of redacted consultee comments are included in **Volume 4: Appendix V1-8.2 (confidential)**. Noted that NatureScot hold some common scoter data, but this may already be presented confidentially within nearby wind farm EIA Reports.	Data was requested from wind farm developers connected to the Connagill Cluster Grid Connection projects. As outlined in section 8.7, datasets that were shared were reviewed as part of the desk study and relevant data used to inform the OIA. Additionally, a common scoter assessment completed for the proposed Kirkton Energy Park (Atmos Consulting, 2022), which would be located adjacent to the Proposed Alignment was reviewed as part of the desk study. This included RSPB and NatureScot records of breeding common scoter in the wider area. Further details of the desk study methods and results, including the data review, are included in **Volume 4: Appendices V1-8.1 and V1-8.2 (confidential)**.
	Noted that the Scoping Report is light on detail to inform the level of bird survey work undertaken to date for the Proposed Development and would welcome greater clarity on this in due course.	An overview of the field survey methods and datasets used to inform the OIA is provided in section 8.7 of this Chapter, with full details presented in **Volume 4: Appendix V1-8.1**.
	Highlighted the lack of clarity regarding whether the Proposed Development would result in an access track being formed around the top edge of the West Halladale SSSI, which may have potential to cause residual disturbance issues and could even inadvertently provide an 'easy' access route to SPA lochs by ground predators (e.g., pine marten, *Martes martes*).	As shown in **Volume 2: Figure V1-3.1**, the Proposed Alignment would include sections of new access tracks to the north of (and outwith) the West Halladale SSSI. However, several of these are temporary and the permanent tracks would not provide a contiguous link between areas of plantation that could harbour ground predators and SPA lochs.

Organisation & Date	Summary of Consultation Response	EIA/Design Response to Consultee
The Highland Council (THC) 21st May 2024	Advised that an EIA Report chapter covering ornithology will be required, and this must provide a baseline survey of the bird interest on site. Further advised that it should be categorically established which species are present on the Proposed Development site, and where, before a future application is submitted.	As described in section 8.7 (and detailed further in **Volume 4: Appendix V1-8.2 (confidential)**), the ornithological baseline was established through a combination of field surveys and an extensive desk study.
	Advised that the presence of protected species such as Schedule 1-listed bird species must be included and considered as part of the application.	As noted above, the ornithological baseline was established through a combination of field surveys and an extensive desk study. Potential impacts of the Proposed Alignment on all IOFs, including species listed on Schedule 1 to the W&CA and qualifying features of statutory sites of ornithological importance, are discussed in sections 8.10 and 8.12.1 of this Chapter.
	Advised that the EIA Report should address the likely impacts on nature conservation interests in the vicinity of the Proposed Development and provide proposals for mitigation to avoid or reduce to a level where they are not significant.	Potential impacts of the Proposed Alignment on all IOFs, including statutory sites of ornithological importance, are assessed in sections 8.10 and 8.12.1 of this Chapter and, where relevant, proposed mitigation to avoid or reduce potential effects on IOFs to a level where they are not significant is presented in section 8.11.
	Stated that, if an Appropriate Assessment (AA) is required (based on NatureScot's advice), THC would encourage the Applicant to provide a Shadow HRA and AA with the planning application.	A Shadow HRA for European sites is presented in **Volume 4: Appendix V1-8.3 (confidential)**.
RSPB Scotland 31st May 2024	Noted that the Proposed Development passes through the Caithness and Sutherland Peatlands SPA, SAC and Ramsar site and the West Halladale SSSI, and is adjacent to the East Halladale SSSI and within connectivity distance to qualifying features of the Caithness Lochs SPA. Advised that, due to likely significant effects (LSEs) on European sites, the EIA Report must include sufficient information to inform an AA by the competent authority, as required by The Conservation of Habitats and Species Regulations 2017. Further advised that, as the Proposed Development has the potential to impact on a number of qualifying features of these European sites, the commitment [in the Scoping Report] to include a shadow HRA in the EIA Report was welcomed.	See above response.
	Noted that, in the UK, common scoters are extremely rare and have a very restricted breeding range, The population is	Potential impacts of the Proposed Alignment on common scoter are discussed in sections 8.10 and 8.12.1 of

Organisation & Date	Summary of Consultation Response	EIA/Design Response to Consultee
	decreasing and is at risk of loss as a breeding bird in the UK. Further noted that common scoter is one of the qualifying features of the Caithness and Sutherland SPA and this area is important for the small breeding population. Highlighted that they have particular and significant concerns regarding the uncertainty around the effects of the Proposed Development on this species, noting that they have objected to a number of wind farm applications in the Flow Country due to potential impacts and lack of common scoter. Advised that the RSPB have historic records of common scoter breeding in lochans to the south of the Proposed Development, and they would be conducting a Flow Country wide common scoter survey during the 2024 breeding season (May to August), which will provide up-to-date presence data for this species in these areas. Recommended that appropriate surveys are conducted at the Proposed Development site to inform the assessment of potential impacts on this species, noting that common scoter can be particularly elusive when breeding, and surveys need be intensive and timed precisely to ensure breeding behaviour is recorded. Intensive surveys are therefore required to confirm or discount breeding attempts and productivity. Gave their opinion that a minimum of three surveys between 23rd April and 3rd June would be required to confirm presence and numbers of Common Scoter. Advised that VP watches during June are best for gathering data on movement and nesting areas to avoid influencing or disturbing the birds, whilst acknowledging that males will disappear from breeding lochs in June and it can be very difficult to observe female birds at this time because they will be attending the nest, appearing on the water only for an hour or so to feed; therefore June is a time when their presence can be easily missed.	this Chapter and, where relevant, proposed mitigation is presented in section 8.11. Additional details are included in **Volume 4: Appendix V1-8.2 (confidential)**. Potential effects on qualifying ornithological features of the Caithness and Sutherland Peatlands SPA, including common scoter, are also considered in **Volume 4: Appendix V1-8.3 (confidential)**. Targeted surveys for breeding common scoter were not considered necessary for the Proposed Alignment since no lochs, lochans or pool systems were identified within 500 m of the Proposed Alignment, and since NatureScot (2022) guidance recommends a minimum buffer of 200-500 m to avoid disturbance to breeding common scoter, the potential for disturbance is very low. Furthermore, due to the small population size, and difficulties in observing breeding common scoter (whilst avoiding causing a disturbance) acknowledged by the RSPB, the absence of common scoter records during any targeted surveys may not provide conclusive evidence that birds were not present. Flight activity surveys were completed for the Proposed Alignment to identify any regular commuting routes or other areas where birds may be at increased risk of collision due to high levels of flight activity. Additionally, an extensive desk study was completed to inform potential impacts on IOFs, including common scoter. This included a review of datasets from surrounding developments, obtaining records of all sensitive species (including common scoter) within 2 km of the Proposed Alignment from the RSPB and reviewing relevant literature, including a common scoter assessment completed for the proposed Kirkton Energy Park (Atmos Consulting, 2022), which would be located adjacent to the Proposed Alignment. An overview of the desk study and field survey methods is provided in section 8.7, with full details presented in **Volume 4: Appendix V1-8.1**.
	Stated that, based on data from the Melvich Wind Energy Hub, it was considered that the Proposed Development could create a barrier and/or risk of collision to both red-throated and black-throated divers. Advised that the risk of	Potential impacts of the Proposed Alignment on diver species, are discussed in sections 8.10 and 8.12.1 of this Chapter and proposed mitigation is presented in section 8.11.

Organisation & Date	Summary of Consultation Response	EIA/Design Response to Consultee
	collision and barrier effects should be assessed, and data should be requested from the Melvich Wind Energy Hub developer. Additional details of redacted consultee comments are included in **Volume 4: Appendix V1-8.2 (confidential).**	Additional details are included in **Volume 4: Appendix V1-8.2 (confidential)**. Data was requested from wind farm developers connected to the Connagill Cluster Grid Connection projects. As outlined in section 8.7, datasets that were shared were reviewed as part of the desk study and relevant data used to inform the OIA. Although confidential records of Schedule 1-listed breeding territories, including diver territories, were not obtained for the Melvich Wind Energy Hub, for some species (including divers), it was possible to determine approximate locations based on information provided in the EIA Report (ITPEnergised, 2023). Additionally, confidential records from the adjacent Kirkton Energy Park, including diver breeding territory locations and Figures showing commuting routes, were shared by the developer and informed the OIA. Further details of the desk study methods and results, including the data review, included in **Volume 4: Appendices V1-8.1 and V1-8.2 (confidential)**.
	Noted that the creation of towers, working areas and tracks could lead to significant habitat loss and disturbance to qualifying species of designated sites, which should be surveyed and assessed prior to finalisation of the OHL route.	Ecological and ornithological survey and desk data informed the design of the Proposed Alignment and, as stated in paragraph 8.9.2, potential impacts on ornithological features were minimised as far as possible. Further details of the OHL route options considered and the reasons for selecting the Proposed Alignment OHL route are presented in **Volume 1: Chapter 2: Routeing Process and Alternatives**.
	Advised that, due to lack of clarity in the Scoping Report on surveys conducted and the areas and buffers covered, it could not be confirmed whether the current surveys set out in the Scoping Report are sufficient for determining impact.	An overview of the field survey methods and datasets used to inform the OIA is provided in section 8.7, with full details presented in **Volume 4: Appendix V1-8.1**.
	Advised that potential impacts of the moorland fire that occurred in the Strathy area in 2019 on ornithology surveys and data should be included in the EIA Report.	Potential effects of the moorland fire, which occurred over five years ago and prior to the surveys for the Proposed Alignment, on IOFs were considered when completing the OIA.
	Noted that RSPB Scotland was pleased that data from other existing, consented and proposed developments in the area are being used but could not comment on the sufficiency of these as the extent of the	As noted above, data was requested from wind farm developers connected to the Connagill Cluster Grid Connection projects. As outlined in section 8.7, datasets that were shared were reviewed as part of the

Organisation & Date	Summary of Consultation Response	EIA/Design Response to Consultee
	developments consulted or surveys used were not provided in the Scoping Report. Suggested that data sharing should include other developments in the area, especially Melvich Wind Energy Hub, as it significantly overlaps the proposed OHL.	desk study and relevant data used to inform the OIA. Although confidential records from Melvich Wind Energy Hub were not made available, for some species (including divers), it was possible to determine approximate locations based on information provided in the EIA Report (ITPEnergised, 2023). Additionally, confidential records from the adjacent Kirkton Energy Park were obtained and informed the OIA.
	Recommended either undertaking two years of field surveys for all Caithness and Sutherland Peatlands SPA qualifying species, in line with NatureScot (2017) guidance, or one full year of surveys, plus the use of all other available data from surrounding wind farms. Further recommended that surveys should consider particular breeding patterns of qualifying species, including common scoter, as standard surveys may not be adequate for determining potential impacts.	An overview of the field survey methods and datasets used to inform the OIA is provided in section 8.7, with full details presented in **Volume 4: Appendix V1-8.1**. It was considered that the field survey data, combined with extensive datasets available from surrounding developments (reviewed as part of the desk study), was sufficient to inform a robust OIA.
	Strongly recommended that golden and white-tailed eagle data within 6 km of the Proposed Development and other raptor species within 2 km are requested from the HRSG. Further advised that specific raptor surveys should also be undertaken to identify breeding territories and should consider eagle breeding behaviour as this may not be captured during standard surveys.	Records of breeding and roosting golden and white-tailed eagles and other raptor species listed on Schedule 1 to the W&CA and/or Annex I of the Birds Directive within the specified search areas were obtained from both the HRSG and RSPB and used to inform the OIA presented in sections 8.10 and 8.12.1 of this Chapter, along with records of breeding raptors from surrounding developments (where available). As extensive datasets were available, it was not considered necessary to complete targeted surveys for eagles or other raptor species. An overview of the desk study datasets used to inform the assessment of potential effects of the Proposed Alignment on eagle species and other IOFs is provided in section in section 8.7, with full details presented in **Volume 4: Appendix V1-8.1**.
	Asserted that wintering bird surveys are required, noting that the Caithness Lochs SPA is within connectivity distance of the development, as greylag goose, which is a qualifying feature of this SPA, has a core range of 15-20 km. Further advised that, although wintering birds are not qualifying features of the Caithness and Sutherland Peatlands SPA, undertaking these surveys is best practice	The Proposed Alignment site is outside the known feeding areas of greylag goose from the Caithness Lochs SPA (Mitchell, 2012). Therefore, in line with NatureScot (2017) guidance, it was considered that targeted surveys for foraging greylag goose were not required. Furthermore, much of the habitat within and around the Proposed Alignment footprint is considered to be sub-

Organisation & Date	Summary of Consultation Response	EIA/Design Response to Consultee
	and the Proposed Development site may be important for wintering species such as hen harrier, which is protected under Schedule 1A to the W&CA.	optimal for foraging wildfowl species, including greylag goose. As noted by the RSPB, wintering birds are not qualifying features of the Caithness and Sutherland SPA and the Proposed Alignment site is not considered to be of particular interest for wintering birds. As described in section 8.9 of this Chapter, the Bird Protection Plan (BPP) will include measures to protect any winter roosting Schedule 1A-listed raptor species, including hen harrier, from disturbance.
	Advised that, in addition to SPA qualifying species, RSPB have records of several wader species listed on the UK Birds of Conservation Concern (BoCC) Red and Amber lists (Stanbury *et al*., 2021) in the vicinity of the Proposed Development, and advised that these species should be included in any surveys.	Records of protected and sensitive birds, including Red and Amber listed species, within 2 km of the Proposed Alignment were requested from the RSPB as part of the desk study. All records received (which did not include any wader species), together with relevant records from other datasets reviewed as part of the desk study, were used to inform the OIA. Additionally, a Scarce Breeding Bird Survey (SBBS) of the Proposed Alignment and a surrounding 500 m buffer was completed in 2022. Species recorded during the SBBS included waders, with the results analysed to identify breeding wader territories. An overview of the desk study and SBBS methods and results is provided in sections 8.7 and 8.8 respectively, with full details presented in **Volume 4: Appendix V1-8.1**.
	Recommended that information is provided within the EIA Report to demonstrate that the survey data are adequate, robust and accurate, including the following: • Full information on the flight activity [VP] surveys undertaken including dates, times and weather conditions for each. • Maps showing VP locations that also denote viewsheds and OHL locations, including steel towers and ancillary development. • Maps showing survey areas for breeding bird and wintering bird surveys. • Maps showing diver, wader, common scoter and raptor breeding, foraging and roosting areas, commuting routes and wintering geese flight routes,	As stated above, an overview of the desk study and field survey methods and results is provided in sections 8.7 and 8.8 respectively, with full details presented in **Volume 4: Appendix V1-8.1**. This includes the specified information (where the species was recorded).
	Recommended that disturbance, displacement (Including barrier effects),	Potential effects of the Proposed Alignment on IOFs, including disturbance,

Organisation & Date	Summary of Consultation Response	EIA/Design Response to Consultee
	loss of suitable habitat (breeding, wintering and foraging) electrocution and collision risk are assessed for all scoped in species. Further advised that this should not be limited to impacts from the Proposed Development OHL route but should also include the increased height of the towers, working areas, new tracks and infrastructure as well as any existing road widening or upgrades.	displacement, barrier effects, habitat loss and collision, are assessed in sections 8.10 and 8.12.1 of this Chapter. All elements of the Proposed Alignment, including the new towers, associated infrastructure and both existing and new access tracks were included when assessing potential effects on IOFs. As stated in paragraph 8.5.3, the risk of a significant number of mortality events is considered to be negligible and potential mortality/injury due to electrocution was scoped out of the OIA.
	Highlighted that the Proposed Development is located between the Caithness and Sutherland Peatlands SPA and the sea and could create a barrier for red-throated and black-throated divers, which are known to commute from breeding lochs within the SPA northwards to the sea to feed. Stated that this behaviour is also thought to be possible for common scoter. Advised that potential barrier impacts should be assessed for the Proposed Development, both alone and as part of the cumulative assessment.	Although it is acknowledged that diver species breeding within the SPA commute across the Proposed Alignment OHL, there is no evidence showing that breeding scoters do this (although it is possible, existing data suggest it is unlikely). As noted above, potential effects, including barrier effects, of the Proposed Alignment on relevant IOFs are assessed in sections 8.10 and 8.12.1 of this Chapter.
	Highlighted that the potential effects of the Proposed Development on IOFs listed in the Scoping Report included barrier effects during the construction phase but not during the operational phase. Further advised that the increased height of the Proposed Development OHL compared with the Strathy North 132 kV trident 'H' wood pole OHL has the potential for increased barrier effects. Barrier and collision effects should be considered in the EIA Report.	The omission of potential barrier effects during the operational phase of the Proposed Alignment from the Scoping Report was a typographical error. Potential barrier effects of the Proposed Alignment on relevant IOFs during the operational phase are assessed in sections 8.10 and 8.12.1 of this Chapter. This included a consideration of the increased height of the new OHL compared with the Strathy North 132 kV trident 'H' wood pole OHL.
	Gave the opinion that the developments proposed in the Scoping Report for inclusion in the assessment of cumulative effects were insufficient in scope as only those wind farm developments and grid connections in the Connagill Cluster were included, rather than all relevant developments at the appropriate SPA or Natural Heritage Zone (NHZ) level.	Details of the developments included in the assessment of cumulative effects are included in section 8.13. Developments included in the assessment are considered to be proportionate to the scale of the Proposed Alignment.
	Highlighted their concerns about cumulative effects on birds as a result of the high number of operational, consented and planned wind farm developments across the Flow Country and their associated infrastructure. Advised that, due	An assessment of potential cumulative impacts, including collision risk, disturbance, displacement and barrier effects, on IOFs is presented in section 8.12.1 of this Chapter. Developments included in the assessment included all

Organisation & Date	Summary of Consultation Response	EIA/Design Response to Consultee
	to the LSE of the Proposed Development on the [Caithness and Sutherland Peatlands] SPA, impacts should be assessed for the SPA populations as well as at the NHZ level. Further advised that a robust cumulative assessment of collision risk, disturbance, displacement and barrier effects should take account of all operational, consented and proposed wind energy schemes, OHLs and their associated infrastructure that could impact on bird populations of both the relevant NHZ 5 and Caithness and Sutherland Peatlands SPA.	types and stages of development (where information was available). Where an IOF was a designated feature of an SPA population with potential connectivity to the Proposed Alignment footprint, the assessment was made against the SPA population only. This is considered to be the most appropriate scale for the relevant IOFs. The NHZ 5 populations of relevant IOFs will be larger than those within SPAs, and hence potential effects would affect a smaller proportion of the NHZ population compared with the SPA population. Where an IOF was not a designated feature of an SPA with potential connectivity to the Proposed Alignment footprint, the assessment was made against the NHZ 5 population.
	Advised that cumulative disturbance and displacement impact on birds from the increase in traffic and noise from the additional use of the existing Strathy North Wind Farm and 132 kV trident 'H' wood pole OHL access tracks during construction and maintenance of this Proposed Development should be included. Further advised that any identified impacts should be assessed against the relevant SPAs and NHZ populations.	All potential cumulative effects of the Proposed Alignment on IOFs, including additional use of existing access tracks were considered when completing the OIA. Details of the assessment of cumulative effects are included in section 8.13 As detailed in paragraph 8.7.255, where there was considered to be connectivity with an SPA, potential effects on the relevant IOF were assessed in the context of the SPA population. Where there was not considered to be potential connectivity with an SPA, potential effects on the relevant IOF were assessed in the context of the NHZ population (namely NHZ 5, the Peatlands of Caithness and Sutherland, within which the Proposed Alignment is located). This applied to the assessment of both the Proposed Alignment alone and cumulatively with other developments.
	Advised that in-combination effects of other relevant plans or projects within the wider NHZ 5 area a, such as the Sutherland Spaceport and overhead line grid connections at Limekiln and Creag Riabhach, should be considered.	Details of the developments included in the assessment of cumulative effects on IOFs are included in section 8.13 As noted above, where an IOF is a designated feature of an SPA with potential connectivity to the Proposed Alignment footprint, the assessment was made against the SPA population. Where this was not the case, the assessment was against the NHZ 5 population. In-combination effects on relevant European sites were also considered in the shadow HRA, which forms **Volume 4: Appendix V1-8.3 (confidential)**.

