VOLUME 4: APPENDIX V1-8.1: ORNITHOLOGY TECHNICAL REPORT

STRATHY SOUTH WIND FARM GRID CONNECTION: EIA REPORT

Volume 4: Appendix V1-8.1: Ornithology Technical Report

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1 INTRODUCTION

1.1 Background and Scope of the Report

1.1.1 Scottish and Southern Electricity Networks Transmission ("SSEN Transmission") is applying under Section 37 of the Electricity Act 1989 for consent to construct and operate a new 132 kV overhead line (OHL) to connect the consented Strathy South Wind Farm (and eventually the consented Strathy Wood Wind Farm and the operational Strathy North Wind Farm as shared infrastructure) to the National Grid at Connagill 275/132 kV substation ("the Proposed Development").

1.1.2 The Proposed Development comprises a Proposed Alignment and an Alternative Alignment.

1.1.3 The Proposed Alignment would comprise approximately 10.5 km in length of 132 kV double circuit OHL supported by steel lattice towers from Strathy North 'T' (near Dallangwell) to a cable sealing end (CSE) compound, prior to entering into Connagill 132 kV substation via a short section of UGC.

1.1.4 Whilst the Proposed Alignment is the Applicant's preference, due to it passing through the footprint of the proposed Melvich Wind Energy Hub, should the wind farm be granted planning consent and be built, an alternative route for the 132 kV OHL would be required. The Alternative Alignment would comprise 13.5 km of double circuit 132 kV OHL supported by steel structures and would circumvent the proposed Melvich wind turbines to the north, prior to connecting into Connagill 275/132 kV substation via a short section of underground cable (UGC).

1.1.5 The towers for the Proposed Development would comprise a combination of 'L7c' and 'L8c' series of steel lattice towers. The heights of the towers 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. Tower numbers and tower design types are presented in

- Proposed Alignment: **Volume 4: Appendix V1-3.1 - Indicative Tower Schedule – Proposed Alignment** and illustrated on **Volume 2: Figure V1-3.1 – The Proposed Development (Proposed Alignment).**
- Alternative Alignment: **Volume 4: Appendix V5-3.1 - Indicative Tower Schedule – Alternative Alignment** and illustrated on **Volume 2: Figure V5-3.1 – The Proposed Development (Alternative Alignment).**

1.1.6 This Technical Appendix (TA) was prepared by RPS Group (RPS) and commissioned by ASH Design + Assessment Ltd (ASH) on behalf of SSEN Transmission (the Applicant) and details the methods and results of the ornithology desk study and field surveys completed within and around the Proposed Alignment and Alternative Alignment.

1.1.7 This TA pertains to the results and methods only; the ornithological impact assessment (OIA) for the Proposed Alignment is presented in **Volume 1: Chapter 8**, while the OIA for the Alternative Alignment is presented within **Volume 5: Chapter 6: Ornithology - Alternative Alignment**. This TA includes details of the following:

- A desk study to identify designated sites of ornithological importance and records of protected and sensitive bird species;
- A review of recent and historic ornithology survey data obtained for other developments in the surrounding area with survey areas overlapping or in close proximity to the Proposed Alignment and/or Alternative Alignment (completed as part of the desk study); and
- Baseline ornithology field surveys completed for the Proposed Alignment and Alternative Alignment.

1.2 Bird Species Names and Conservation Status

1.2.1 All bird species names used in this TA follow the British List, which is maintained by the British Ornithologists' Union (BOU, 2022), with all species referred to by their British (English) vernacular name. A list of scientific names, as well as details of relevant legislation and conservation status, of all bird species referred to in this TA is provided in **Table 3-12, Annex A**.

1.2.2 The term "bird species of conservation concern" is used in this TA to refer to species listed on one or more of the following:

- Schedule 1 of the Wildlife and Countryside Act (1981) as amended (W&CA);
- Annex I of Directive 2009/147/EC on the conservation of wild birds ("the Birds Directive");
- The UK Birds of Conservation Concern (BoCC) Red and Amber lists (Stanbury *et al*., 2021); and
- The Scottish Biodiversity List (SBL).

1.3 Confidential Appendix

1.3.1 In accordance with NatureScot (2016a) guidance, environmentally sensitive bird information has been withheld from this TA and is presented separately within **Volume 4: Appendix V1-8.2: Ornithology Confidential Annex**.

2 METHODS