Organisation & Date	Summary of Consultation Response	EIA/Design Response to Consultee
	Advised that the EIA Report should fully discuss mitigation measures required to reduce predicted impacts during both construction and ongoing future maintenance and evidence should be provided for the assumed effectiveness of the proposed mitigation measures based on experience from other projects.	Proposed mitigation measures to reduce potential impacts on IOFs are detailed in section 8.11.
	Advised that flight activity (VP) survey data should be used in conjunction with NatureScot guidance on powerline developments to best minimise impacts on birds through design.	Survey data, including flight activity data, from the Proposed Alignment, together with relevant datasets from nearby developments, were used to inform the mitigation measures proposed in section 8.11 to reduce potential adverse effects of the Proposed Alignment on IOFs. Additionally, NatureScot (2016a) guidance on the assessment and mitigation of impacts of power lines and guyed meteorological masts on birds informed the proposed mitigation measures.
	Raised concerns that there is insufficient evidence that power line bird diverters are effective in protecting rare and protected species, such as raptors, divers and common scoter from collisions, noting that many bird species are unable to perceive fine detail in flight, particularly during adverse weather and nocturnal conditions when perception of diverter objects, and the cables to which they are attached, will be poor at best. Suggested that it is highly likely that fast-flying birds with low manoeuvrability will have insufficient response time to take evasive action.	As stated in NatureScot (2016a) guidance, line marking is the most common and practical form of wire collision mitigation worldwide, and research shows that it can reduce bird collisions for some species by 50-94% (reviewed in Prinsen *et al*., 2011). In the UK, there is evidence that line marking is effective in reducing wildfowl mortality, particularly for swans (Frost, 2008). It is acknowledged, however, that the efficacy of line marking varies between species and regions. This was taken into account when developing the line marking proposed as one of the mitigation measures in section 8.11.
Scottish Ministers 11th June 2024	Recommended that decisions on bird surveys – species, methodology, vantage points, viewsheds & duration - site specific & cumulative – should be made following discussion between the Company, RSPB and NatureScot.	NatureScot were consulted on the scope of bird surveys in 2021.
	Highlighted that the Proposed Development OHL route passes through the Caithness and Sutherland Peatlands SPA, SAC and Ramsar site and the West Halladale SSSI, and is adjacent to the East Halladale SSSI and within connectivity distance to qualifying features of the Caithness Lochs SPA. Advised that the EIA Report must include sufficient information to inform an AA, as required by The Conservation of Habitats and Species Regulations 2017.	Potential impacts of the Proposed Alignment on qualifying features of statutory sites of ornithological importance are considered in sections 8.10 and 8.12.1 of this Chapter and, where relevant, proposed mitigation to reduce adverse effects is presented in section 8.11. Potential effects on qualifying ornithological features of European sites are also considered in the shadow HRA, which forms **Volume 4: Appendix V1-8.3 (confidential)**.

8.5 Effects Scoped Out of the Assessment

8.5.1 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 Proposed 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.

8.5.2 All IOFs identified as being of Local or lower importance in section 8.10 were scoped out of the OIA.

8.5.3 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.

8.6 Legislation, Policy and Guidance

8.6.1 The key legislation, policy and guidance listed below has been considered when undertaking the OIA.

European Legislation, Policy and Guidance

- Directive 2009/147/EC on the Conservation of Wild Birds ('the Birds Directive') (European Parliament, 2009).
- Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) ('the Habitats Directive') (European Parliament, 1992).
- Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment ('the EIA Directive') (European Parliament, 2011), as amended by Directive 2014/52/EU (European Parliament, 2014).

National Legislation, Policy and Guidance

- The Wildlife and Countryside Act 1981 (UK Government, 1981) (W&CA).
- The Conservation (Natural Habitats &c) Regulations 1994 (as amended) ('the Habitats Regulations'). (UK Government, 1994).
- The Nature Conservation (Scotland) Act 2004 (as amended) (Scottish Government, 2004).
- The Conservation of Habitats and Species Regulations 2017, relating to specific activities (reserved matters) including consents granted under sections 36 and 37 of the Electricity Act 1989. (UK Government, 2017).
- Planning Advice Note 1/2013: Environmental Impact Assessment (Scottish Government, 2013).
- The Electricity Works (Environment Impact Assessment) (Scotland) Regulations 2017 (Scottish Government, 2017).
- Planning Advice Note 60: Planning for Natural Heritage (Scottish Government, 2020).
- National Planning Framework 4 (NPF4) (Scottish Government, 2023).

Other Guidance

- *Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms*, version 2. (NatureScot, 2017).
- *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Chartered Institute of Ecology and Environmental Management (CIEEM). (2018).
- *Environmental Impact Assessment Handbook* (NatureScot, 2018a).

- *Guidance - Assessment and mitigation of impacts of power lines and guyed meteorological masts on birds*. (NatureScot, 2016a).
- *Assessing connectivity with Special Protection Areas (SPAs)*, version 3. (NatureScot, 2016b).
- *Assessing significance of impacts from onshore wind farms outwith designated areas*, version 2 (NatureScot, 2018b).
- *Assessing the cumulative impacts of onshore wind farms on birds* (NatureScot, 2018c).
- *Environmental Statements and Annexes of Environmentally Sensitive Bird Information. Guidance for Developers, Consultants and Consultees*. (NatureScot, 2016c).
- *Disturbance Distances in selected Scottish Bird Species* (NatureScot, 2022).

8.6.2 Note that additional sources of information are referenced in the text where relevant.

8.7 Methodology

8.7.1 Ornithology field surveys of the Proposed Alignment were carried out between May and August 2022. Additionally, a desk study was completed to supplement the field survey results. Further details are provided below.

Desk Study

8.7.2 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 Highland Raptor Study Group (HRSG).

8.7.3 Ornithology field surveys of the Alternative Alignment were carried out by RPS between March and October 2023. Although the datasets collected were primarily used to inform the assessment of potential impacts on IOFs from the Alternative Alignment, due to the proximity of the survey areas to the Proposed Alignment, relevant records also informed the OIA for the Proposed Alignment.

8.7.4 Additionally, the following existing datasets from surrounding developments were reviewed to identify relevant records:

- Survey data for the proposed Melvich Wind Energy Hub collected by ITPEnergised between September 2020 and August 2022[4];
- Survey data for the proposed Kirkton Energy Park collected by Atmos Consulting between September 2019 and August 2021;
- Survey data for the proposed Strathy Wood Wind Farm Grid Connection collected by Stagfire Ecological Surveys Ltd and WSP between October 2018 and August 2019;
- Survey data for the proposed Armadale Wind Farm Grid Connection, collected by Blairbeg Consulting Ltd between September 2021 and August 2022;
- Monitoring data from the operational Strathy North Wind Farm, collected by RPS in 2016-19 (inclusive) and 2021; and
- Survey data for the consented Strathy Wood Wind Farm to the south of the Proposed Alignment, collected by Atmos Consulting during the 2018 and 2019 breeding seasons.

8.7.5 Full details of the desk study methods are presented in **Volume 4: Appendix V1-8.1.**

[4] Note that locations of certain breeding species were restricted to Confidential Figures, which were not publicly available, and were therefore of limited value for the desk study.

Field Surveys

8.7.6 Ornithology field surveys of the Proposed Alignment were carried out by Blairbeg Consulting Ltd between May and August 2022, comprising the following:

- Flight activity surveys (May to August 2022 inclusive); and
- Scarce breeding bird survey (May to July 2022).

8.7.7 The VP locations and viewsheds for the flight activity surveys and SBBS area are shown on **Volume 2: Figure V1-8.2**. Note that the survey areas were based on the optimal route option[1] at that time, which was similar to the Proposed Alignment, and a surrounding 500 m buffer.

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

Assessment of Effects

8.7.9 The approach used for the OIA is in line with guidance produced by CIEEM (2024) and NatureScot (2018a), and comprises the following stages:

- An evaluation of the importance of ornithological features identified through the field surveys and desk study. Those considered to be 'Important Ornithological Features' (IOFs) are scoped into the assessment, while those considered to be of Local or lower importance are scoped out;
- Identification and characterisation of potential effects on IOFs;
- Assessment of potential effects on IOFs, both from the Proposed Alignment alone and in combination with other developments in the surrounding area (cumulative effects);
- Identification of any measures required to avoid and mitigate (reduce) these effects; and
- Assessment of the significance of any residual effects after mitigation.

8.7.10 Further details relating to the methods used for evaluating the importance of ornithological features, characterising the magnitude of potential effects, and assessing significance are provided below.

Sensitivity/Importance of Ornithological Features

8.7.11 In accordance with CIEEM (2024) guidance, the level of importance of each ornithological feature identified during the field surveys and/or desk study has been determined within a geographic context as being of International, National, Regional, Local or Less than Local importance.

8.7.12 Features evaluated as being of Regional or higher importance are considered to be IOFs, while those of Local or lower importance are not considered to be IOFs and are scoped out of the assessment.

8.7.13 For sites, the level of importance is evaluated through a consideration of statutory designations and relevant legislation, as well as potential connectivity to the study area. A statutory site may be of international importance, but if there is no pathway for effects from the Proposed Alignment, e.g., no demonstrated or likely movement of features between the respective areas or no hydrological connectivity, it is not considered to be an IOF.

8.7.14 For bird species, the level of importance is evaluated through a consideration of relevant legislation, conservation status, population size and distribution and whether they are a designated feature of a statutory site (with potential connectivity to the study area), as well as NatureScot (2016a) guidance on selecting target species for assessment when considering the impacts of power lines.

8.7.15 CIEEM (2024) guidance also states that ecological features that should be subject to detailed assessment are those that are considered to be important *and* potentially affected by a project. Therefore, consideration was also given to the number of individuals using the study area, and the nature and level of use.

8.7.16 For example, if one or more pairs of a species listed on Schedule 1 to the W&CA was found to be breeding within the study area, the species would likely be of regional or higher importance (depending on whether or not it is a designated feature of a statutory site, as well as population status and trends). In contrast, if a Schedule 1-listed bird flew across the ornithology study area very occasionally, and the species was not considered to be using it regularly for breeding, roosting or foraging, or considered to be at risk of population-level effects, it is unlikely that it would be identified as an IOF.

8.7.17 Note that, in some cases, information relating to the size and/or distribution of local and regional bird populations can be limited or unavailable. Where this is the case and it is not clear whether a population is locally versus regionally (or regionally versus nationally) important, a precautionary approach is used, and the population is assessed as being of the higher level of importance.

Potential Effects

8.7.18 The main ways in which the Proposed Alignment could affect IOFs during the construction phase are via:

- Habitat loss and degradation due to construction of the Proposed Alignment and associated infrastructure, including new access tracks; and
- Disturbance/displacement resulting from the presence of personnel and presence/use of vehicles and machinery during construction of the Proposed Alignment and dismantling of redundant parts of the existing Strathy North 132 kV trident 'H' wood pole OHL.

8.7.19 The main ways in which the Proposed Alignment could affect IOFs during the operational phase are via:

- Disturbance/displacement of breeding, roosting and/or foraging resulting from the presence of personnel, and presence/use of vehicles and machinery during operational maintenance of the Proposed Alignment.
- Mortality/injury due to birds colliding with the OHL, or electrocution if attempting to perch or nest on it (as noted in paragraph 8.5.3, this has been scoped out).
- Barrier effects due to the Proposed Alignment presenting a barrier, either alone or cumulatively with other developments, to the movement of birds, restricting or displacing birds from much larger areas.

Magnitude of Effects

8.7.20 Magnitude refers to the size, amount, intensity and volume of an impact, determined on a quantitative basis, if possible, but typically expressed in terms of relative severity, such as high, medium, low, or negligible. Extent, duration, reversibility, timing, and frequency of the impact can be assessed separately but they tie in to determine the overall magnitude.

8.7.21 The following criteria were used to assess the magnitude of potential effects from the Proposed Alignment, both alone and in combination with other developments in the surrounding area (cumulative effects):

- High: an impact that could cause a fundamental change to the baseline condition of the IOF, leading to total loss or major alteration of the relevant population in the short to long-term, affecting the long-term viability.
- Medium: an impact that could cause a material change to the baseline condition of the IOF, leading to partial loss or alteration of the relevant population in the short to medium term, but which should not alter the long-term viability of the site/population.
- Low: an impact of small scale or short duration that could cause a slight, detectable, alteration of the baseline condition of the IOF, resulting in no long-term harm to the habitat/populations viability.
- Negligible: an Impact causing no, or a barely distinguishable, change from baseline conditions.

Significance of Effect

8.7.22 The overall significance of effect is defined using a combination of impact magnitude and sensitivity/importance of IOFs.

8.7.23 CIEEM (2024) guidance avoids and discourages use of the matrix approach to determine significance and describes only two categories: "significant" or "not significant". According to this guidance, for the purpose of EcIA, a "significant effect" is an effect that either supports or undermines biodiversity conservation objectives for important ecological features (which in this case would be IOFs) or for biodiversity in general.

8.7.24 NatureScot (2018b) guidance on assessing the significance of wind farm impacts on birds refers to maintaining the favourable conservation status of bird species, or where a species is already in decline, not affecting its recovery. Although this guidance relates to onshore wind farms, the advice regarding conservation status is considered to be applicable to other types of development, including grid connections.

8.7.25 Where potential connectivity with an SPA has been identified, significant effects on species are assessed in the context of potential effects on the conservation status of the SPA population (and the potential for LSEs on qualifying features of the SPA is considered in **Volume 4: Appendix V1-8.3**). In the case of species that are not designated features of an SPA with potential connectivity to the Proposed Alignment, the relevant scale for assessment of significant effects on conservation status of populations is considered to be NHZ 5 (the Peatlands of Caithness and Sutherland), within which the Proposed Alignment is located.

8.7.26 For some species that are not designated features of statutory sites, there is limited information on NHZ populations; in this situation effects on the conservation status of the regional or Scottish (national) population (depending on what data are available) have been considered when determining whether potential effects are likely to be significant.

8.7.27 For the purposes of this assessment, any effect that could threaten the integrity of a statutory site designated for ornithological features, or the favourable conservation status of a population, is considered to be significant. Where this is not the case, effects are considered to be not significant.

Limitations to the Assessment

8.7.28 Limitations to the 2022 field surveys completed for the Proposed Alignment are detailed in **Volume 4: Appendix V1-8.1**.

8.7.29 It is assumed that that datasets received from other developers and records received from third party organisations (RSPB and HRSG) were correct at the time of provision.

8.7.30 Assessment of cumulative effects was reliant on the availability and accuracy of information pertaining to other developments.

8.7.31 Additionally, as different projects sometimes employ different baseline survey and/or impact assessment methods, datasets often cannot be directly compared. Furthermore, confidential data and assessments are not publicly available, and as there is no compulsion for developers to share commercial data with other companies, it is often impossible to acquire a full dataset. Therefore, a comprehensive and quantitative cumulative impact assessment is rarely possible. However, every effort has been made to provide an assessment that is as robust as the available data allows.

8.7.32 There are no defined modelling methods for predicting the risk of birds colliding with OHLs. Given that the Proposed Alignment overlaps the Caithness and Sutherland Peatlands SPA and Ramsar site, and in line with current NatureScot (2016a) guidance, emphasis is therefore placed on installation of line markers as targeted mitigation to reduce potential collision risk to IOFs.

8.8 Baseline Conditions

Designations

8.8.1 The Proposed Alignment slightly overlaps with the Caithness and Sutherland Peatlands SPA and Ramsar site (approximately 250 m of the OHL and 45 m of the permanent access track), which is designated for a range of breeding duck, wader, diver and raptor species, as well as the West Halladale SSSI, which is a component of the SPA. The SSSI is designated for breeding common scoter, breeding black-throated diver and its breeding bird assemblage (as well as blanket bog).

8.8.2 Three additional SPAs, one of which is also a Ramsar site, and two additional SSSIs (both of which are components of the Caithness and Sutherland Peatlands SPA), are also located within the relevant study areas, as follows:

- East Halladale SSSSI, which is designated for breeding golden plover, breeding dunlin (*Calidris alpina*) and its breeding bird assemblage (as well as blanket bog), is located approximately 0.7 km to the east of the Proposed Alignment;
- Lochan Buidhe Mires SSSI, which is designated for its breeding bird assemblage (as well as blanket bog), is located approximately 1.9 km to the west of the Proposed Alignment;
- North Caithness Cliffs SPA, which is designated for breeding peregrine and several breeding seabird species, as well as its breeding seabird assemblage feature, is located approximately 2.5 km to the northeast of the Proposed Alignment;
- Caithness Lochs SPA and Ramsar site, which is designated for non-breeding greylag goose, Greenland white-fronted goose (*Anser albifrons flavirostris*) and whooper swan, is located approximately 12.7 km to the east of the Proposed Alignment; and
- North Sutherland Coastal Islands SPA, which is designated for non-breeding barnacle goose (*Branta leucopsis*), is located approximately 18.8 km to the northwest of the Proposed Alignment.

8.8.3 Further details of these sites are presented in **Volume 4: Appendix V1-8.1** and locations are shown in **Volume 2: Figure V1-8.4**.

8.8.4 It is also noted that the Proposed Alignment is located within the Flow Country WHS; an assessment of potential effects of the Proposed Alignment on this site, including IOFs, is presented in **Volume 4: Appendix V1-7.7**, and it is not considered further in this Chapter.

8.8.5 Additionally, the RSPB Forsinard Flows National Nature Reserve (NNR), which overlaps the Caithness and Sutherland Peatlands SPA, is located approximately 7.4 km to the south of the Proposed Alignment (at the closest point).

Desk Study

<u>Review of Survey Data from Surrounding Developments</u>

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

8.8.7 Single golden plover and snipe breeding territories were recorded within 500 m of the Proposed Alignment (including ancillary development) during 2021 surveys for Strathy North Wind Farm. These are shown in **Volume 2: Figure V1-8.5a**. Additionally, single possible territories of oystercatcher, snipe lapwing and curlew were identified within 500 m of the Proposed Alignment during 2020 surveys for Kirkton Energy Park, while a single potential curlew territory was identified within 500 m of the Proposed 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 V1-8.5a**. 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.

8.8.8 During surveys for surrounding developments (listed in paragraph 8.7.4), 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**.

8.8.9 The review of flight activity data identified that red-throated diver sometimes commuted over the Proposed Alignment. With the exception of greylag goose, pink-footed goose (*Anser brachyrhynchus*) and curlew, flight activity within 500 m of the Proposed Alignment (including ancillary development) by target species[5] was generally low, with no evidence of regular commuting routes. Flight lines of target species, except diver species, recorded within 500 m of the Proposed Alignment during flight activity surveys of the developments listed below are shown in **Volume 2: Figure V1-8.5**:

- 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).

8.8.10 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.

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

Data Requests

8.8.12 The RSPB provided a total of 16 records of six bird species, including two records of a passerine species, namely twite (*Linaria flavirostris*)[6]. Passerines are not generally considered to be of concern in relation to potential impacts from power lines (NatureScot, 2016a). Records of the remaining five species, namely common scoter, corncrake (*Crex crex*), golden eagle, hen harrier and white-tailed eagle, are summarised in **Volume 4: Appendix V1-8.2**. Note that the hen harrier records were more than 2 km from the Proposed Alignment and one of the golden eagle records was more than 6 km away.

8.8.13 The HRSG returned breeding records of three raptor species listed on Schedule 1 to the W&CA: golden eagle (two territories just over 6 km of the Proposed Alignment), merlin (a single territory within 2 km of the Proposed Alignment and a second territory in the wider area) and peregrine (a single historic territory within 2 km of the Proposed Alignment). Further details, including locations, are presented within **Volume 4: Appendix V1-8.2**.

[5] i.e., species identified as 'target' species for flight activity surveys at surrounding developments due to potential collision risk

[6] Acknowledgements: RSPB, Scottish Raptor Study Group, NatureScot, National Trust for Scotland, SCARABBS (Statutory Conservation Agencies and RSPB Breeding Birds Scheme), Manx BirdLife, Natural Resources Wales (NRW), Northern Ireland Environment Agency (NIEA), Isle of Man Department of Environment, Food and Agriculture on the Isle of Man and RSPB LIFE+ Hen Harrier Project.

Survey Data for the Alternative Alignment

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

8.8.15 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 V1-8.7a**.

8.8.16 Of the breeding wader territories recorded during the 2023 moorland breeding bird survey 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 of the Proposed Alignment (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 is those recorded in the wider survey area, more than 500 m from the Proposed Alignment) are shown in **Volume 2: Figure V1-8.7b**.

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

8.8.18 A black-throated diver summering territory (identified in Gilbert *et al*., (1998) as a pair/single adult recorded at the same site during two or more survey visits) was recorded within 2 km of the Proposed Alignment during the 2023 breeding diver surveys for the Alternative Alignment, 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.

Field Surveys

8.8.19 An overview of the field survey results is provided below. Further details are presented in **Volume 4: Appendices V1-8.1 and V1-8.2** within Volume 4 of this EIA Report.

8.8.20 A total of 135 flights by 14 identified species were recorded during the 2022 flight activity surveys, 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.

8.8.21 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 V1-8.6a**.

8.8.22 During the 2022 scarce breeding bird survey, 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. Two mallard (*Anas platyrhynchos*) territories were also recorded. It should be noted that, as the SBBS area included the proposed Strathy Wood Wind Farm

Grid Connection, both common sandpiper territories, two of the snipe territories and single territories of oystercatcher and golden plover were located more than 500 m from the Proposed Alignment. The locations of all aforementioned territories are shown in **Volume 2: Figure V1-8.6b**.

8.8.23 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 OHL but is within 500 m of ancillary infrastructure.

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

8.9 Mitigation by Design and Embedded Mitigation

8.9.1 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 below, while further targeted mitigation measures are detailed in section 8.11. In addition, opportunities for enhancements that will benefit IOFs have been identified where possible and are also outlined in section 8.11.

Mitigation by Design

8.9.2 Mitigation by design occurs during the design stage of a project, and in the case of the Proposed Alignment, during the design of the steel lattice towers that have been selected. Ornithological sensitivities were taken into account during the route, alignment and EIA stages of the Proposed Alignment, with the layout designed to minimise potential effects on IOFs as far as possible.

8.9.3 In general, electrocution of birds can occur on structures where the separation distance between phase conductors, or between earthed hardware and energised phase conductors, is less than the flesh-to-flesh distance of a bird. On a horizontal plane, the flesh-to-flesh distance is considered to be the wrist-to-wrist distance of a bird's wingspan; on a horizontal plane it is considered to be the bird's length from head-to-foot.

8.9.4 The L7c and L8c steel lattice towers have phase conductors which are respectively at least 3.8 m and 7.1 m apart. These dimensions are greater than the recommended minimum separation distances in Avian Power Line Interaction Committee (APLIC) (2006) guidance for eagle species[7], which are 1.5 m of horizontal separation and 1.0 m of vertical separation.

Embedded Mitigation

8.9.5 Embedded mitigation measures are those that have been incorporated into a project description and form an inherent part of the project design. The key type of embedded mitigation with relevance to ornithological features is implementation of a Bird Protection Plan (BPP) during construction of the Proposed Alignment to protect breeding birds and roosting Schedule 1A species (Schedule 1A to the W&CA) in accordance with relevant legislation. Proposed BPP measures are outlined below. Subsequent sections of this Chapter assume that the embedded mitigation described below will be fully implemented.

Bird Protection Plan

8.9.6 Under the W&CA, it is an offence to kill or injure any bird, or to damage or destroy nests and eggs. Breeding species listed on Schedule 1 to the Act are afforded additional protection from disturbance. In addition, golden eagle, hen harrier, red kite and white-tailed eagle are listed on Schedule 1A to the Act. Species listed in

[7] Eagle species are the IOFs with the largest wing spans that could potentially be at risk of electrocution from the OHL.

Schedule 1A to the W&CA are legally protected from harassment at all times (including during the non-breeding season).

8.9.7 As such, the good practice measures outlined below would be incorporated into a detailed BPP, developed post-consent, to ensure compliance with the legislation protecting breeding birds and roosting Schedule 1A species during construction of the Proposed Alignment. The exact measures would be determined in consultation with NatureScot but would likely include those outlined in **Table V1-8.2**.

Table V1-8.2: Outline BPP Measures to be Implemented during Construction

Type of Measure	Description
Appointment of an Ecological Clerk of Works (ECoW)	To ensure that embedded mitigation measures are reactive to changing conditions during the Proposed Development and compliant with relevant legislation protecting breeding birds and roosting Schedule 1A species, a suitably experienced ECoW would be appointed to oversee their implementation. The ECoW would regularly attend areas where works are planned throughout the construction phase of the Proposed Development, to identify any potential constraints to works and/or reactive mitigation needs, particularly if any works take place during the breeding bird season.
Appointment of a Professional Ornithologist	Although oversight of the BPP would be the responsibility of the ECoW, in order to ensure specialist technical support is available, if construction overlaps with the breeding bird season (defined as March to August inclusive) during one or more years, it is proposed that a suitably experienced and licensed ornithologist would be appointed throughout this period. The ornithologist would attend areas where works are planned on a regular basis and would have responsibility for implementing the measures included in the BPP and advising the ECoW on all ornithological matters (e.g., pre-commencement surveys, appropriate exclusion zones around any nest sites and any additional mitigation required to protect Schedule 1, 1A and Annex I species from disturbance or harassment).
Toolbox talk	A 'toolbox talk' would be delivered by the ECoW to ensure that all contractors working on the Proposed Development are aware of ornithological sensitivities and relevant legislation.
Timing of works	Where possible, construction works would take place outside the main breeding bird season (March to August inclusive).
Pre-construction checks for breeding crossbill (*Loxia curvirostra*)	Crossbill is listed on Schedule 1 to the W&CA and could potentially be breeding in coniferous woodland within the Proposed Development footprint and surrounding area. As the breeding season for crossbill species is defined as January to mid-December (NatureScot, 2021), a pre-construction check of areas of suitable habitat for nesting crossbill within 200 m of felling or other works would be completed by a suitably experienced and qualified ECoW, ahead of any construction works, regardless of the time of year.
Pre-construction surveys for other breeding Schedule 1/Annex I species	Where construction works are required during the breeding bird season and suitable habitat is present for breeding Schedule 1 and/or Annex I species, a suitably experienced and licenced ornithologist would complete targeted surveys for all relevant species, during the breeding season prior to commencement of construction works, to identify any nests or breeding territories (suspected or confirmed). The relevant species would be determined by the ornithologist, based on the habitats present and timing of the works, but as a minimum, would likely include common scoter, golden plover, red-throated diver, black-throated diver, hen harrier and merlin. The survey area would extend to the maximum disturbance buffer distance for the relevant species recommended in NatureScot (2022) guidance and would include nest sites identified during recent baseline surveys for the Proposed Development and surrounding developments (reviewed as part of the desk study), where suitable habitat still exists. The survey methods (including number of survey visits and timings) would

Type of Measure	Description
	be in accordance with standard species-specific surveys, as recommended in NatureScot (2017). Where works are scheduled to commence partway through the breeding season, NatureScot would be consulted to determine whether surveys should take place during that season and/or the preceding breeding season, and how many survey visits would be required per year. The survey findings would inform any additional mitigation measures deemed necessary to protect Schedule 1/Annex I breeding species from disturbance during construction of the Proposed Development.
Pre-construction checks for nesting birds	In addition to the surveys for breeding Schedule 1/Annex I species outlined above, prior to any felling or vegetation clearance within the breeding season (March to August inclusive), checks of the relevant works areas for nesting birds (all species) would be completed immediately prior to (within the preceding 72 hours) commencement of works in the relevant area. Where there is potential for Schedule 1/Annex I species to be present, checks would be completed by a suitably experienced and licensed ornithologist; where this is not the case, checks may be completed by the ECoW. For species listed on Schedule 1 to the WC&A and/or Annex I of the Birds Directive, as well as other non-passerine species of conservation concern, the search area would include suitable nesting habitat within a species-specific buffer of the works area. The buffer distance would be determined by the appointed ornithologist but, as a minimum, would be the maximum disturbance buffer in NatureScot (2022) guidance. For other species (e.g., passerines), it is proposed that suitable nesting habitat within a 50 m buffer around the works area would be an appropriate search area.
Protection of all nesting birds	If any nests or confirmed/suspected breeding territories of species listed on Schedule 1 to the W&CA or Annex I of the Birds Directive, are identified during pre-construction surveys or pre-construction nest checks, an exclusion zone around the nest (or territory) would be established. For breeding Schedule 1/Annex I species and non-passerine species, the exclusion zone would be appropriate to the species, in accordance with NatureScot (2022). For passerines species (except those listed on Schedule 1 to the W&CA), it is proposed that a 10 m exclusion zone would be appropriate. No works would be permitted within the exclusion zone and no personnel or vehicles would be allowed to enter or pass through it until the ECoW has confirmed that the breeding attempt has concluded. Where this is not feasible, NatureScot would be contacted, and further mitigation measures agreed to ensure compliance with relevant legislation protecting breeding birds. This could involve, for example, minimising the number of personnel and/or vehicles permitted to access the relevant area, restricting working hours, and employment of an ECoW to undertake a watching brief.
Additional protection of breeding Schedule 1/Annex I species	Additional, targeted measures to protect breeding Schedule 1/Annex I species throughout the construction phase of the Proposed Development would be required for common scoter, diver species and hen harrier and may also be required for other species. It is therefore proposed that targeted species protection plans are produced as required for relevant species, which would include common scoter, diver species and hen harrier as a minimum. Any additional species requiring a targeted protection plan would be identified during the pre-construction bird surveys, nesting bird checks and regular site presence of the professional ornithologist and appointed ECoW. Specific mitigation measures would be agreed with NatureScot but would likely include implementation of an appropriate disturbance buffer within which works are excluded whilst breeding birds are present, avoiding works within a wider buffer area during the most sensitive period early in the nesting attempt (Hardey *et al*., 2013) and/or during periods of cold or wet weather, restricting working hours to allow birds sufficient time to forage and a watching brief of any nests by a suitably experienced and licensed ornithologist whilst works are ongoing.

Type of Measure	Description
Surveys for roosting Schedule 1A species	If any roosting Schedule 1A species are identified within the Proposed Development footprint or surrounding area (at any time of year) and no measures are taken to protect them from disturbance, this could be considered to constitute reckless harassment. Therefore, where works are proposed in areas of suitable roosting habitat for a Schedule 1A species, regardless of the time of year, it is proposed that a pre-construction survey would be undertaken by a suitably experienced ornithologist, prior to commencement of works, to identify any regular roost sites. The survey area should include suitable habitat within 750 m of the works for hen harrier, within 500 m for eagle species and within 300 m for red kite[8], and surveys should follow the methods detailed in Hardey *et al*. (2013).
Protection of roosting Schedule 1A species	If any Schedule 1A species are confirmed or suspected to be roosting within 300-750 m of construction works (with the exact distance dependent on the species, as listed above), a specific protection plan would be developed to avoid disturbance to this species. Specific mitigation measures would be agreed with NatureScot but would likely include implementation of an appropriate disturbance buffer within which works are excluded whilst roosting birds are present.

8.9.8 Additionally, the Birds Directive, as implemented by the Habitats Regulations and the Conservation of Habitats and Species Regulations 2017, provides protection against deliberate disturbance of birds, particularly during the period of breeding and chick rearing (Article 5(d)). Many species listed on Schedule 1 to the W&CA are also listed on Annex I of the Birds Directive, but certain species, such as golden plover and short-eared owl (*Asio flammeus*) are only included on the latter. Whilst it may not be illegal to disturb a breeding species listed on Annex I of the Birds Directive that is not also included on Schedule 1 to the W&CA, to ensure delivery of the objectives of the Directive, disturbance should not adversely affect the species' conservation status (NatureScot, 2016d).

8.9.9 Compared with construction works, routine operational maintenance is expected to be limited both spatially and temporally. However, should significant operational maintenance works be required during the breeding bird season, or if any roosting Schedule 1A species are suspected or confirmed to be present, implementation of the mitigation measures outlined above in **Table V1-8.2** would be implemented to protect breeding birds and roosting Schedule 1A species, and ensure compliance with relevant legislation.

8.9.10 As decommissioning works are likely to be of a similar nature and duration as construction activities, it is proposed that the mitigation outlined above would also be implemented during the decommissioning phase, following review and update (if required) to ensure compliance with relevant guidance and legislation at the time.

8.10 Assessment of Likely Significant Effects

Identification of IOFs

8.10.1 An evaluation of the importance of ornithological features identified during the field surveys and/or desk study is provided in **Table V1-8.3**.

8.10.2 Statutory sites and species evaluated as being of Regional or higher importance are considered to be IOFs and are taken forwards for detailed assessment in subsequent sections, while those of Local or lower importance are not considered to be IOFs and have been scoped out of the assessment.

[8] As the Proposed Alignment is outside the current wintering range for this species (Balmer *et al*., 2007), it is considered unlikely that roosting red kite will be present. However, as the range is expanding and potentially suitable habitat is present, it has been included for completeness.

8.10.3 Note, however, that the BPP described above in section 8.9 'Mitigation by Design and Embedded Mitigation' would ensure that all breeding birds are protected during construction works, including those of Local or lower importance.

8.10.4 In addition, the Outline HMP, which forms **Volume 4: Appendix V1-7.8**, is likely to benefit a range of upland breeding birds, including some species not identified as IOFs.

Table V1-8.3: Evaluation of Ornithological Features

Importance Level*	Ornithological Feature	Justification
International	Caithness and Sutherland Peatlands SPA and Ramsar site	The Proposed Alignment overlaps with this internationally designated statutory site, and several of the qualifying features were recorded during field surveys, and/or identified during the desk study, within the relevant study areas. This included several breeding species.
	North Caithness Cliffs SPA	The Proposed Alignment is located approximately 2.5 km from this statutory site of international nature conservation importance (at the closest point), which is just outside the core foraging range for breeding peregrine (2 km; NatureScot, 2016b), a qualifying feature of the SPA. It is also designated for a number of breeding seabird species and its breeding seabird assemblage, but the habitats present within and around the Proposed Alignment site are considered unsuitable to support breeding or foraging seabirds. Due to potential impacts on the breeding peregrine qualifying interest feature, the SPA was scoped into the assessment as a precautionary approach.
	Caithness Lochs SPA and Ramsar site	This site, which is of international ornithological importance, is designated for non-breeding greylag goose, Greenland white-fronted goose and whooper swan. The Proposed Alignment is located approximately 12.7 km to the west of the site (at the closest point), which is within the core foraging range for non-breeding greylag goose (15-20 km; NatureScot, 2016b), but outside the core foraging ranges of the other two qualifying features. Although there was no evidence that greylag geese (or other qualifying features of the SPA) regularly forage within or around the Proposed Alignment site, there was some greylag goose and whooper swan flight activity across it, which could potentially relate to migratory flights of SPA birds. Therefore, given the importance of this site, it was scoped into the assessment as a precautionary approach.
	Greylag goose	Greylag goose is a designated feature of the Caithness Lochs SPA and Ramsar site and an Amber-listed BoCC (Stanbury *et al*., 2021). It is unclear whether breeding greylag goose is still a qualifying feature of the Caithness and Sutherland Peatlands Ramsar site – the NatureScot SiteLink website (NatureScot, 2024c) lists it as a feature, whereas the Ramsar site citation (NatureScot, 2023b) does not and the Ramsar site information sheet (RIS) contains conflicting

Importance Level*	Ornithological Feature	Justification
		information (Joint Nature Conservation Committee, [JNCC], 2005)[9]. An incidental record of greylag goose within 500 m of the Proposed Alignment indicated that the species bred nearby in 2022, but no other breeding records were identified within 500 m of the Proposed Development and there was no evidence that the species regularly foraged within or around it (habitats present are considered to be suboptimal). However, there was some flight activity across the Proposed Alignment site, which could relate to birds from the Caithness Lochs SPA population. Greylag goose was therefore scoped into the assessment.
	Common scoter	This species is a designated feature of the Caithness and Sutherland Peatlands SPA and Ramsar site. No common scoter were recorded during surveys for the Proposed Alignment and no records of breeding birds were identified within 500 m during the desk study. However, records of non-breeding birds within 2 km of the Proposed Alignment were identified during the desk study and, given the small size of the breeding population and concerns raised by NatureScot and RSPB Scotland regarding potential impacts to this species, a precautionary approach was adopted, and this species was scoped into the assessment.
	Golden plover Red-throated diver Black-throated diver Golden eagle Hen harrier Merlin	These species are designated features of the Caithness and Sutherland Peatlands SPA and Ramsar site and, with the exception of golden eagle, breeding birds were recorded during field surveys, and/or identified during the desk study, within the relevant study areas.
	Peregrine	Breeding peregrine is a designated feature of the North Caithness Cliffs SPA and the Proposed Alignment is located approximately 2.5 km away (at the closest point), which is just outside the core foraging range for this species (2 km; NatureScot, 2016b). Peregrine is also listed as part of the breeding bird assemblage of East Halladale SSSI (NatureScot, undated a) and Lochan Buidhe Mire SSSI (NatureScot, undated b). Low levels of flight activity within 1 km of the Proposed Alignment were recorded during some of the surveys for surrounding developments reviewed as part of the desk study and the HRSG provided details of a historic peregrine breeding territory within the study area.
National	West Halladale SSSI East Halladale SSSI Lochan Buidhe Mires SSSI	Based on the proximity of these nationally important statutory sites to the Proposed Alignment (the first of which overlaps the Proposed Alignment and the other two which are <2 km away) and records of notified features identified during the field surveys, and/or desk study, there is

[9] The Overview section of the RIS states that the Ramsar site supports "*internationally important populations of North Scottish greylag goose and dunlin…*" but only dunlin Is listed under the justification for the application of Ramsar criterion 6 – species/populations occurring at levels of international importance.

Importance Level*	Ornithological Feature	Justification
		considered to be potential connectivity with all three SSSIs.
	Whooper swan	Although whooper swan is a designated feature of the Caithness Lochs SPA and Ramsar site, as noted above, there is not considered to be any potential connectivity between the Proposed Alignment and the Caithness Lochs SPA/Ramsar site whooper swan population. Whooper swan is included on Schedule 1 to the W&CA, Annex I of the Birds Directive, the UK BoCC Amber list (Stanbury *et al*., 2021) and the Scottish Biodiversity List (SBL), although the Schedule 1 listing relates to breeding birds, which are not present within/around the Proposed Alignment. Although there was no evidence that whooper swan made regular use of the area within or around the Proposed Alignment site and the majority of habitat present is suboptimal for foraging birds, low levels of flight activity by this species were recorded across the Proposed Alignment site which could potentially relate to migratory flights of birds from the Caithness Lochs SPA population. Given the importance of the SPA population and small size of the NHZ 5 wintering whooper swan population, which numbers 190 birds (Wilson *et al*., 2015), it was scoped into the assessment as a precautionary approach.
Regional	Curlew	Although curlew is not a qualifying/notified feature of any nationally or internationally designated site with potential connectivity to the Proposed Alignment site, it is included on 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**). Several curlew breeding territories were identified within 500 m of the Proposed Alignment during the field surveys and desk study and some flight activity was recorded, particularly towards the eastern end of the Proposed Alignment.
	Osprey White-tailed eagle	Neither species is a qualifying/notified feature of any nationally or internationally designated site with potential connectivity to the site where the Proposed Alignment is located. However, both species are listed on Schedule 1 to the W&CA, Annex I of the Birds Directive, the UK Birds of Conservation Concern (BoCC) Amber list (Stanbury *et al*., 2021) and the SBL. Additionally, white-tailed eagle is listed on Schedules 1A and A1 to the W&CA. Registrations of both species were infrequent, with no evidence of regular flight activity over the Proposed Alignment, and no white-tailed eagle breeding territories were identified within 6 km. However, there were desk study records of an osprey nest site and a white-tailed eagle roost site within 2 km of the Proposed Alignment.
	Barn owl	Although barn owl is not a qualifying/notified feature of any nationally or internationally designated site with potential

Importance Level*	Ornithological Feature	Justification
		connectivity to the site where the Proposed Alignment is located, it is listed on Schedule 1 to the W&CA and the SBL. Additionally, white-tailed eagle is listed on Schedules 1A and A1 to the W&CA. A single barn owl breeding territory and roost site was identified within 2 km of the Proposed Alignment.
Local	North Sutherland Coastal Islands SPA	Although this is a statutory site of international nature conservation importance, the Proposed Alignment is located outwith the core foraging range for non-breeding barnacle goose (15 km; NatureScot, 2016b). The species was not recorded during the field surveys and only one record of this species was identified during the desk study (a single flight of four birds recorded over 2 km to the south of the Proposed Alignment during 2020 surveys for Kirkton Energy Park). Furthermore, it is considered that the habitats around the Proposed Alignment are unsuitable for foraging barnacle goose. As such, there is not considered to be any connectivity with this SPA, and it has therefore been scoped out of the assessment.
	Pink-footed goose	Pink-footed goose is not a qualifying feature of any SPA or Ramsar site within 20 km of the Proposed Alignment. There was no evidence that birds were regularly foraging on or around the Proposed Alignment site. Although multiple pink-footed goose flights crossed the Proposed Alignment, it is considered likely that birds would be flying above potential collision height as there was no evidence of foraging birds coming into land/taking off within or around the Proposed Alignment. Furthermore, the NatureScot website states that "*In light of the robust population and its high avoidance rate of 99.8%, collision risk modelling for pink-footed geese is only required if a proposal has connectivity with a protected area where this species is a qualifying interest*." (NatureScot, 2024a). Although this is in relation to onshore wind farms, it is considered to be relevant to OHLs also.
	Wigeon (*Mareca penelope*) Dunlin Wood sandpiper (*Tringa glareola*) Greenshank (*T. nebularia*) Short-eared owl	Although these species are designated features of SPAs within the study area, there were no records of wood sandpiper or short-eared owl during the field surveys, and none were identified during the desk study. For the other species, no breeding birds within the maximum species-specific disturbance buffer in NatureScot (2022) guidance were recorded during field surveys or identified during the desk study. Additionally, where flights were recorded, these were infrequent, with no commuting routes identified over/towards the Proposed Alignment for any species. Based on the habitats present and patterns of historical activity, it is considered unlikely that levels of breeding or flight activity around the Proposed Alignment would change to such an extent in the future that there could be significant effects on breeding populations of any of these species. Note that, where these species are potentially part of the breeding bird assemblage feature of a SSSI scoped into

Importance Level*	Ornithological Feature	Justification
		the assessment, potential impacts of the Proposed Alignment on the assemblage feature as a whole are assessed.
	Corncrake	The RSPB returned two registrations of corncrake recorded at the same site in 2013 and considered to represent a breeding territory. Although this was within the study area, it was several hundred metres from the Proposed Alignment and is not considered to be within potential disturbance distance (NatureScot (2016b) guidance recommends a disturbance buffer of ≥100 m for breeding corncrake). Based on the species breeding range and habitat requirements, there is considered to be negligible potential for any impacts from the Proposed Alignment on breeding corncrake.
	Mallard Teal (*Anas crecca*) Red grouse (Lagopus scotica) Cuckoo (*Cuculus canorus*) Oystercatcher Lapwing Snipe Common sandpiper Gull species Kestrel	These non-passerine species are all included on the UK BoCC Red or Amber List (Stanbury *et al*., 2021) and/or SBL. Based on the low levels of flight activity and absence/low numbers of breeding territories recorded, particularly in the context of Scottish breeding populations, it is considered that the Proposed Alignment would not have a significant effect on breeding populations of any of these species. Furthermore, nesting birds would be protected through implementation of the BPP outlined above in section 8.9. As such, there is not considered to be any potential for population level effects on any of these species. Note that, where these species are potentially part of the breeding bird assemblage feature of a SSSI scoped into the assessment, potential impacts of the Proposed Alignment on the assemblage feature as a whole are assessed.
	Red kite (*Milvus milvus*)	Red kite is listed on Schedules 1 and 1A to the W&CA and the SBL and Annex I of the Birds Directive. A single registration of red kite within 1 km of the Proposed Alignment was identified during the desk study (one bird during 2019 flight activity surveys at Strathy North Wind Farm). The Proposed Alignment is outside the breeding range of this species (Balmer *et al*., 2013) and it is considered unlikely that levels of activity would change to such an extent in the future that there could be significant effects on breeding populations of this species.
	Crossbill	A small of desk study records crossbill were identified within 500 m of the Proposed Alignment and it is possible that birds could be breeding in the small areas of coniferous woodland habitat present within and adjacent to the Proposed Alignment footprint. However, given the limited extent of suitable habitat, it is highly unlikely that crossbill would be breeding in notable numbers and there is not considered to be any potential for the Proposed Alignment to have any population-level effects. Although crossbill is listed on Schedule 1 to the W&CA, NatureScot (2017) guidance on survey methods for

Importance Level*	Ornithological Feature	Justification
		onshore wind farm developments advises that, while this species may need to be taken into account for developments in commercial forestry in relation to species protection plans, any survey required would be undertaken prior to construction (following consent). To ensure compliance with legislation protecting Schedule 1 species, pre-construction checks for breeding crossbill are included within the BPP.
	Passerine species listed on the UK BoCC Red or Amber list (Stanbury *et al*., 2021) and/or SBL	Passerine species are not generally considered to be of concern in relation to potential impacts from OHLs (NatureScot, 2016a) and it is considered unlikely that the Proposed Alignment would have a significant impact on any passerine populations.
Less than local	Black grouse (*Lyrurus tetrix*)	Although it Is included on the UK BoCC Red list (Stanbury *et al*., 2021) and the SBL and targeted surveys for this species were completed for the proposed Strathy Wood Grid Connection, no records of black grouse were identified and the Proposed Alignment is outside the species breeding range (Balmer *et al*., 2013).
	All species not covered above, i.e., Green-listed species of low conservation concern that are not listed on Schedule 1 to the W&CA or Annex I of the Birds Directive	These species are generally common, widespread and of low conservation concern, and are considered to be at low risk of adverse population-level effects from wind farm developments. Although the Proposed Alignment is not a wind farm, these species were not present in exceptional or unusual numbers and the risk of significant adverse population-level effects from the Proposed Alignment on any of these species is considered to be negligible.
*IOFs of Local or lower importance (shaded) have been scoped out of the OIA		

Construction Effects

8.10.5 As stated in paragraph 8.7.18, the main ways in which the Proposed Alignment could affect IOFs during the construction phase are via:

- Habitat loss and degradation due to construction of the Proposed Alignment and associated infrastructure, including new access tracks; and
- Disturbance/displacement resulting from the presence of personnel and presence/use of vehicles and machinery during construction of the Proposed Alignment and dismantling of redundant parts of the existing Strathy North 132 kV trident 'H' wood pole OHL.

8.10.6 Direct habitat loss relates to the loss of habitat to infrastructure (including new access tracks). Indirect effects relate to habitat fragmentation and or degradation related to proximity of construction activities.

8.10.7 Note that habitat loss does not include functional loss; i.e., where disturbance or displacement would constrain use of a particular area of habitat by an IOF for breeding, foraging and/or roosting. This is assessed separately under disturbance/displacement.

8.10.8 As described in **Volume 1: Chapter 7 - Ecology**, an area of 41.54 ha would be lost due to construction of the Proposed Alignment. This includes 7.22 ha of direct permanent habitat loss, 29.04 ha of indirect permanent habitat loss and 5.28 ha of temporary habitat loss. Further details of habitat loss calculations are included in **Volume 1: Chapter 7: Ecology**.

8.10.9 During the construction phase of the Proposed Alignment there would be increased levels of activity by site personnel, vehicles and machinery, resulting in increased levels of noise and visual disturbance. This could lead to the temporary disturbance and/or displacement of breeding, foraging and/or roosting birds. The magnitude of potential effects depends on the following:

- The timing of the works;
- The magnitude of the disturbance;
- The extent of displacement (both spatially and temporally);
- The availability of suitable habitats in the surrounding area for any displaced birds to occupy; and
- The behavioural sensitivity of the relevant bird species.

8.10.10 Potential construction effects of the Proposed Alignment on each IOF are assessed below, with IOFs considered in order of importance level (and by taxonomic order[10] within each importance category). To minimise repetition, species of the same Importance level, and with similar habitat requirements and ecology, are assessed together.

Caithness and Sutherland Peatlands SPA and Ramsar Site

8.10.11 The Caithness and Sutherland Peatlands SPA is designated for breeding populations of the following species: wigeon, common scoter, golden plover, dunlin, wood sandpiper, greenshank, red-throated diver, black-throated diver, golden eagle, hen harrier, short-eared owl and merlin. With the exception of the raptors (the latter four species), these species are also qualifying features of the Caithness and Sutherland Peatlands Ramsar site.

8.10.12 With the exception of common scoter, for which the latest assessed[11] condition (in June 2013) is 'Unfavourable Declining' and short-eared owl, the condition of which was not assessed, the latest assessed condition of each qualifying feature is categorised as 'Favourable Maintained' (NatureScot, 2024b).

8.10.13 The Proposed Alignment overlaps the Caithness and Sutherland Peatlands SPA and Ramsar site and, in total, 0.164 ha of habitat within the SPA and Ramsar site would be lost due to construction of the Proposed Alignment. This includes 0.023 ha of direct permanent habitat loss, 0.030 ha of temporary habitat loss and 0.109 ha of indirect permanent habitat loss due to habitat change. The total habitat loss (0.164 ha) represents 0.0001 % of the SPA and Ramsar site which cover 147,726.54 ha (NatureScot, 2023a) and 145,960.53 ha[12] (NatureScot, 2023b) respectively. Potential effects on the SPA itself due to habitat loss are assessed as being Minor adverse and **not significant** in terms of the EIA Regulations (see **Volume 1: Chapter 7 – Ecology**).

8.10.14 Although potential indirect effects on SPA habitats due to habitat degradation associated with construction works is possible, e.g., due to pollution during construction of the Proposed Alignment, it is anticipated that such effects would be avoided through implementation of relevant mitigation measures detailed in **Volume 4: Appendix V1-3.4: SSEN Transmission General Environmental Management Plans (GEMPs)** and **Appendix V1-3.8: Outline Construction Environmental Management Plan (CEMP)**. As such, they are assessed as being of low magnitude and **not significant** under the EIA Regulations.

8.10.15 As there is some overlap between the Proposed Alignment and the Caithness and Sutherland Peatlands SPA, there is potential for direct and indirect impacts to qualifying features within the SPA itself due to habitat loss (i.e. loss of nesting and foraging habitat) and disturbance/displacement of breeding and foraging birds during construction of the Proposed Alignment.

[10] Hierarchical ranking system used to classify organisms

[11] By NatureScot

[12] The Caithness and Sutherland Peatlands site boundary lies within the Caithness and Sutherland Peatlands SPA, which underpins all the bird features of the Ramsar site and is coincident with the Caithness and Sutherland Peatlands Special Area of Conservation (SAC), which underpins the other features of the Ramsar site (NatureScot, 2023b).

8.10.16 Potential effects on individual qualifying features of the SPA identified as IOFs (namely common scoter, golden plover, red-throated diver, black-throated diver, golden eagle, hen harrier and merlin) due to construction of the Proposed Alignment are discussed below, with further details of the assessment of potential construction phase effects presented in **Volume 4: Appendix V1-8.2** where this includes sensitive information.

8.10.17 There was no evidence that other qualifying features of the SPA, namely wigeon, dunlin, wood sandpiper, greenshank and short-eared owl) were breeding within 500 m of the Proposed Alignment, which is the maximum disturbance buffer recommended in NatureScot (2022) guidance for these species. Therefore, there is no potential for loss of known nest sites or disturbance of nesting birds within identified territories. Furthermore, in the event that any of these species do nest within 500 m of the Proposed Alignment in future (immediately prior to or during construction) they would be protected through implementation of the BPP outlined in section 8.9.

8.10.18 Although some SPA-qualifying birds breeding in the wider area could be affected by loss of suitable nesting and/or foraging habitat or displacement of foraging birds, the extent of habitat loss will be relatively small, and is likely to be sub-optimal in comparison to the large extent of suitable habitat within the SPA and Ramsar site. This is supported by the lack of records (wood sandpiper and short-eared owl) or low levels of activity, which indicates that these species make no more than occasional use of the Proposed Alignment site. Correspondingly, it is considered highly unlikely that there would be significant disturbance to foraging birds.

8.10.19 Potential construction phase effects of the Proposed Alignment on qualifying features of the Caithness and Sutherland Peatlands SPA and Ramsar site that were not identified as IOFs are assessed as being of low magnitude and **not significant** under the EIA Regulations.

8.10.20 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 Proposed Alignment.

North Caithness Cliffs SPA

8.10.21 The North Caithness Cliffs SPA 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.

8.10.22 As the SPA is located approximately 2.5 km to the northeast of the Proposed Alignment (at the closest point), there will be no habitat loss within the SPA and there is not considered to be any potential for indirect effects on SPA habitats due to habitat degradation associated with construction works (e.g., due to pollution) or direct effects due to disturbance/displacement of breeding populations of qualifying species.

8.10.23 NatureScot (2016b) guidance gives a core foraging range for breeding peregrine of 2 km. As the Proposed Alignment is just over 2 km of the North Caithness Cliffs SPA and there is functionally linked land between the SPA and the Proposed Alignment site, it is possible that construction of the Proposed Alignment could have potential impacts on nesting and/or foraging birds. These are discussed below under the species assessment.

8.10.24 As there is no functionally linked foraging habitat for breeding seabirds between the North Caithness Cliffs SPA and the Proposed Alignment site, there is not considered to be any potential for disturbance/displacement of nesting or foraging seabirds.

8.10.25 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 Proposed Alignment.

Caithness Lochs SPA and Ramsar site

8.10.26 The Caithness Lochs SPA and Ramsar site is designated for non-breeding populations of greylag goose, Greenland white-fronted goose and whooper swan.

8.10.27 As the SPA is located approximately 12.7 km to the east of the Proposed Alignment (at the closest point), there will be no habitat loss within the SPA and there is not considered to be any potential for indirect effects on SPA habitats due to habitat degradation associated with construction works (e.g., due to pollution) or direct effects due to disturbance/displacement of qualifying species whilst they are roosting within the SPA.

8.10.28 The Proposed Alignment is located within the core foraging range for wintering greylag goose (15-20 km; NatureScot, 2016b), one of the qualifying features of the SPA. However, a study by Mitchell (2012) suggests that birds rarely forage to the west of the SPA and the Proposed Alignment is outside core foraging areas. Furthermore, the majority of the habitat within and around the Proposed Alignment is considered to be sub-optimal for foraging greylag goose and there was no evidence that birds regularly forage within or around surrounding developments. This is supported by another study by Patterson *et al*. (2013), which identified suitable foraging habitat within 25 km of the SPA, all of which is located to the east of the Proposed Alignment.

8.10.29 The Proposed Alignment is located outside the core foraging range of both wintering Greenland white-fronted goose and wintering whooper swan (5-8 km and <5 km respectively; NatureScot, 2016b), which are the only other qualifying features of the SPA and Ramsar site. Additionally, as for greylag goose, the majority of the habitat within and around the Proposed Alignment is considered to be sub-optimal for foraging Greenland white-fronted goose and whooper swan.

8.10.30 Potential construction phase effects of the Proposed Alignment on qualifying features of the Caithness Lochs SPA and Ramsar site are assessed as being of negligible magnitude and **not significant** under the EIA Regulations.

8.10.31 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 Proposed Alignment.

Greylag Goose

8.10.32 Wintering greylag goose is a qualifying feature of the Caithness Lochs SPA. The NatureScot SiteLink website (NatureScot, 2024c) lists breeding greylag goose as a feature of the Caithness and Sutherland Peatlands Ramsar site, although it is not included in the SPA citation (NatureScot, 2023ab, while the Ramsar site information sheet (JNCC, 2005) contains conflicting information[9]. For the purposes of the assessment, it is assumed that the Ramsar site citation (NatureScot, 2023b) includes the most up-to-date information and breeding greylag goose is not a qualifying interest feature of the Ramsar site. Greylag goose is included on the UK BoCC Amber list (Stanbury *et al.*, 2021) and is a component of both the East Halladale SSSI and West Halladale SSSI breeding bird assemblage feature (NatureScot, undated a, c).

8.10.33 An incidental record of an adult greylag goose with two juveniles was identified within 500 m of the Proposed Alignment (on Loch Earacha), indicating that the species bred nearby in 2022, but no other breeding records were identified within 500 m of the Proposed Development, indicating that the study area is of limited suitability for breeding birds. Furthermore, the BPP outlined in section 8.9 includes measures to protect all nesting birds.

8.10.34 As noted above, the separation distance between the Proposed Alignment site and the Caithness Lochs SPA and Ramsar site is within the core foraging range for wintering greylag goose (15-20 km; NatureScot, 2016b). However, studies by Mitchell (2012) and Patterson *et al*. (2013) suggest that the Proposed Alignment is well outside core foraging areas. Furthermore, the majority of the habitat within and around the Proposed Alignment

is considered to be sub-optimal for foraging greylag goose and there was no evidence that birds regularly forage within or around surrounding developments.

8.10.35 Given there was only one record of breeding birds within 500 m of the Proposed Alignment and the lack of records of foraging birds, potential construction phase effects on the Caithness and Sutherland Peatlands SPA and Ramsar site breeding greylag goose population or the Caithness Lochs SPA and Ramsar site wintering population (including foraging birds) and the East Halladale SSSI and West Halladale SSSI breeding populations due to habitat loss or displacement/ disturbance, are assessed as being of negligible magnitude and **not significant** under the EIA Regulations.

Common Scoter

8.10.36 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 BoCC Red list (Stanbury *et al*., 2021) and the SBL.

8.10.37 The SPA breeding population was estimated at a minimum of 21 pairs in 2007 (NatureScot, 2023a), although, a spreadsheet of collision rates for developments in North Highland (dated 29/05/2024) provided by NatureScot (2024d) to inform the cumulative assessment cites an SPA population of 26 common scoter breeding pairs based on 2007 Site Condition Monitoring (SCM)[13]. The latest assessed condition of the population (on 3rd June 2013) was 'Unfavourable Declining' (NatureScot, 2024b).

8.10.38 There were no observations of common scoter during the 2022 surveys for the Proposed Alignment and no records of breeding birds within 500 m of the Proposed Alignment were identified during the desk study. The RSPB returned five records of non-breeding common scoter within 2 km of the Proposed Alignment. These are detailed in **Volume 4: Appendix V1-8.2: Ornithology Confidential Annex (Confidential)**.

8.10.39 As there is not considered to be any suitable nesting or foraging habitat for common scoter within the Limit of Deviation (LoD) of the Proposed Alignment, potential effects on the SPA breeding populations due to habitat loss during construction of the Proposed Alignment are considered to be of negligible magnitude and **not significant** under the EIA Regulations.

8.10.40 NatureScot (2022) guidance recommends a disturbance buffer of 300-500 m for breeding common scoter. Given the lack of desk study records of breeding common scoter records within 500 m of the Proposed Alignment, it is considered unlikely that birds would begin breeding within 500 m prior to construction. This is discussed in more detail in **Volume 4: Appendix V1-8.2**.

8.10.41 However, the possibility that birds could breed within potential disturbance distance of the Proposed Alignment cannot be entirely excluded. The BPP outlined in section 8.9 includes measures to protect breeding species listed on Schedule 1 of the W&CA and/or Annex I of the Birds Directive, including common scoter, from disturbance.

8.10.42 Following implementation of the BPP outlined in section 8.9, potential effects on the Caithness and Sutherland Peatlands SPA breeding common scoter population due to disturbance/displacement during construction of the Proposed Alignment are considered to be of negligible to low magnitude and **not significant** under the EIA Regulations.

Golden Plover

8.10.43 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.

[13] 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.

8.10.44 The SPA population was estimated at 1,064 pairs in 1993 and 1994 (NatureScot, 2023a). However, a spreadsheet of collision rates for developments in North Highland (dated 29th May 2024) provided by NatureScot (2024b) to inform the cumulative assessment cites 1,922 golden plover breeding pairs as the most recent SPA population estimate, based on 2009 SCM.

8.10.45 During surveys for the Proposed Alignment, four possible golden plover breeding territories were identified within 500 m of the Proposed Alignment site (in 2022). Single golden plover breeding territories were also recorded within 500 m of the Proposed Alignment during 2021 surveys for Strathy North Wind Farm and 2023 surveys for the Alternative Alignment.

8.10.46 As one of the 2022 breeding territories is within the LoD of the Proposed Alignment, there is some potential for a nest site to be lost. While some of the additional habitat that would be lost could also be potentially suitable for nesting and/or foraging golden plover, there is no evidence to suggest the areas being lost are particularly valuable or exceptional as breeding or foraging habitat for this species.

8.10.47 Furthermore, given the limited extent of habitat that would be lost, relatively large core foraging range of breeding birds (3 km; NatureScot, 2016) 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.

8.10.48 As there is some overlap between the Proposed Alignment and the Caithness and Sutherland Peatlands SPA, there is potential for direct disturbance to the SPA breeding golden plover population due to construction of the Proposed Alignment. NatureScot (2022) guidance recommends a disturbance buffer of 200-500 m for breeding golden plover. As noted above, a maximum of four golden plover pairs were present within 500 m of the Proposed Alignment during a single survey year (in 2022). However, implementation of the BPP (outlined above in section 8.9) would ensure that any nesting birds are protected during construction of the Proposed Alignment.

8.10.49 As such, effects on the Caithness and Sutherland Peatlands SPA golden plover breeding population due to disturbance/displacement during the construction of the Proposed Alignment are assessed as being of low magnitude and **not significant** under the EIA Regulations.

Red-throated and Black-throated Divers

8.10.50 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).

8.10.51 The SPA populations were estimated at 46 red-throated diver pairs in 2006 and 26 black-throated diver pairs in 1994 (NatureScot, 2023a). 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, 2024d) that informed the cumulative assessment, cites 20 black-throated diver breeding pairs as the most recent SPA population estimate, based on 2018 SCM.

8.10.52 Three red-throated diver breeding territories (two confirmed and one possible) were identified within 2 km of the Proposed Alignment during the field surveys and desk study. A further three red-throated diver breeding territories (two confirmed and one possible) were identified in the wider study area (more than 2 km from the Proposed Alignment) during the desk study.

8.10.53 During the desk study, a confirmed black-throated diver breeding territory was identified within 2 km of the Proposed Alignment, and two additional (confirmed) black-throated throated diver breeding territories were identified in the wider study area (more than 2 km from the Proposed Alignment).

8.10.54 Further details of all nine confirmed/potential breeding diver territories, including locations, are presented within **Volume 4: Appendix V1-8.2**.

8.10.55 As there is no suitable nesting or foraging habitat for red-throated or black-throated divers within the LoD of the Proposed Alignment, potential effects on SPA breeding populations of both diver species due to habitat loss during construction of the Proposed Alignment are considered to be of negligible magnitude and **not significant** under the EIA Regulations.

8.10.56 An assessment of the potential effects of disturbance/displacement on breeding red-throated and black-throated divers during construction is presented in **Volume 4: Appendix V1-8.2** within Volume 4 of this EIA Report.

8.10.57 In the absence of targeted mitigation, potential effects on the Caithness and Sutherland Peatlands SPA breeding red-throated and black-throated diver populations due to disturbance/displacement during construction of the Proposed Alignment are assessed as being of low to medium magnitude and **potentially significant**.

Golden Eagle

8.10.58 Breeding golden eagle is a qualifying feature of the Caithness and Sutherland Peatlands SPA. It is also included on Schedules 1, 1A and A1 to the W&CA, Annex I to the Birds Directive and the SBL.

8.10.59 The SPA population was estimated at five pairs in 1992 (NatureScot, 2023a). Two breeding territories were identified during the desk study. Locations are provided within **Volume 4: Appendix V1-8.2**. Both are more than 6 km from the Proposed Alignment and levels of flight activity by these species during surveys for the Proposed Alignment and surrounding developments (reviewed as part of the desk study) were low.

8.10.60 As neither of the breeding golden eagle territories are located within the LoD for the Proposed Alignment, there is not considered to be any potential for nest sites to be lost. While some of the additional habitat that would be lost could also be suitable for foraging golden eagle, this will represent a fractional proportion of the species core foraging range (6 km; NatureScot, 2016b) and there is no evidence to suggest the areas being lost are particularly valuable foraging habitats for golden eagle.

8.10.61 Given the separation distances between the Proposed Alignment and identified golden eagle territories, which far exceed the recommended disturbance buffers of 750-1,000 m for breeding golden eagle (NatureScot, 2016b), there is not considered to be any potential for disturbance/displacement of nesting birds. Although it is possible that foraging birds could be displaced due to construction works, this would be temporary. Furthermore, as noted above, the Proposed Alignment site represents a very small proportion of the species core foraging range and is not considered to be of particular importance to foraging golden eagle.

8.10.62 Potential construction effects on the SPA breeding golden population due to habitat loss and/or disturbance/displacement of birds during construction are assessed as being of negligible magnitude and **not significant** under the EIA Regulations.

Hen Harrier and Merlin

8.10.63 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.

8.10.64 The SPA populations were estimated at 14 hen harrier pairs in 1993 to 1997 and 54 merlin pairs in 1993 and 1994 (NatureScot, 2023a). 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.

8.10.65 A single hen harrier breeding territory was identified within 2 km of the Proposed Alignment in 2023 during surveys for the Alternative Alignment. An additional hen harrier breeding territory within 2 km 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.

8.10.66 Three merlin breeding territories within 2 km of the Proposed Alignment were identified during the desk study, each of which were active during a single survey year (2022, 2021 and 2019).

8.10.67 Locations of the two hen harrier and three merlin breeding territories located within 2 km of the Proposed Alignment are detailed within **Volume 4: Appendix V1-8.2**. Note that one of the merlin territories (recorded in 2021) was recorded during surveys for Melvich Wind Energy Hub and the exact location of this territory is unknown.

8.10.68 As none of the breeding hen harrier territories or merlin territories for which exact locations are known were identified within 2 km of the Proposed Alignment are located within the LoD, there is considered to be low potential for nest sites to be lost. While some of the additional habitat that would be lost could also be suitable for nesting and/or foraging birds, there is no evidence to suggest the areas being lost are particularly valuable habitat. Furthermore, the limited extent of habitat that would be lost represents a very small proportion of the core foraging ranges of breeding birds (within 2 km and 5 km of the nest site for hen harrier and merlin respectively; NatureScot, 2016), and extensive suitable habitat is present within the wider area, including the Caithness and Sutherland Peatlands SPA.

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

8.10.70 NatureScot (2016b) guidance recommends disturbance buffers of 300-750 m for breeding hen harrier and 300-500 m for breeding merlin (NatureScot, 2016b).

8.10.71 There is some potential for disturbance/displacement of breeding and/or foraging merlin and hen harrier. This is discussed in **Volume 4: Appendix V1-8.2**. Potential effects on the SPA breeding merlin and hen harrier populations due to disturbance/displacement during construction are assessed as being of low magnitude and **not significant**.

Peregrine

8.10.72 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. The SPA population was estimated at six pairs (NatureScot, 2018c). However, the cumulative collision risk dataset provided by NatureScot (2024b) cites two[14] as the most recent SPA breeding peregrine population estimate, based on 2014 SCM.

8.10.73 The HRSG provided the location of a historic peregrine breeding territory within 2 km of the Proposed Alignment during the desk study. The location is provided within **Volume 4: Appendix V1-8.2.** However, this

[14] It does not specify whether this refers to pairs or individual birds.

territory was last known to be active in 2015 and was not occupied in recent years (2016 and 2018-23; no monitoring took place in 2017 or 2024). No other breeding territories within 2 km of the Proposed Alignment were identified during the field surveys or desk study.

8.10.74 As the historic peregrine breeding territory identified within 2 km of the Proposed Alignment is not located within the LoD, there is not considered to be any potential for any existing or potentially suitable nest sites to be lost. While some of the habitat that would be lost could be suitable foraging birds, there is no evidence to suggest that these areas are particularly valuable habitats for foraging peregrine.

8.10.75 Potential effects on the North Caithness Cliffs SPA breeding peregrine population due to habitat loss during construction of the Proposed Alignment are considered to be of negligible magnitude and **not significant** under the EIA Regulations.

8.10.76 There is some potential for disturbance/displacement of breeding peregrine if birds return to the historic territory. This is discussed further in **Volume 4: Appendix V1-8.2**. Although it is also possible that foraging birds could be displaced due to construction works, this would be temporary. Furthermore, the Proposed Alignment site represents a very small proportion of the core foraging range for breeding peregrine (2 km; NatureScot, 2016b) and is not considered to be of particular importance to foraging birds.

8.10.77 Potential effects on the North Caithness Cliffs SPA breeding peregrine population due to disturbance/displacement during construction of the Proposed Alignment are considered to be of low magnitude and **not significant** under the EIA Regulations.

West Halladale SSSI

8.10.78 The West Halladale SSSI is designated for breeding common scoter, breeding black-throated diver and its breeding bird assemblage (as well as blanket bog). The SSSI citation (NatureScot, undated c) notes that the breeding bird assemblage includes several waterfowl and wader species such as greylag goose, black-throated diver, golden plover, dunlin and greenshank, while steep slopes and areas of drier ground within the SSSI are suitable for a range of other species, including hen harrier and merlin. Golden eagle and peregrine also regularly hunt over the SSSI.

8.10.79 In their Scoping Opinion (see **Table V1-8.1**), NatureScot advised that the breeding bird assemblage species list to be considered with regards to the West Halladale SSSI is “Upland moorland with water bodies” in Drewitt *et al*. (2023). This includes a number of additional species to those listed within the SSSI citation, including all qualifying features of the Caithness and Sutherland Peatlands SPA and several non-passerine species that were confirmed or likely to be breeding in low densities within 500 m of the Proposed Alignment, namely red grouse, oystercatcher, curlew, snipe, common sandpiper, osprey and buzzard (*Buteo buteo*).

8.10.80 The Proposed Alignment overlaps the West Halladale SSSI and, in total, 0.164 ha of habitat within the SSSI would be lost (including permanent, temporary and indirect permanent habitat loss) due to construction of the Proposed Alignment. This represents 0.0019 % of the SSSI, which covers 8,658.85 ha (NatureScot, undated c). Potential effects on notified avian features of the SSSI due to loss of supporting habitat are assessed as being of low magnitude and **not significant** under the EIA Regulations. Note that effects on non-avian features of the SSSI are considered in **Volume 1: Chapter 7**.

8.10.81 Potential indirect effects on SSSI habitats during construction of the Proposed Alignment, e.g., due to pollution, would be avoided through implementation of relevant mitigation measures detailed in **Volume 4**: **Appendix V1-3.4** and **Appendix V1-3.5**. As such, they are assessed as being of low magnitude and **not significant**.

8.10.82 As there is some overlap between the Proposed Alignment and the West Halladale SSSI, there is some potential for effects on notified features of the SSSI due to loss of foraging and/or nesting habitat both within

and outwith the SSSI. Additionally, there is potential for direct disturbance to notified features of the SSSI due to construction of the Proposed Alignment.

8.10.83 Potential construction phase effects on notified features of the SSSI (including component species of the breeding bird assemblage feature) that were identified as IOFs (namely greylag goose, common scoter, curlew, red-throated diver, black-throated diver, osprey, golden eagle, hen harrier, merlin and peregrine) are discussed within the individual species assessments.

8.10.84 Although other component species of the breeding bird assemblage feature of the West Halladale SSSI could breed and/or forage within and around the Proposed Alignment site immediately prior to or during construction, the extent of habitat that would be lost is very small in the context of available habitat in the wider area, including within the SSSI itself. Furthermore, the low breeding densities and low levels of activity by these species (or in some cases absence of any records) indicate that the area around the Proposed Alignment is not of particular importance to breeding or foraging birds.

8.10.85 Implementation of the BPP would ensure that breeding birds and their nests are protected during construction of the Proposed Alignment. Furthermore, the construction works will be temporary and it is considered likely that some displaced birds could return to former nesting areas post-construction, while others could be accommodated within the extensive areas of suitable habitat present in the wider area (including within the West Halladale SSSI).

8.10.86 Potential construction phase effects of the Proposed Alignment on notified features of the West Halladale SSSI (including components of the breeding bird assemblage feature) that were not identified as IOFs are assessed as being of low magnitude and **not significant** under the EIA Regulations.

East Halladale SSSI and Lochan Buidhe Mires SSSI

8.10.87 The East Halladale SSSI covers an expanse of 8,503.36 ha and is designated for breeding common scoter, breeding golden plover and its breeding bird assemblage (as well as blanket bog). The SSSI citation (NatureScot, undated a) notes that the breeding bird assemblage includes greylag goose, common scoter, red-throated and black-throated divers, golden eagle, merlin and peregrine.

8.10.88 The Lochan Buidhe Mires SSSI covers an expanse of 4,122.76 ha and is designated for its breeding bird assemblage (as well as blanket bog). The SSSI citation (NatureScot, undated b) notes that the breeding bird assemblage includes several waterfowl and wader species such as greylag goose, golden plover, curlew, dunlin, greenshank and red-throated and black-throated divers, while raptors such as merlin, peregrine and golden eagle use the area for hunting and are also part of the breeding bird assemblage.

8.10.89 As noted above, in their Scoping Opinion (see **Table V1-8.1**), NatureScot advised that the breeding bird assemblage species list to be considered with regards to the West Halladale SSSI is “Upland moorland with water bodies” in Drewitt *et al*. (2023). It is assumed that this list is also applicable to the East Halladale and Lochan Buidhe Mires SSSIs.

8.10.90 The East Halladale SSSI is located approximately 0.7 km to the east of the Proposed Alignment, while the Lochan Buidhe Mires SSSI is located approximately 1.9 km to the west of the Proposed Alignment. As there would be no habitat loss within or in close proximity to either SSSI, there is not considered to be any potential for direct or indirect effects on SSSI habitats used by qualifying ornithological features due to habitat loss.

8.10.91 As there is functionally linked land between the Proposed Alignment and the East Halladale and Lochan Buidhe Mires SSSIs, there is some potential for effects on notified features of the SSSIs due to loss of foraging and/or nesting habitat outwith the SSSIs. Additionally, there is some potential for disturbance to notified features of the SSSIs due to construction of the Proposed Alignment.

8.10.92 Where notified features of the SSSIs were identified as IOFs, potential effects due to construction of the Proposed Alignment are discussed within the individual species assessments.

8.10.93 Although some of the other component species of the breeding bird assemblage feature of one or both SSSIs are likely to breed and/or forage within and around the Proposed Alignment site immediately prior to or during construction, the extent of habitat that would be lost is very small in the context of available habitat in the wider area, including within the SSSIs themselves. Furthermore, the lack of breeding records and low levels of activity by these species (or in some cases absence of any records) indicate that the area around the Proposed Alignment is not of particular importance to breeding or foraging birds. Implementation of the BPP would ensure that breeding birds and their nests are protected during construction of the Proposed Alignment.

8.10.94 Potential construction phase effects of the Proposed Alignment on notified features of the East Halladale and Lochan Buidhe Mires SSSIs (including components of the breeding bird assemblage feature) that were not identified as IOFs are assessed as being of low magnitude and **not significant** under the EIA Regulations.

Whooper Swan

8.10.95 Whooper swan is included on Schedule 1 to the W&CA, Annex I of the Birds Directive, the UK BoCC Amber list (Stanbury *et al*., 2021) and the SBL, although the Schedule 1 listing relates to breeding birds, which are not present within/around the Proposed Alignment site.

8.10.96 Although whooper swan is a designated feature of the Caithness Lochs SPA and Ramsar site, as noted above, there is not considered to be any potential connectivity between the Proposed Alignment site and the Caithness Lochs SPA/Ramsar site whooper swan population. This species is therefore assessed against the NHZ 5 wintering population, which has been estimated at 190 birds (Wilson *et al*., 2015).

8.10.97 There was no evidence that whooper swan made regular use of the area within or around the Proposed Alignment site and the majority of habitat present is suboptimal for foraging birds.

8.10.98 Potential construction phase effects on the NHZ 5 wintering whooper swan population due to habitat loss or displacement/ disturbance, are assessed as being of negligible magnitude and **not significant** under the EIA Regulations.

Curlew

8.10.99 Although curlew is not a notified/qualifying feature of any nationally or internationally designated site with potential connectivity to the Proposed 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**). The NHZ 5 breeding curlew population has been estimated at 1,737 pairs (Wilson *et al*., 2015).

8.10.100 During 2022 surveys for the Proposed Alignment, two breeding curlew territories were identified within 500 m of the Proposed Alignment site (**Volume 2: Figure V1-8.6b**), while three were identified within 500 m of the Proposed Alignment during 2023 surveys for the Alternative Alignment. These are shown in **Volume 2: Figure V1-8.6b** and **Figure V1-8.7b,** respectively. Additionally, single potential territories within 500 m of the Proposed Alignment were identified during the 2020 and 2021 surveys for Kirkton Energy Park (as breeding wader territory location data were not available, the locations could not be included on any Figures).

8.10.101 Both of the 2022 territories (but none of the 2023 territories) were within the LoD of the Proposed Alignment. Therefore, there is potential for these nest sites to be lost during construction of the Proposed Alignment, although locations of nest sites used by curlew may change annually and it is considered

likely any displaced birds could breed at a different location within the surrounding area, where extensive suitable habitat is present.

8.10.102 While some of the additional habitat that would be lost could also be potentially suitable for nesting and/or foraging curlew, there is no evidence to suggest the areas being lost are particularly valuable or exceptional as breeding or foraging habitat for this species. Furthermore, the extent of habitat that would be lost represents a small proportion of the extensive suitable habitat present within the wider area. Additionally, implementation of the BPP (outlined above in section 8.9) would ensure that any nesting birds are protected during construction of the Proposed Alignment.

8.10.103 The effects of habitat loss on the NHZ 5 breeding curlew population is therefore considered to be of low magnitude and **not significant** under the EIA Regulations.

8.10.104 There is also potential for direct disturbance to breeding curlew due to construction of the Proposed Alignment. NatureScot (2022) guidance recommends a disturbance buffer of 200-300 m for this species. Both pairs recorded in 2022 were within 300 m of the Proposed Alignment.

8.10.105 It is acknowledged that curlew are highly sensitive to disturbance (NatureScot, 2022) and a study by Pearce-Higgins *et al*. (2012) found that curlew densities had not recovered by the first year after construction. Thus, it is possible that any birds displaced from the Proposed Alignment site may not return, at least in the short-term, despite the temporary duration of construction works. However, an earlier study by Whitfield *et al*. (2010) found no evidence of immediate displacement of breeding curlew following construction of several wind farms, suggesting that, even if birds are displaced during wind farm construction, they may subsequently recover on some sites. It is therefore possible that some birds could return to breed following completion of construction, while others could be accommodated in the wider area, where extensive areas of suitable habitat are present.

8.10.106 As a worst-case scenario, it is considered that up to two curlew pairs could be permanently displaced due to construction works. This would represent 0.12 % of the NHZ 5 breeding curlew population (1,737 pairs; Wilson *et al*., 2015). As such, effects on the NHZ 5 breeding curlew population are assessed as being of low magnitude and **not significant** under the EIA Regulations.

Osprey and White-tailed Eagle

8.10.107 Osprey and white-tailed eagle are not designated features of any statutory sites with potential connectivity to the Proposed Alignment site. However, they are both 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.

8.10.108 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 number of breeding 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).

8.10.109 Similarly, while the NHZ 5 breeding white-tailed eagle population was estimated at just one pair in 2013 (Wilson *et al*., 2015), the local population has increased as white-tailed eagle has expanded its range, and in 2022, nine breeding sites in Sutherland were checked by Scottish raptor workers, of which eight were occupied by pairs (Challis et al., 2023).

8.10.110 There were occasional records of osprey during the 2022 surveys for the Proposed Alignment as well as during surveys completed for surrounding developments (reviewed as part of the desk study). In

addition, there was an incidental record of an osprey nest within 2 km of the Proposed Alignment during ECoW pre-felling checks at Strathy North Wind Farm in mid-August 2023. The nest was regularly monitored, and a single (unaged) bird was observed, but there were no signs of breeding. Although it is possible that breeding could have occurred prior to the monitoring, juvenile dispersal typically occurs between late August and late September (Hardey *et al*., 2013).

8.10.111 Historically, an osprey nest was identified near the 2023 location during 2013 surveys for Strathy North Wind Farm, but no breeding activity was noted during surveys prior to this (surveys commenced in 2003), nor in 2014. Observations in 2015 indicated that ospreys were probably breeding at or near the same nest used in 2013. Further details are provided in **Volume 4: Appendix V1-8.2**. No other osprey breeding activity was identified during the desk study.

8.10.112 White-tailed eagle was occasionally recorded during surveys at Strathy North Wind Farm, but there was no evidence of breeding during the surveys and no breeding territories within 6 km were identified during the desk study. However, a roost site was identified within 2 km during ECoW pre-felling checks at Strathy North Wind Farm in September 2023. Further details are provided in **Volume 4: Appendix V1-8.2**.

8.10.113 There is little or no suitable nesting or roosting habitat for osprey or white-tailed eagle within the LoD for the Proposed Alignment. Although it is possible that some suitable white-tailed eagle foraging habitat would be lost, the extent would represent a fraction of the core foraging range used by breeding birds (the core foraging range during the breeding season is 5 km; NatureScot, 2016b). The effects of habitat loss on the NHZ 5 osprey and white-tailed eagle breeding populations are therefore considered to be of negligible magnitude and **not significant** under the EIA Regulations.

8.10.114 Both the osprey nest and white-tailed eagle roost site were more than 1 km from the Proposed Alignment, which far exceeds the recommended disturbance buffers of 350-750 m for breeding osprey and 250-500 m for non-breeding white-tailed eagle (NatureScot, 2022).

8.10.115 Although it is possible that these species could nest or roost within closer proximity to the Proposed Alignment in future, this is considered unlikely as the extent of suitable habitat is very limited. Furthermore, implementation of the BPP would ensure that birds would be protected from disturbance during construction of the Proposed Alignment.

8.10.116 As such, effects on the NHZ 5 breeding osprey and white-tailed eagle populations due to disturbance/displacement during the construction of the Proposed Alignment are assessed as being of negligible magnitude and **not significant** under the EIA Regulations.

Barn Owl

8.10.117 Barn owl is not a designated feature of any statutory sites with potential connectivity to the Proposed Alignment site. However, it is included on Schedule 1 to the W&CA and the SBL. The Scottish breeding barn owl population is estimated at 500-1,000 pairs, while the wintering population is estimated at 1,000-2,000 individuals (Forrester *et al*., 2007). Regionally, 11 of the 13 barn owl breeding territories in Sutherland that were checked by Scottish raptor surveyors were occupied (Challis *et al*., 2023).

8.10.118 A single barn owl breeding and roost site identified during surveys for the proposed Melvich Wind Energy Hub was confirmed to be active (by breeding and roosting birds) in 2021 and 2022. 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 (ITPEnergised, 2023) and based on this information, possible locations were identified through inspection of aerial imagery to identify potentially suitable sites (although the exact location could not be confirmed). Further details are provided in **Volume 4: Appendix V1-**

8.2. Barn owl was not recorded during field surveys for the Proposed Alignment in 2022 or Alternative Alignment in 2023. No other barn owl registrations within the search area were identified during the desk study.

8.10.119 Barn owls are cavity nesters and will nest within suitable holes in trees as well as artificial structures. There are no suitable structures for nesting or roosting barn owl within the LoD, and the limited woodland habitat within the LoD is likely to be sub-optimal or unsuitable. As such, there is not considered to be any potential for loss of barn owl nest or roost sites.

8.10.120 While some of the habitat that will be lost could be suitable for foraging barn owl, this is limited and it is likely that barn owls will forage preferentially along Strath Halladale where the grassland habitat is considered to be more suitable compared with the surrounding area, and overlap with this habitat is limited to a small section of the eastern end of the Proposed Alignment. This is supported by surveys for the proposed Melvich Wind Energy Hub, during which a total of five birds were recorded hunting in grassland fields along the Halladale River valley in August 2021 (ITPEnergised, 2023), although the details (including locations) of individual registrations are unknown.

8.10.121 Effects on national and regional breeding barn owl populations due to habitat loss during construction of the Proposed Alignment are assessed as being of negligible magnitude and **not significant** under the EIA Regulations.

8.10.122 Based on the available information, it is likely that the barn owl nest and roost site identified during the surveys for Melvich Wind Energy Hub is outside the maximum recommended disturbance buffer for this species (100 m; NatureScot, 2022). Furthermore, implementation of the BPP would ensure that birds would be protected from disturbance during construction of the Proposed Alignment. As noted above, It is considered likely that barn owls will forage preferentially along the grassland habitat in Strath Halladale, including birds from the confirmed nest/roost site, and there is very little overlap between this habitat and the Proposed Alignment footprint.

8.10.123 Effects on national and regional barn owl populations due to disturbance/displacement during construction of the Proposed Alignment are assessed as being of negligible magnitude and **not significant** under the EIA Regulations.

Summary

8.10.124 A summary of construction phase effects on IOFs is presented in **Table V1-8.4**.

Table V1-8.4: 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

IOF	Importance Level	Potential Effect	Magnitude of Effect	Potentially Significant Effect?	Targeted Mitigation Required?
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 to Low	No	No
Golden plover	International	Habitat loss	Low	No	No
		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

IOF	Importance Level	Potential Effect	Magnitude of Effect	Potentially Significant Effect?	Targeted Mitigation Required?
		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[15] identified as IOFs	Negligible to Medium	Yes (diver species only)	Yes (diver species only)
		Disturbance/ displacement of notified features[15] 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[15] identified as IOFs	Negligible to Medium	Yes (diver species only)	Yes (diver species only)
		Disturbance/ displacement of notified features[15] not identified as IOFs	Low	No	No
Lochan Buidhe Mires SSSI	National	Habitat loss	Negligible	No	No
		Habitat degradation	Negligible	No	No
		Disturbance/ displacement of notified features[15] identified as IOFs	Negligible to Medium	Yes (diver species only)	Yes (diver species only)
		Disturbance/ displacement of notified features[15]	Low	No	No

[15] Including component species of the breeding bird assemblage feature.

IOF	Importance Level	Potential Effect	Magnitude of Effect	Potentially Significant Effect?	Targeted Mitigation Required?
		not identified as IOFs			
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

8.10.125 As stated in paragraph 8.7.19, the main ways in which an OHL may affect IOFs during the operational phase are via:

- Disturbance/displacement of breeding, roosting and/or foraging resulting from the presence of personnel, and presence/use of vehicles and machinery during operational maintenance of the Proposed Alignment.
- Mortality/injury due to birds colliding with the OHL, or electrocution if attempting to perch or nest on it (as noted in paragraph 8.5.3, this has been scoped out).
- Barrier effects due to the Proposed Alignment presenting a barrier, either alone or cumulatively with other developments, to the movement of birds, restricting or displacing birds from much larger areas.

8.10.126 The increased human activity associated with maintenance of the Proposed Alignment has the potential to cause disturbance and displace birds from the area. However, the level of human activity and associated disturbance during operational works would be considerably reduced compared to the construction phase and is expected to be infrequent and of limited extent (both spatially and temporally).

8.10.127 If any significant maintenance works are required during the operational phase of the Proposed Alignment, the BPP measures outlined in section 8.9 would be applied to ensure compliance with legislation protecting breeding birds, including species listed on Schedule 1 to the W&CA, as well as roosting species listed on Schedule 1A to the W&CA.

8.10.128 It is also possible that visual disturbance from the towers and OHL could deter birds from making use of the surrounding area for foraging, breeding and/or roosting (although this would result in reduced collision risk). However, the Proposed Alignment would follow a similar route to the existing Strathy North 132 kV trident 'H' wood pole OHL. Additionally, Strathy North Wind Farm, which is located west of the Proposed Alignment, and is bordered to the east by an access road from the A836, has been operational since 2015. The

presence of these existing features could mean that some local bird populations are already habituated to the presence of large artificial structures such as poles, turbines, OHLs and roads in the landscape.

8.10.129 In terms of morphology and ecology, large, heavy-bodied bird species are generally thought to be more susceptible to collisions with overhead power lines than smaller, more manoeuvrable species (e.g., Luzenski *et al*., 2016). Species with limited visual capacity, and those flying in conditions of reduced visibility (e.g., during the hours of darkness), may also be more vulnerable to collisions, as may birds engaged in hunting or breeding displays. Additionally, younger and more inexperienced birds and migrants that are unfamiliar with the landscape may also be at increased collision risk (NatureScot, 2016a).

8.10.130 Landscape and topography as well as environmental conditions (e.g., adverse weather and/or low light) can also influence the risk of bird mortality due to collision with overhead power lines.

8.10.131 Birds can be at risk of electrocution from contact with unprotected wires and associated metal infrastructure. Large birds are generally more vulnerable to electrocution by OHLs due to the greater risk of bridging the gap between two phase conductors, or energised and earthed structures, with open wings or other body parts (Lehman *et al*., 2007). Therefore, technical aspects of the design (e.g., spacing of conductors and the availability of perches) influences the level of risk, as well as a bird's body size and ecology/behaviour (e.g., Bevanger, 1994; NatureScot, 2016a).

8.10.132 Many bird species, particularly raptors, are attracted to OHLs and their supports, especially in open un-forested areas, as they provide lookout posts, as well as being used for perching, nesting and/or roosting. Ground-nesting species, such as hen harrier, rarely use OHL supports for perching / hunting and are therefore at less risk from electrocution (Haas *et al*., 2005). Of the identified IOFs, osprey, golden eagle, white-tailed eagle and peregrine are considered to be at risk of electrocution. However, as described in section 8.9 'Mitigation by Design and Embedded Mitigation', due to the designs used for the steel lattice towers, the risk of a significant number of mortality events is considered to be negligible. Therefore, potential mortality/injury due to electrocution has been scoped out of the OIA.

8.10.133 The towers for the Proposed Alignment would likely comprise a combination of 'L7c' and 'L8c' series of steel lattice towers. The heights of the would vary, depending on local topography, but would typically be in the region of approximately 31 m in height for an L7c standard tower and 48.6 m for an L8c standard tower. A vertical LoD, i.e. the maximum height of a tower above ground level, is also sought to allow a height increase or decrease of 3.2 m on the proposed tower height of the L7c series of tower design and 4 m on the proposed tower height of an L8c series of tower design. Tower numbers and tower design types are presented in **Volume 4: Appendix V1-3.1 - Indicative Tower Schedule – Proposed Alignment** and illustrated on **Volume 2: Figure V1-3.1**.

8.10.134 Although the Proposed Alignment OHL would be close to the existing Strathy North 132 kV trident 'H' wood pole OHL, the wood poles for the latter are typically 14 m in height, which is much lower than the Proposed Alignment (ASH, 2013).

8.10.135 It is considered that red-throated diver, black-throated diver and common scoter are the only IOFs that could potentially be affected by barrier effects, with any birds breeding to the south of the Proposed Alignment, potentially flying around it to forage at the coast.

8.10.136 Potential effects on IOFs during the operational phase of the Proposed Alignment are assessed below, with IOFs considered in order of importance level (and by taxonomic order within in each importance category). As for construction effects, to minimise repetition, species of the same importance level and with similar habitat requirements and ecology are assessed together.

Caithness and Sutherland Peatlands SPA and Ramsar site

8.10.137 Potential operational effects on qualifying features of the Caithness and Sutherland Peatlands SPA are discussed below for individual species identified as IOFs.

8.10.138 Although other SPA-qualifying birds breeding in the wider area could be affected by operational disturbance of breeding or foraging birds, there were either no records of these species (wood sandpiper and short-eared owl) or low levels of flight activity (but no evidence of regular commuting routes across the Proposed Alignment) and no breeding territories within the Study Area, which indicates that these species make no more than occasional use of the Proposed Alignment site for foraging. It is therefore considered highly unlikely that there would be significant disturbance or collision risk to nesting or foraging SPA-qualifying birds during the operational phase of the Proposed Alignment.

8.10.139 Potential operational phase effects of the Proposed Alignment on qualifying features of the Caithness and Sutherland Peatlands SPA and Ramsar site that were not identified as IOFs are assessed as being of low magnitude and **not significant** under the EIA Regulations.

8.10.140 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 Proposed Alignment.

North Caithness Cliffs SPA

8.10.141 As noted above, the North Caithness Cliffs SPA is designated for breeding peregrine and a number of breeding seabird species, as well as its breeding seabird assemblage feature. Of these, there is only considered to be an impact pathway between the Proposed Alignment and the SPA breeding peregrine population. Potential operational impacts of the Proposed Alignment on this species are considered below in paragraphs 8.10.172 and 8.10.173.

8.10.142 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 Proposed Alignment.

Caithness Lochs SPA and Ramsar site

8.10.143 Potential operational effects of the Proposed Alignment on greylag goose are discussed below under the individual species assessment.

8.10.144 As the Proposed Alignment is outwith the core foraging range of Greenland white-fronted goose and whooper swan from the Caithness Lochs SPA populations (5-8 km and <5 km respectively; NatureScot, 2016b), there is not considered to be any potential for disturbance/displacement of foraging SPA populations of either qualifying feature during the operational phase.

8.10.145 As noted in **Table V1-8.3**, low levels of whooper swan flight activity within 500 m of the Proposed Alignment were identified during the desk study and it is acknowledged that whooper swans associated with the SPA could still be at risk of colliding with the Proposed Alignment whilst migrating. Potential collision risk to the SPA whooper swan population is discussed below under the individual species assessment (paragraphs 8.10.1844 to 8.10.1877).

8.10.146 No registrations of Greenland white-fronted goose were identified during the desk study. Since the Caithness Lochs SPA is located to the east of the Proposed Alignment, it is considered unlikely that migrating birds would be flying inland and crossing the Proposed Alignment site on their route between the SPA and Greenlandic breeding grounds. Additionally, it is expected that any regular flight lines by migrating birds

would have been detected during the non-breeding season flight activity surveys completed for the proposed Melvich Wind Energy Hub and Kirkton Energy Park. In the unlikely event that Greenland white-fronted geese do cross the Proposed Alignment whilst on migration, the frequency would be very low (up to twice a year).

8.10.147 Potential operational phase effects of the Proposed Alignment on the Caithness Lochs SPA and Ramsar site population of Greenland white-fronted goose are assessed as being of negligible magnitude and **not significant** under the EIA Regulations.

8.10.148 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 Proposed Alignment.

Greylag Goose

8.10.149 As noted under Construction Effects (paragraph 8.10.32), wintering greylag goose is a qualifying feature of the Caithness Lochs SPA and Ramsar site, while breeding greylag goose is a component of both the East Halladale SSSI and West Halladale SSSI breeding bird assemblage feature (NatureScot, undated a, c).

8.10.150 A record of an adult greylag goose with two juveniles on Loch Earacha in 2002 was the only evidence of breeding by this species within 500 m of the Proposed Alignment. Similarly, there was no evidence of regular foraging within or around the Proposed Alignment site, which is located outwith the key foraging areas used by greylag geese from this SPA (Mitchell, 2012; Patterson *et al*., 2013).

8.10.151 Potential effects on the Caithness Lochs SPA and Ramsar site wintering greylag goose population and East Halladale SSSI and West Halladale SSSI breeding populations due to disturbance/displacement during the operation of the Proposed Alignment are assessed as being of negligible magnitude and **not significant** under the EIA Regulations.

8.10.152 The desk study identified some greylag goose flights in the vicinity of the Proposed Alignment during the spring and autumn. These were potentially associated with the Caithness Lochs SPA population. However, such flights will be infrequent (two flights annually per individual) and it is likely that birds will typically be flying above potential collision height whilst on migration.

8.10.153 There was also some flight activity during the breeding season, which could include birds that form part of the East Halladale SSSI and West Halladale SSSI breeding populations. However, numbers were typically low and it is considered unlikely that the Proposed Alignment could have significant effects on breeding greylag goose populations due to collision.

8.10.154 As such, the potential effects of collision mortality to both the Caithness Lochs SPA wintering greylag goose population and greylag goose populations associated with the East and West Halladale SSSIs are assessed as being of low magnitude and **not significant** under the EIA Regulations.

Common Scoter

8.10.155 No common scoter breeding territories were identified within 500 m[16] of the Proposed Alignment during surveys for the Proposed Alignment or the review of extensive datasets completed as part of the desk study. As the possibility that breeding birds could be present in future cannot be excluded, potential effects of the Proposed Alignment on breeding common scoter due to disturbance/displacement are assessed in **Volume 4: Appendix V1-8.2**.

[16] The maximum species-specific disturbance buffer in NatureScot (2022) guidance.

8.10.156 Similarly, no common scoter flights were recorded during surveys for the Proposed Alignment, and none were recorded during surveys for surrounding developments reviewed as part of the desk study. However, due to concerns raised by NatureScot and the RSPB regarding common scoter, potential collision risk to this species during the operational phase of the Proposed Alignment are assessed in **Volume 4: Appendix V1-8.2.**

8.10.157 Effects on the Caithness and Sutherland Peatlands SPA breeding common scoter population due to disturbance/displacement, collision risk and barrier effects during the operation of the Proposed Alignment are assessed as being of negligible to low magnitude and **not significant** under the EIA Regulations.

Golden Plover

8.10.158 As noted above, there is some overlap between the Proposed Alignment site and the Caithness and Sutherland Peatlands SPA, and a maximum of four golden plover pairs were present within 500 m of the Proposed Alignment during a single survey year (2022). Assuming a worst-case scenario that all four pairs of golden plover are permanently displaced due to the presence of the Proposed Alignment, this would represent 0.38 % of the SPA breeding golden plover population (1,064 pairs; NatureScot, 2023a).

8.10.159 However, given that numbers and locations of golden plover breeding territories varied between survey years, and the extent of suitable breeding habitat present within the SPA, it is anticipated that any displaced birds would be accommodated in the surrounding area, rather than being lost entirely from the breeding population.

8.10.160 Effects on the Caithness and Sutherland Peatlands SPA breeding golden plover population due to disturbance/displacement during the operation of the Proposed Alignment are assessed as being of low magnitude and **not significant** under the EIA Regulations.

8.10.161 Levels of golden plover flight activity during surveys for the Proposed Alignment and neighbouring developments (reviewed as part of the desk study) were low. Furthermore, no regular commuting routes across the Proposed Alignment were identified. Levels of flight activity around the Proposed Alignment are not anticipated to increase post-construction.

8.10.162 As such, the potential effects of collision mortality to the SPA breeding golden plover population during operation of the Proposed Alignment are assessed as being of low magnitude and **not significant** under the EIA Regulations.

Red-throated and Black-throated Divers

8.10.163 As noted above under Construction Effects, one confirmed black-throated diver territory and three red-throated diver breeding territories (two confirmed and one possible) were identified within 2 km of the Proposed Alignment and there was also some flight activity by both species. Potential operational effects on both species due to disturbance/displacement, collision risk and barrier effects are assessed in **Volume 4: Appendix V1-8.2** .

8.10.164 Potential effects on the Caithness and Sutherland Peatlands SPA breeding red-throated and black-throated diver populations due to disturbance/displacement during operation of the Proposed Alignment are assessed as being of low magnitude and **not significant** under the EIA Regulations, while potential barrier effects are assessed as being of negligible magnitude and **not significant**.

8.10.165 Potential effects on the Caithness and Sutherland Peatlands SPA breeding black-throated diver population due to collision risk during the operational phase of the Proposed Alignment are considered to be of low magnitude and **not significant** under the EIA Regulations. However, in the absence of the targeted

mitigation proposed in paragraph 8.11.1, potential effects on the Caithness and Sutherland SPA breeding red-throated diver population due to collision are assessed as being of low to medium magnitude and **potentially significant**.

Golden Eagle

8.10.166 No golden eagle breeding territories were identified within 1 km[16] of the Proposed Alignment during surveys for the Proposed Alignment or the desk study, and effects on the Caithness and Sutherland Peatlands SPA breeding population due to disturbance/displacement during the operation of the Proposed Alignment are assessed as being of negligible magnitude and **not significant** under the EIA Regulations.

8.10.167 No golden eagle flights were recorded during surveys for the Proposed Alignment and low levels of flight activity were recorded during surveys for the Alternative Alignment and neighbouring developments (reviewed as part of the desk study). Furthermore, no commuting routes or areas of concentrated flight activity were identified within 500 m of the Proposed Alignment. Levels of flight activity around the Proposed Alignment are not anticipated to increase post-construction.

8.10.168 As such, the potential effects of collision mortality to the Caithness and Sutherland Peatlands SPA breeding golden eagle population during operation of the Proposed Alignment are assessed as being of low magnitude and **not significant** under the EIA Regulations.

Hen harrier and Merlin

8.10.169 As noted above under Construction Effects, two hen harrier breeding territories and three merlin territories were identified within 2 km of the Proposed Alignment and there was also some flight activity by both species. Potential operational effects on both species due to disturbance/displacement and collision risk are assessed in **Volume 4: Appendix V1-8.2**.

8.10.170 Potential effects on the Caithness and Sutherland SPA breeding hen harrier and merlin populations during operation are assessed as being of low magnitude and **not significant** under the EIA Regulations. Further details of the assessment are presented in **Volume 4: Appendix V1-8.2**.

8.10.171 Although potential effects are not considered to be significant for either species, mitigation to reduce collision risk to hen harrier is proposed in paragraph 8.11.3 as a precautionary measure.

Peregrine

8.10.172 As noted above under Construction Effects, a single historical peregrine territory was identified within 2 km of the Proposed Alignment and there were occasional flights by this species. Potential operational effects on peregrine due to disturbance/displacement and collision risk are assessed in **Volume 4: Appendix V1-8.2**.

8.10.173 Potential effects on the North Caithness Cliffs SPA breeding peregrine population during operation are assessed as being of low magnitude and **not significant** under the EIA Regulations.

West Halladale SSSI

8.10.174 As there is some overlap between the Proposed Alignment and the West Halladale SSSI, there is potential for direct disturbance and/or collision risk to notified features within the SSSI itself during operation of the Proposed Alignment.

8.10.175 Potential operational effects on species identified as IOFs that are notified features of the West Halladale SSSI (including components of the breeding bird assemblage feature) are discussed below for individual species.

8.10.176 Although other bird species that are notified features of the SSSI could be breeding in the wider area and could be affected by operational disturbance of nesting or foraging birds, there were either no records of these species or low levels of flight activity (but no evidence regular commuting routes across the Proposed Alignment) and no breeding territories within the Study Area, which indicates that these species make no more than occasional use of the Proposed Alignment site for foraging. It is therefore considered highly unlikely that there would be significant disturbance or collision risk to nesting or foraging birds that are notified features of the SSSI (but were not identified as IOFs) during the operational phase of the Proposed Alignment.

8.10.177 Furthermore, implementation of the BPP would reduce the risk of disturbance to breeding birds during operation of the Proposed Alignment. Additionally, it is anticipated that at least some of the component species of the breeding bird assemblage feature that were not identified as IOFs will be habituated to large artificial structures (such as turbines, OHLs and tracks/roads) within the landscape and would continue to nest and/or forage around the Proposed Alignment, while sufficient habitat is present in the surrounding area to accommodate any displaced birds.

8.10.178 Potential operational phase effects of the Proposed Alignment on notified features of the West Halladale SSSI that were not identified as IOFs (which are assessed separately) are assessed as being of low magnitude and **not significant** under the EIA Regulations.

8.10.179 East Halladale SSSI and Lochan Buidhe Mires SSSIAs the East Halladale and Lochan Buidhe Mires SSSIs are respectively located approximately 0.7 km and 1.9 km away from the Proposed Alignment (at the closest point), there is not considered to be any potential for direct disturbance to notified features within the SSSI itself during operation of the Proposed Alignment.

8.10.180 Potential operational effects on species identified as IOFs that are notified features of the East Halladale SSSI and/or Lochan Buidhe Mires SSSI (including components of the breeding bird assemblage feature) are discussed below for individual species.

8.10.181 Although there is some potential for indirect effects during the operational phase of the Proposed Alignment due to disturbance of other foraging birds breeding within the SSSIs, or direct effects due to collisions, levels of activity by notified features that were not identified as IOFs (including component species of the breeding bird assemblage) were generally very low, suggesting that the area around the Proposed Alignment is not of particular importance to foraging birds.

8.10.182 It is anticipated that at least some component species of the SSSI breeding bird assemblages that were not identified as IOFs would be habituated to large artificial structures within the landscape and would continue to forage around the Proposed Alignment, while sufficient habitat is present in the surrounding area to accommodate any displaced birds. Based on the low levels of flight activity, collision risk to notified features of the SSSIs that were not identified as IOFs is also considered to be negligible.

8.10.183 As such, potential effects of operational effects on notified avian features of East Halladale SSSI and Lochan Buidhe Mires SSSI that were not identified as IOFs (which are assessed separately) are considered to be of negligible magnitude and **not significant** under the EIA Regulations.

Whooper Swan

8.10.184 As there was no evidence that whooper swans foraged within or around the Proposed Alignment site and the habitats present are largely sub-optimal for foraging birds, there is not considered to be any potential for disturbance/displacement to this species during the operational phase of the Proposed Alignment.

8.10.185 Potential operational phase effects on the NHZ 5 wintering whooper swan population due to displacement/disturbance, are therefore assessed as being of negligible magnitude and **not significant** under the EIA Regulations.

8.10.186 Low levels of whooper swan flight activity were recorded during surveys for the nearby Melvich Wind Energy Hub and Kirkton Energy Park, some of which could have been associated with birds migrating to/from the Caithness Lochs SPA and Ramsar site. However, such flights will be infrequent (two flights annually per individual) and it is likely that birds will typically be flying above potential collision height whilst on migration.

8.10.187 Potential operational phase effects on the NHZ 5 and Caithness Lochs SPA wintering whooper swan population due to collision, are assessed as being of low magnitude and **not significant** under the EIA Regulations.

Curlew

8.10.188 As noted above under Construction Effects, a maximum of two curlew territories were present within 300 m of the Proposed Alignment during a single survey year (2023). Assuming a worst-case scenario that both pairs are permanently displaced due to the presence of the Proposed Alignment, this would represent 0.12 % of the NHZ 5 breeding curlew population (1,737 pairs; Wilson *et al*., 2015). Note that these would likely be the same pairs potentially affected by impacts during the construction phase; thus, there is unlikely to be an additive effect, although effects could be long-term.

8.10.189 While a study by Pearce-Higgins *et al*. (2009) suggested that breeding curlews would be displaced from 500 m around operational turbines, a long-term monitoring study by Whitfield *et al*. (2010) found no evidence that curlew were displaced due to wind farm infrastructure. Furthermore, given the extent of suitable breeding habitat present in the wider area, notably within the Caithness and Sutherland Peatlands SPA, it is possible that displaced birds would be accommodated in the surrounding area, rather than being lost entirely from the NHZ 5 breeding population.

8.10.190 Effects on the NHZ 5 breeding curlew population due to disturbance/displacement during the operation of the Proposed Alignment are assessed as being of low magnitude and **not significant** under the EIA Regulations.

8.10.191 Curlew flight activity was concentrated in the eastern part of the survey area, which is also where the 2022 territories were recorded, and it is likely that much of the flight activity was associated with a small number of breeding pairs. If breeding birds are displaced due to habitat loss and/or disturbance during the construction and operation of the Proposed Alignment, this may reduce collision risk to the species.

8.10.192 As such, the potential effects of collision mortality to the NHZ 5 breeding curlew population during operation of the Proposed Alignment are assessed as being of low magnitude and **not significant** under the EIA Regulations.

8.10.193 However, as a precautionary measure, it is proposed that targeted mitigation, namely installation of line markers, in areas where curlew flight activity was concentrated will be installed to reduce collision risk to this species as far as possible. Further details are provided in paragraph 8.11.3.

Osprey and White-tailed Eagle

8.10.194 As noted above, an osprey nest was identified in the wider area, more than 750 m[16] from the Proposed Alignment (in 2023), although breeding was not confirmed. Historically, a pair of osprey was confirmed to have bred close to this location in 2013 and probably in 2015; again, the nest site was more than 750 m from the Proposed Alignment.

8.10.195 Although no white-tailed eagle nest sites have been identified within 2 km of the Proposed Alignment, a roost site was identified more than 500 m[16] away (in 2023).

8.10.196 While it is possible that ospreys could nest within 750 m of the Proposed Alignment in future and/or white-tailed eagles could roost, or potentially nest, within 500 m as the species range continues to expand, suitable habitat for both species within these distances is limited. Furthermore, implementation of the BPP would ensure that any breeding Schedule 1-listed species such as osprey and white-tailed eagle, as well as any roosting white-tailed eagles, would be protected from disturbance during any major operational maintenance required for the Proposed Alignment.

8.10.197 Potential effects of operational disturbance on the NHZ 5 breeding osprey and white-tailed eagle populations are assessed as being of negligible magnitude and **not significant** under the EIA Regulations.

8.10.198 Levels of osprey flight activity recorded during surveys for the Proposed Alignment and surrounding developments (reviewed as part of the desk study) were very low, despite the presence of a nest in the wider area. Similarly, white-tailed eagle flights were recorded only occasionally. Although levels of flight activity by the latter species could increase if birds breed in the wider area, it is considered unlikely that collision risk would constrain the upward trajectory of the white-tailed eagle population within NHZ 5.

8.10.199 Potential effects of collision mortality on the NHZ 5 breeding osprey and white-tailed eagle populations are therefore assessed as being of negligible magnitude and **not significant** under the EIA Regulations.

Barn Owl

8.10.200 As noted above, a single barn owl roosting and breeding site was identified during surveys for the proposed Melvich Wind Energy Hub (active in 2021 and 2022). Although the exact location is unknown, it is highly likely that it is outwith potential disturbance distance (100 m; NatureScot, 2022) of the Proposed Alignment. Furthermore, breeding barn owls would be protected from disturbance during any major operational maintenance required for the Proposed Alignment. As foraging habitat within and around the Proposed Alignment is largely sub-optimal for foraging barn owl, there is also minimal potential for disturbance/displacement of foraging birds.

8.10.201 Additionally, given the limited distribution of suitable nest and roost sites within 100 m of the Proposed Alignment and the presence of the existing Strathy North 132 kV trident 'H' wood pole OHL, it is considered highly unlikely that barn owls would be deterred from breeding or roosting due to the presence of the Proposed Alignment.

8.10.202 Effects on national and regional barn owl populations due to disturbance/displacement during operation of the Proposed Alignment are therefore assessed as being of negligible magnitude and **not significant** under the EIA Regulations.

8.10.203 No barn owl flights were recorded during field surveys in 2022 for the Proposed Alignment or 2023 for the Alternative Alignment and the only registrations of this species identified during the desk study were recorded during surveys for the proposed Melvich Wind Energy Hub, when a total of five birds were recorded hunting in grassland fields along the Halladale River valley in August 2021 (ITPEnergised, 2023). Although the flight paths were not available for review, there is very little overlap between the Proposed Alignment footprint and optimal foraging habitat in Strath Halladale.

8.10.204 Furthermore, as nesting barn owls typically have a foraging range of up to 1 km from the nest it is considered unlikely that birds from the Melvich site would typically fly across the Proposed Alignment site

during the breeding season, although it is acknowledged that, outside the breeding season birds are known to forage up to 3 km, and sometimes up to 5 km from their nest site (Hardey *et al*., 2013).

8.10.205 Effects on national and regional barn owl populations due to collision risk during operation of the Proposed Alignment are assessed as being of low to negligible magnitude and **not significant** under the EIA Regulations.

Summary

8.10.206 A summary of operational phase effects on IOFs is presented in **Table V1-8.5**.

Table V1-8.5: 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
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

IOF	Importance Level	Potential Effect	Magnitude of Effect	Potentially Significant Effect?	Targeted Mitigation Required?
		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 to Low	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
Black-throated diver	International	Disturbance/ displacement	Low	No	No
		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

IOF	Importance Level	Potential Effect	Magnitude of Effect	Potentially Significant Effect?	Targeted Mitigation Required?
		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
Lochan Buidhe Mires 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
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

IOF	Importance Level	Potential Effect	Magnitude of Effect	Potentially Significant Effect?	Targeted Mitigation Required?
		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

8.11 Mitigation, Enhancements and Monitoring

Mitigation

Line Marking

8.11.1 As advised in NatureScot (2016a) 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).

8.11.2 Line markers would be installed along key sections of the 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;
- Between Towers 32 and 38; and
- Between Towers 40 and 47 (this would also reduce collision risk to curlew).

8.11.3 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 Towers 21 and 26 of the OHL to minimise collision risk to hen harrier, and between Towers 54 and 61 to minimise collision risk to curlew.

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

8.11.5 It is proposed that the most suitable line marker model and optimal spacing would be determined post-submission in consultation with NatureScot. However, in line with recommendations in Martin (2022), as far as possible, the following line marker design and deployment characteristics would be sought and implemented to maximise detectability.

- As large a surface area as possible.
- A repeat chromatic pattern to generate a high degree of internal contrast so that markers are detectable regardless of landscape background conditions (rather than relying upon the markers contrasting with the landscape background).
- An element of movement or flicker (i.e., an oscillating or rotating device), which will allow markers to be detected more readily than static markers.
- Deployment of markers at small intervals along the OHL.
- High durability of markers to minimise wear and tear.

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

8.11.7 In line with NatureScot (2016a) 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 Proposed Alignment.

Artificial Nest Rafts for Breeding Divers

8.11.8 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 Proposed Alignment.

8.11.9 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

8.11.10 Although no significant effects were identified for any other IOFs, as part of the Connagill Cluster Grid Connections Outline HMP (**Volume 4: Appendix V1-7.8**), it is proposed that upland habitat in the wider area (more than 500 m from the Proposed 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.

8.11.11 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.

8.11.12 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.

8.11.13 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.

8.11.14 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 Proposed Alignment.

Monitoring

8.11.15 In addition to monitoring of the habitat enhancements for breeding hen harrier as part of the Connagill Cluster Grid Connections 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 Proposed Alignment is undertaken by a suitably experienced ornithologist during construction of the Proposed 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.

8.11.16 Surveys would include the Proposed 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 Proposed Alignment.

8.12 Residual Effects

8.12.1 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 Proposed Alignment as well as collision risk. With these exceptions, potential effects of the Proposed Alignment on IOFs were predicted to be of negligible to low magnitude and not significant.

8.12.2 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 and black-throated divers (outlined above in section 8.11), 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.

8.13 Cumulative Effects

8.13.1 The potential for the Proposed Alignment to make a material contribution to cumulative effects on IOFs is assessed below with reference to NatureScot (2018c) guidance. A spreadsheet listing estimated collision risk to target species recorded at wind farms in North Highland (dated 29/05/2024) was provided by NatureScot (2024b) and was used to inform the assessment of cumulative effects.

8.13.2 The cumulative assessment focussed on key developments in the area around the Proposed Alignment with the potential to affect the same populations of IOFs. These are listed in **Table V1-8.6**. Where an impact assessment has yet to be completed or no data is publicly available, the developments were scoped out of the cumulative assessment.

8.13.3 It should be noted that the majority of the developments included in the cumulative assessment do not overlap the Caithness and Sutherland Peatlands SPA, and some of the breeding territories of relevant species (e.g., hen harrier and merlin) recorded during surveys for these developments could be outwith the SPA. Similarly, none of the developments overlap the North Caithness Cliffs SPA.

8.13.4 Furthermore, developments will be at different stages of their life-cycle and construction periods will not all overlap, which could reduce the potential for significant cumulative effects on breeding, roosting and foraging birds due to disturbance and displacement during the construction phase.

Table V1-8.6: List of Developments Included in the Assessment of Cumulative Effects on Relevant IOFs

Development Name	Status	Total Permanent Land-take for Development (ha)	No. of Turbines/ Length of OHL/ Underground Cable (UGC)	Notes
Achairn Wind Turbines	Consented	No information available	3 turbines	No publicly available information; collision risk values taken from NatureScot (2024d) spreadsheet
Achlachan Wind Farm	Consented	1.09	5 turbines	
Bad á Cheò Wind Farm	Operational	Unknown	13 turbines	

Development Name	Status	Total Permanent Land-take for Development (ha)	No. of Turbines/ Length of OHL/ Underground Cable (UGC)	Notes
Baillie Wind Farm	Operational	No information available	21 turbines	No publicly available information*
Bettyhill Wind Farm	Operational	No information available	2 turbines	No publicly available information; collision risk values taken from NatureScot (2024d) spreadsheet
Bettyhill Wind Farm Phase 2	Consented	9.40	10 turbines	
Bettyhill Wind Farm Phase 2 Grid Connection	Pre-application	Unknown	~31 km	Impact assessment not yet completed*
Bilbster Wind Farm	Operational	No information available	3 turbines	No publicly available information*
Camster Wind Farm	Operational	No information available	25 turbines	No publicly available information; collision risk values taken from NatureScot (2024d) spreadsheet
Camster II Wind Farm	Under construction	14.4	10 turbines	
Causeymire Wind Farm	Operational	No information available	21 turbines	No publicly available information; collision risk values taken from NatureScot (2024d) spreadsheet
Causeymire Wind Farm Life Extension	Under consideration	None	21 turbines	
Cogle Moss Wind Farm	Consented	Unknown	12 turbines	
Golticlay Wind Farm Section 36C Variation	Consented	12.34	13 turbines	

Development Name	Status	Total Permanent Land-take for Development (ha)	No. of Turbines/ Length of OHL/ Underground Cable (UGC)	Notes
Halsary Wind Farm	Operational	10.2	15 turbines	
Kirkton Energy Park (including Kirkton Substation)	Under consideration	15.29	11 turbines	
Kirkton Energy Park Grid Connection	Pre-application	Unknown	Not yet confirmed, approximately ~1 km	Impact assessment not yet completed*
Limekiln Grid Connection	Consented	Direct loss of 1-2m^2 of habitat per pole	~5 km	
Limekiln Wind Farm	Consented	3.38	21 turbines	
Limekiln Wind Farm Extension	Consented	Unknown	5 turbines	
Lochend Wind Farm	Operational	1,16	4 turbines	
Lochend Wind Farm Extension	Under consideration	1.202	5 turbines	
Loch Toftingall Battery Energy Storage System (BESS)	Pre-application	Unknown	N/A	Impact assessment not yet completed*
Melvich Wind Energy Hub (including Melvich Substation)	Under consideration	10.65 (plus 18.94 ha of indirect habitat loss); values include temporary habitat loss	12 turbines	
Melvich Wind Energy Hub Grid Connection	Pre-application	Unknown	Unknown	Impact assessment not yet completed*
Rangag Wind Turbines	Pre-application	Unknown	2 turbines	Impact assessment not yet completed*
Slickly Wind Farm	Consented	11.77	11 turbines	
Stemster Wind Farm	Pre-application	Unknown	11 turbines	Impact assessment not yet completed*
Strathy North Grid Connection (Strath Halladale to Dallangwell)	Operational	1.70 (plus 1.03 ha of potential habitat modification)	~12 km	
Strathy North Wind Farm	Operational	26.92	35 turbines	

Development Name	Status	Total Permanent Land-take for Development (ha)	No. of Turbines/ Length of OHL/ Underground Cable (UGC)	Notes
Strathy South Wind Farm (including Strathy South substation)	Consented	28.38 (plus 24.19 ha of permanent habitat change)	35 turbines	
Strathy South Wind Farm 'Southern Section' Grid Connection	Anticipated to be Permitted Development	Unknown	Approximately 5.4 km	Assessment of potential impacts included within Strathy South Wind Farm section 36 application*
Strathy Switching Station	Pre-application	Not yet confirmed	N/A	Impact assessment not yet completed*
Strathy Wood Wind Farm	Consented	13.00	11 turbines	
Strathy Wood Wind Farm Grid Connection	Under consideration	4.32	Approximately 4.5 km	
Stroupster Wind Farm	Operational	No information available	13 turbines	No publicly available information; collision risk values taken from NatureScot (2024d) spreadsheet
Sutherland Spaceport	Under construction	4.824****	N/A	
Tacher A, B & C Wind Turbines	Consented	No information available	3 turbines	No publicly available information*
Tormsdale Wind Farm Resubmission	Under consideration	9.78	10 turbines	
Wathegar Wind Farm	Operational	1.7	5 turbines	
Wathegar 2 Wind Farm	Operational	134.2	5 turbines	

*Where an impact assessment has not yet been completed for a development, no information was available, or the impact assessment was included within that for an associated development, it was not included in the cumulative assessment; **Only in a scenario with Melvich Wind Energy Hub/substation but without Strathy South Wind Farm 'Northern Section' Grid Connection – Proposed Alignment; ***Only in a scenario without Melvich Wind Energy Hub/substation or Strathy South Wind Farm 'Northern Section' Grid Connection – Alternative Alignment; ****This is the value reported in the 2020 EIA Report (Ramboll, 2020); the 2024 EIA Report stated that total permanent habitat loss has been reduced, but the updated total habitat loss is unclear

Construction Phase

Habitat Loss

8.13.5 Although it is possible that golden plover and curlew could potentially lose one or two nest sites respectively due to construction of the Proposed Alignment, nest sites vary between years and it is considered that birds could nest elsewhere within established breeding areas/territories in the area around the Proposed Alignment. It is considered highly unlikely that the loss of a single golden plover territory, which represents 0.09 % of the Caithness and Sutherland Peatlands SPA population of 1,064 pairs (NatureScot, 2023a), or loss of two curlew territories, which represents 0.12 % of the NHZ 5 population of 1,737 pairs (Wilson *et al*., 2015), would result in a population-level effect for either species.

8.13.6 No other IOFs are expected to lose any nest sites, and the extent of additional habitat that is potentially suitable for nesting birds is considered to be low. Similarly, the extent of potentially suitable foraging habitat that would be lost would also be low for all IOFs.

8.13.7 As such, it is considered that habitat loss due to the Proposed Alignment would be negligible and too low to make a material contribution to potential cumulative effects. Potential effects on IOFs due to habitat loss are therefore scoped out of the cumulative assessment.

Disturbance/Displacement

8.13.8 It is possible that the Proposed Alignment could make a material contribution to potentially significant cumulative effects on red-throated diver, black-throated diver, hen harrier, merlin and peregrine as all these species were breeding within potential disturbance distance of the Proposed Alignment. A summary of potential cumulative construction disturbance / displacement effects on these species is presented in **Table V1-8.7** at the end of this section.

8.13.9 It was considered that up to two red-throated diver territories and one black-throated diver territory could be displaced for a single breeding season due to construction of the proposed Melvich Wind Energy Hub. However, due to the temporary nature of the effects, it was considered that there would not be any significant effects on the Caithness and Sutherland Peatlands SPA breeding populations of either species (ITPEnergised, 2023). Furthermore, one of the red-throated diver territories and the black-throated diver territory are the same ones as those identified as being at potential risk of displacement from the Proposed Alignment alone. Therefore, if construction phases of the proposed Melvich Wind Energy Hub and Proposed Alignment overlap, up to three red-throated diver pairs and a single black-throated diver pair could be temporarily displaced due to potential cumulative disturbance effects.

8.13.10 It should be noted that displacement of divers is considered to be a worst-case scenario and the proposed BPP measures (outlined in section 8.9) would be implemented to avoid disturbance and displacement of diver species and other Schedule 1-listed breeding birds. Other developments, including Melvich Wind Energy Hub, will follow similar good practice measures to protect breeding birds (including divers) in order to comply with relevant legislation. Additionally, the measures proposed in section 8.11 to mitigate potentially significant effects on breeding divers due to construction of the Proposed Alignment alone, may also offset those resulting from the neighbouring Melvich Wind Energy Hub.

8.13.11 Following implementation of the targeted mitigation outlined in section 8.11, cumulative effects on the Caithness and Sutherland Peatlands SPA breeding red-throated and black-throated diver populations due to disturbance during construction of the Proposed Alignment are assessed as being of low magnitude and **not significant** under the EIA Regulations.

8.13.12 It was considered that construction of the Lochend Wind Farm could lead to short-term displacement of 1-3 roosting hen harriers (Wind Harvest, 2013), while construction of the proposed Tormsdale Wind Farm could

result in displacement of up to three breeding pairs and eight foraging pairs as a worst-case scenario, although it was considered that there would be no significant residual effects following implementation of mitigation (Arcus, 2021).

8.13.13 As the Lochend Wind Farm is already operational, there is not considered to be any potential for it to contribute to any cumulative construction phase effects on hen harrier. Even if it is consented, the construction phase of the proposed Tormsdale Wind Farm may not overlap with that of the Proposed Alignment. Additionally, construction effects are considered to be temporary, and mitigation would be implemented during construction to avoid disturbance and displacement of hen harriers at both sites, following which no significant population-level effects are predicted.

8.13.14 Cumulative effects on the Caithness and Sutherland Peatlands SPA breeding hen harrier population due to disturbance during construction of the Proposed Alignment are assessed as being of low to medium magnitude and **not significant** under the EIA Regulations.

8.13.15 Potential temporary displacement of a single breeding merlin pair was predicted at both Melvich Wind Energy Hub (ITPEnergised, 2023) and Strathy Wood Wind Farm Grid Connection (ASH, 2024). However, the former territory is the same as one of those identified as potentially at risk of disturbance from the Proposed Alignment alone. Therefore, if construction phases of all three developments overlap, up to three merlin pairs could be temporarily displaced due to potential cumulative disturbance effects

8.13.16 It was considered likely that any birds displaced due to construction of Melvich Wind Energy Hub and Strathy Wood Wind Farm Grid Connection would relocate to another suitable site and there would be no significant population-level effects from either development alone (ITPEnergised, 2023; ASH, 2024). Given that locations of merlin nest sites can vary considerably between years (Hardey *et al*., 2013), this is considered to be a reasonable conclusion, and is also the case for the Proposed Alignment.

8.13.17 Cumulative effects on the Caithness and Sutherland Peatlands SPA breeding merlin population due to disturbance during construction of the Proposed Alignment are assessed as being of low magnitude and **not significant** under the EIA Regulations.

8.13.18 No black-throated diver or peregrine pairs were predicted to be displaced during construction of other developments reviewed as part of the cumulative assessment. Therefore, following implementation of the embedded mitigation outlined in section 8.9 and targeted mitigation for breeding divers outlined in section 8.11, cumulative effects on the Caithness and Sutherland Peatlands SPA breeding black-throated diver population and the North Caithness Cliffs breeding peregrine population due to disturbance during construction of the Proposed Alignment are assessed as being of low magnitude and **not significant** under the EIA Regulations.

Operational Phase

Disturbance/Displacement

8.13.19 As the Proposed Alignment will closely follow the existing Strathy North 132 kV trident 'H' wood pole OHL and operational maintenance will typically be of low magnitude, infrequent and temporary, effects on IOFs due to disturbance/displacement during the operational phase are considered to be negligible to low.

8.13.20 The potential for the Proposed Alignment to make a material contribution to potentially significant cumulative effects on IOFs due to disturbance / displacement during the operational phase is, therefore, considered to be limited to red-throated diver, black-throated diver, hen harrier, merlin and peregrine, all of which were breeding within potential disturbance distance of the Proposed Alignment. A summary of potential cumulative operational disturbance / displacement effects on these species is presented in **Table V1-8.8** at the end of this section.

8.13.21 Potential operational disturbance to all five species from each surrounding development scoped into the cumulative assessment was assessed as being of negligible to low magnitude, with no potential for population-level effects. As such, potential cumulative effects on the Caithness and Sutherland Peatlands SPA breeding red-throated diver, black-throated diver, hen harrier and merlin populations, and the North Caithness Cliffs breeding peregrine population, due to operational disturbance are assessed as being of low to negligible magnitude and **not significant** under the EIA Regulations.

Mortality due to Collision

8.13.22 Residual effects on IOFs due to collisions during operation of the Proposed Alignment were considered to be of negligible to low magnitude and, with the exception of collision risk to red-throated diver, black-throated diver and hen harrier, there is not considered to be any potential for the Proposed Alignment to make a material contribution to a potentially significant cumulative effect. A summary of the potential cumulative collision effects on these three species is presented in **Table V1-8.8** at the end of this section.

8.13.23 The potential for significant effects on red-throated diver, black-throated diver and hen harrier due to collision risk was considered to be negligible for many of the developments included in the cumulative assessment, and in many cased flight activity was too low for collision risk modelling (CRM) to be required. Where CRM was completed, the total cumulative risk was low for both diver species, with predicted mean annual rates of 0.363 for red-throated diver and 0.202 for black-throated diver, with a higher predicted mean annual rate of 1.118 for hen harrier.

8.13.24 These estimates represent 0.395 % of the Caithness and Sutherland Peatlands SPA breeding red-throated diver population (46 pairs in 2006, NatureScot 2023a), 0.388 % of the breeding black-throated diver population (26 pairs in 1994, NatureScot 2023a) and 2.150 % of the hen harrier population (14 pairs in 1993 to 1997, NatureScot 2023a), with Melvich Wind Energy Hub, Strathy South Wind Farm and Strathy North Wind Farm contributing the highest proportions of total cumulative collision risk for red-throated diver, black-throated diver and hen harrier respectively.

8.13.25 Although the predicted cumulative collision risk to hen harriers is much higher than that for both diver species, the CRM values do not take into account any mitigation/compensation, which would likely reduce the figures significantly (NatureScot, 2024d). Furthermore, the SPA population estimate relates to breeding hen harrier, whereas some of the flight activity on which the CRM was based would be associated with wintering birds, non-breeding adults and immature birds.

8.13.26 Population viability analysis (PVA) completed for Camster Wind Farm (also in NHZ 5) (Whitfield, 2008) demonstrated that, due to the favourable status of the SPA hen harrier population, even with a theoretical annual collision risk of 7.5 female birds, the hen harrier population would remain stable at pre-construction levels, indicating that the SPA breeding population is relatively robust. This finding was supported by more recent PVA of the SPA breeding hen harrier population completed for Strathy Wood Wind Farm (Atmos Consulting, 2015) which showed that, even with the additional cumulative collision risk from that wind farm, the population would continue to increase.

8.13.27 Although it is acknowledged that there could be additional cumulative collision risk to both species from developments for which CRM was not completed (including the Proposed Alignment and other OHLs), this is expected to be negligible, and collision risk from the Proposed Alignment would result in no more than a marginal increase to cumulative effects on the SPA breeding red-throated diver and hen harrier populations.

8.13.28 The effects of cumulative collision risk to the Caithness and Sutherland Peatlands SPA breeding red-throated diver, black-throated diver and hen harrier populations are therefore assessed as being of low magnitude and **not significant** under the EIA Regulations.

Cumulative Barrier Effects

8.13.29 It is considered that red-throated diver is the only IOF that could potentially be significantly affected by cumulative barrier effects. This could result in birds breeding to the south of the Proposed Alignment potentially having to fly around both the Proposed Alignment and the Strathy North Wind Farm to forage at the coast.

8.13.30 However, a small number of red-throated diver flights have been recorded over or through the operational Strathy North Wind Farm, indicating that it does not present a barrier to their movement. Additionally, the minimum separation distance between the Proposed Alignment and the Strathy North Wind Farm turbines is approximately 800 m, with a clear corridor between the two, along the River Strathy, which is considered to be sufficient to allow birds breeding to the south to fly between the two developments to reach the coast.

8.13.31 Alternatively, birds may fly around both developments to the west or east, in which case they would still be following one of the three other identified commuting routes for birds breeding to the south (described above, with additional details provided in Atmos Consulting (2019)). Under this scenario, it is considered that the additional distance required to fly around rather than between the developments would be minor and unlikely to result in significant increases to daily energy costs.

8.13.32 There is not considered to be any potential for cumulative barrier effects to red-throated divers breeding at the northern Caithness and Sutherland Peatlands SPA lochs. If these birds avoid flying over the Proposed Alignment, this could entail them flying around the Proposed Alignment, but it would not entail an additional detour to avoid neighbouring wind farms. Given that birds are known to cross turbine arrays (including Strathy North Wind Farm) and they already fly over the existing Strathy North 132 kV trident ‘H’ wood pole OHL, it is considered likely that birds will continue to use existing commuting routes.

8.13.33 As such, cumulative barrier effects on the Caithness and Sutherland Peatlands SPA breeding red-throated diver population are assessed as being of low magnitude and **not significant** under the EIA Regulations.

Table V1-8.7: Summary of Potential Cumulative Effects on Relevant IOFs during Construction of the Proposed Alignment

Alignment Name and Source of Information	Potential Effects of Construction Disturbance				
	Red-throated Diver	Black-throated Diver	Hen Harrier	Merlin	Peregrine
Proposed Alignment	Potential temporary loss of 1-3 breeding territories; this would be offset by mitigation proposed in section 8.11	Potential temporary loss of one breeding territory; this would be offset by mitigation proposed in section 8.11	Potential temporary loss of 1-2 breeding territories; this would be offset by habitat enhancements proposed in section 8.11	Potential temporary loss of 1-2 breeding territories; considered likely that any displaced birds would relocate to another location and no significant effects predicted	Potential temporary loss of one breeding territory; considered likely that any displaced birds would return to the territory post-construction and no significant effects are predicted
Achairn Wind Turbines NatureScot (2024d)	No information	No information	No information	No information	No information
Achlachan Wind Farm Whirlwind Renewables LLP (2013)	Not assessed	Negligible impacts and no significant effects	Negligible impacts and no significant effects	Negligible impacts and no significant effects	Not assessed
Bad á Cheò Wind Farm (SKM Enviros, 2012)	No significant effects	Not assessed	No evidence of breeding; no impacts	One breeding pair ~780 m from nearest turbine; no significant effects predicted	No significant effects
Bettyhill Wind Farm NatureScot (2024d)	No information	No information	No information	No information	No information
Bettyhill Wind Farm Phase 2 SLR (2022a; 2023a)	Closest breeding record c.900 m from turbines; no significant effects predicted	None recorded	Recorded twice only (in flight); no significant effects predicted	No breeding territories within 500 m; no significant effects predicted	Not breeding; not assessed
Camster Wind Farm	No information	No information	No information	No information	No information
Camster II Wind Farm (AECOM, 2019)	Not assessed	Not assessed	No evidence of breeding within 2 km; no significant effects	No evidence of breeding within 2 km; no significant effects	No evidence of breeding within 2 km; no significant effects

Alignment Name and Source of Information	Potential Effects of Construction Disturbance				
	Red-throated Diver	Black-throated Diver	Hen Harrier	Merlin	Peregrine
Causeymire Wind Farm	No information	No information	No information	No information	No information
Causeymire Wind Farm Life Extension (RSK Environment Limited, 2021)	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed
Cogle Moss Wind Farm (Cogle Moss Renewables LLP, 2015)	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed
Golticlay Wind Farm Section 36C Variation (Ramboll UK Limited, 2023)	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed
Halsary Wind Farm (ScottishPower Renewables, 2009; 2012)	No significant effects	No significant effects	No significant effects	No significant effects	No significant effects
Kirkton Energy Park (including Kirkton Substation) SLR (2022b; 2023b)	No territories within potential disturbance distance; no significant effects predicted	No territories within potential disturbance distance; no significant effects predicted	No territories within potential disturbance distance; no significant effects predicted	No territories within potential disturbance distance; no significant effects predicted	No territories within potential disturbance distance; no significant effects predicted
Limekiln Grid Connection ASH (2020)	Not assessed	Not assessed	Not assessed; no evidence of breeding within study area	Not assessed	Not assessed
Limekiln Wind Farm Infinergy (2012; 2021; 2022)	No breeding territories within 2 km; no significant effects	No breeding territories within 2 km; no significant effects	No breeding territories within 1 km; no significant effects	Closest breeding site ~1 km away; no significant effects	No breeding territories within 2 km; not assessed
Limekiln Wind Farm Extension Infinergy (2020)	No breeding records; not assessed	No breeding records; not assessed	No breeding records within 2 km; not assessed	No breeding records within 2 km; not assessed	No breeding records within 2 km; not assessed
Lochend Wind Farm (Wind Harvest, 2013)	Not assessed	Not assessed	No breeding records; potential short-term	Not assessed	Not assessed

Alignment Name and Source of Information	Potential Effects of Construction Disturbance				
	Red-throated Diver	Black-throated Diver	Hen Harrier	Merlin	Peregrine
			displacement of 1-3 roosting birds		
Lochend Wind Farm Extension (ITPEnergised, 2024)	Not assessed	Not assessed	No breeding records; not assessed	Not assessed	Not assessed
Melvich Wind Energy Hub ITPEnergised (2023); NatureScot (2024d)	Failure of up to two breeding pairs for one breeding season, but not considered significant	Potential loss of a single nest for one breeding season, but not considered significant	Not considered to be breeding in local area; scoped out of assessment	Potential loss of a single nest for one breeding season, but not considered significant	No breeding records and no significant effects
Slickly Wind Farm (Arcus Consultancy Services, 2019)	Not assessed	Not assessed	No nesting birds within 750 m; no significant effects	No nesting birds within 2 km; no significant effects	No nesting birds within 750 m; not assessed
Strathy North Grid Connection (Strath Halladale to Dallangwell) ASH (2013)	Not assessed	Nearest breeding territory over 700 m away; no disturbance following implemetation of mitigation	Nearest breeding territory over 1 km away; no disturbance following implemetation of mitigation	Nearest breeding territory over 1 km away; no disturbance following implemetation of mitigation	Not assessed
Strathy North Wind Farm Environ (2007; 2010); NatureScot (2024d)	Minimal disturbance and negligible construction impacts	Minimal disturbance and negligible construction impacts	Disturbance expected but would be minimised by timing works to occur outwith breeding season	Minimal disturbance and negligible construction impacts	Minimal disturbance and negligible construction impacts
Strathy South Wind Farm (including Strathy South substation) Ramboll UK Limited (2020)	Breeding activity on waterbodies >500 m from construction activity; no significant effects following implementation of mitigation	Breeding activity on waterbodies >500 m from construction activity; no significant effects following implementation of mitigation	Not breeding within site during 2018-19 surveys; no significant effects following implementation of mitigation	Potential disturbance to one territory but no significant effects following implementation of mitigation	Not breeding within 2 km; no significant effects
Strathy Wood Wind Farm Atmos Consulting (2015; 2019)	No significant effects	Not assessed	No significant residual effect following	No significant effects	Not assessed

Alignment Name and Source of Information	Potential Effects of Construction Disturbance				
	Red-throated Diver	Black-throated Diver	Hen Harrier	Merlin	Peregrine
			implementation of mitigation		
Strathy Wood Wind Farm Grid Connection (ASH, 2024)	No breeding lochs within at least 1 km; no significant effects predicted	No breeding lochs within at least 1 km; no significant effects predicted	No significant effects predicted following implementation of mitigation	Potential temporary displacement of one breeding territory; considered likely that birds would relocate to another location and no significant effects predicted	Soped out of assessment
Stroupster Wind Farm	No information	No information	No information	No information	No information
Sutherland Spaceport (Ramboll, 2024)	No displacement or significant effects predicted following implementation of mitigation	Not assessed	Not assessed	No significant effects predicted	Not assessed
Tormsdale Wind Farm Resubmission (Arcus, 2021)	No evidence of breeding within 2 km; no potential effects	No evidence of breeding within 2 km; no potential effects	Potential displacement of three breeding pairs and eight foraging pairs, but no significant residual effects following implementation of mitigation	No evidence of breeding; no significant effects	Not assessed
Wathegar Wind Farm (Whirlwind Renewables, 2010)	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed
Wathegar 2 Wind Farm (Whirlwind Renewables Limited, 2011)	Not assessed	Not assessed	Birds assessed against regional non-breeding population; no significant effects predicted	Not assessed	Not assessed

Table V1-8.8: Summary of Potential Cumulative Effects on Relevant IOFs during Operation of the Proposed Alignment

Alignment Name and Source of Information	Potential Effects of Operational Disturbance					Potential Effects of Collision During Operation (Mean Annual Collision Risk)		
	Red-throated Diver	Black-throated Diver	Hen Harrier	Merlin	Peregrine	Red-throated Diver	Black-throated Diver	Hen Harrier
Proposed Alignment	Potential temporary disturbance of birds at 1-3 breeding territories	Potential temporary disturbance of birds at one breeding territory	Potential temporary disturbance of birds at 1-2 breeding territories	Potential temporary disturbance of birds at 1-2 breeding territories	Potential temporary disturbance of birds at one breeding territory	CRM not completed, but potential effects of collision considered to be of low magnitude (see **Volume 4: Appendix V1-8.2**)	CRM not completed, but potential effects of collision considered to be of low magnitude (see **Volume 4: Appendix V1-8.2**)	CRM not completed, but potential effects of collision considered to be of low magnitude (see **Volume 4: Appendix V1-8.2**)
Achairn Wind Turbines NatureScot (2024d)	No information	No information	No information	No information	No information	0.00	CRM not completed	CRM not completed
Achlachan Wind Farm Whirlwind Renewables LLP (2013)	Not assessed	Negligible impacts and no significant effects	Negligible impacts and no significant effects	None recorded; not assessed	None recorded; not assessed	CRM not completed	CRM not completed	CRM not completed
Bad á Cheò Wind Farm (SKM Enviros, 2012)	No significant effects	Not assessed	No significant effects	No significant effects	Not assessed	CRM not completed	CRM not completed	CRM not completed
Bettyhill Wind Farm NatureScot (2024d)	No information	No information	No information	No information	No information	0.010	0	0.010
Bettyhill Wind Farm Phase 2 SLR (2022a; 2023a)	Closest breeding record c.900 m from turbines; no	None recorded	Recorded twice only (in flight); no significant effects predicted	No territories within potential disturbance distance; no	Not assessed	CRM not completed	None recorded	CRM not completed

Alignment Name and Source of Information	Potential Effects of Operational Disturbance					Potential Effects of Collision During Operation (Mean Annual Collision Risk)		
	Red-throated Diver	Black-throated Diver	Hen Harrier	Merlin	Peregrine	Red-throated Diver	Black-throated Diver	Hen Harrier
	significant effects predicted			significant effects				
Camster Wind Farm	No information	No information	No information	No information	No information	CRM not completed	CRM not completed	0.06
Camster II Wind Farm (AECOM, 2019)	Not assessed	Not assessed	No evidence of breeding within 2 km; no significant effects	No evidence of breeding within 2 km; no significant effects	Not assessed	CRM not completed	CRM not completed	0.02
Causeymire Wind Farm	No information	No information	No information	No information	No information	CRM not completed	CRM not completed	CRM not completed
Causeymire Wind Farm Life Extension (RSK Environment Limited, 2021)	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed	CRM not completed	CRM not completed	CRM not completed
Cogle Moss Wind Farm (Cogle Moss Renewables LLP, 2015)	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed	CRM not completed	CRM not completed	0.036
Golticlay Wind Farm Section 36C Variation (Ramboll UK Limited, 2023)	Not assessed	Not assessed	Not assessed	Not assessed	Disturbance and displacement effects negligible and not significant	CRM not completed	CRM not completed	CRM not completed
Halsary Wind Farm (ScottishPower	No significant effects	No significant effects	No significant effects	No significant effects	No significant effects	CRM not completed	0.052	0.016

Alignment Name and Source of Information	Potential Effects of Operational Disturbance					Potential Effects of Collision During Operation (Mean Annual Collision Risk)		
	Red-throated Diver	Black-throated Diver	Hen Harrier	Merlin	Peregrine	Red-throated Diver	Black-throated Diver	Hen Harrier
Renewables, 2009; 2012)								
Kirkton Energy Park (including Kirkton Substation) SLR (2022b; 2023b)	Not assessed	Not assessed	No significant effects	No significant effects	No significant effects	CRM not completed	CRM not completed	0.001
Limekiln Grid Connection ASH (2020)	Not assessed	Not assessed	Not assessed; no evidence of breeding within study area	Not assessed	Not assessed	CRM not completed	CRM not completed	Low level of flight activity (10 flights); no display flights. Impact of low magnitude and not significant
Limekiln Wind Farm Infinergy (2012; 2021; 2022)	No breeding territories within 2 km; no significant effects	No breeding territories within 2 km; no significant effects	No breeding territories within 1 km; no significant effects	No breeding records within 2 km; no significant effects	No connectivity with SPA	CRM not completed	CRM not completed	CRM not completed; collision risk considered to be negligible and not significant
Limekiln Wind Farm Extension Infinergy (2020)	No breeding records; not assessed	No breeding records; not assessed	No breeding records within 2 km; not assessed	No breeding records within 2 km; not assessed	Scoped out of assessment	CRM not completed	CRM not completed	CRM not completed
Lochend Wind Farm (Wind Harvest, 2013)	Not assessed	Not assessed	No breeding records; no/negligible impacts on	Not assessed	Not assessed	CRM not completed	CRM not completed	0.003

Alignment Name and Source of Information	Potential Effects of Operational Disturbance					Potential Effects of Collision During Operation (Mean Annual Collision Risk)		
	Red-throated Diver	Black-throated Diver	Hen Harrier	Merlin	Peregrine	Red-throated Diver	Black-throated Diver	Hen Harrier
			roosting and foraging birds					
Lochend Wind Farm Extension (ITPEnergised, 2024)	Not assessed	Not assessed	No breeding records; not assessed	Not assessed	Not assessed	CRM not completed	CRM not completed	0.012
Melvich Wind Energy Hub ITPEnergised (2023); NatureScot (2024d)	Closest breeding record c.500 m away; no significant effects predicted	Closest breeding record >500 m away; no significant effects predicted	Not considered to be breeding in local area; scoped out of assessment	Potential for displacement of single breeding pair as a worst-case scenario; effects not considered to be significant	Not assessed	0.270	CRM not completed	CRM not completed
Slickly Wind Farm (Arcus Consultancy Services, 2019)	Not assessed	Not assessed	No significant effects	Potential for disturbance considered unlikely	Scoped out of assessment	CRM not completed	CRM not completed	0.11
Strathy North Grid Connection (Strath Halladale to Dallangwell) ASH (2013)	Not assessed	Nearest breeding territory over 700 m away; no significant effects	Nearest breeding territory over 1 km away; no significant effects	Nearest breeding territory over 1 km away; no significant effects	Not assessed	CRM not completed	CRM not completed	CRM not completed
Strathy North Wind Farm	Not assessed	Not assessed	Not assessed	No significant disturbance	Negligible operational effects	0.017	0.05	0.381

Alignment Name and Source of Information	Potential Effects of Operational Disturbance					Potential Effects of Collision During Operation (Mean Annual Collision Risk)		
	Red-throated Diver	Black-throated Diver	Hen Harrier	Merlin	Peregrine	Red-throated Diver	Black-throated Diver	Hen Harrier
Environ (2007; 2010); NatureScot (2024d)								
Strathy South Wind Farm (including Strathy South substation) Ramboll UK Limited (2020)	Breeding activity on waterbodies >900 m from nearest turbine; no significant effects	Breeding activity on waterbodies >900 m from nearest turbine; no significant effects	Based on a precautionary approach, birds could be displaced from nest sites**, but sufficient alternative nesting habitat is available, and effects would not be significant	Potential loss of a single merlin territory as a worst-case scenario	No evidence of breeding within 2 km; no significant effects	0.004	0.10	0.09
Strathy Wood Wind Farm Atmos Consulting (2015; 2019)	No significant effects	Not assessed	No significant effects	Not assessed	Not assessed	0.062	CRM not completed	0.11
Strathy Wood Wind Farm Grid Connection (ASH, 2024)	No breeding lochs within at least 1 km; no significant effects predicted	No breeding lochs within at least 1 km; no significant effects predicted	Potential displacement of single breeding territory; this would be offset by targeted mitigation	Potential displacement of single breeding territory	Not considered to be any connectivity with SPA	CRM not completed, but potential effects of collision considered to be of low magnitude	CRM not completed; potential effects of collision considered to be of low magnitude following implementation of targeted	CRM not completed; potential effects of collision considered to be of low magnitude following implementation of targeted

Alignment Name and Source of Information	Potential Effects of Operational Disturbance					Potential Effects of Collision During Operation (Mean Annual Collision Risk)		
	Red-throated Diver	Black-throated Diver	Hen Harrier	Merlin	Peregrine	Red-throated Diver	Black-throated Diver	Hen Harrier
							mitigation (line markers)	mitigation (line markers)
Stroupster Wind Farm	No information	No information	No information	No information	No information	CRM not completed	No information	No information
Sutherland Spaceport (Ramboll, 2024)	No significant effects	Not assessed	Not assessed	No significant effects	Not assessed	N/A	N/A	N/A
Tormsdale Wind Farm Resubmission (Arcus, 2021)	No evidence of breeding within 2 km; no potential effects	No evidence of breeding within 2 km; no potential effects	No significant effects	No evidence of breeding within potential disturbance distance; no potential effects	Not assessed	CRM not completed	CRM not completed	0.139
Wathegar Wind Farm (Whirlwind Renewables, 2010)	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed	CRM not completed	CRM not completed	0.05
Wathegar 2 Wind Farm (Whirlwind Renewables Limited, 2011)	Not assessed	Not assessed	No significant effects	Not assessed	Not assessed	CRM not completed	CRM not completed	0.08
*Based on current recommended avoidance rates (99.5 % for red-throated diver, 98 % for black-throated diver and 99 % for hen harrier; NatureScot, 2018d); **The number of nests considered to be affected was not specified								

8.14 Summary and Conclusions

8.14.1 An assessment has been made of the potential for significant effects of the Proposed Alignment on Important Ornithological Features (IOFs). By implementing the embedded measures detailed in section 8.9 and specific mitigation for red-throated and black-throated divers outlined in section 8.11, the magnitude of effects of the Proposed 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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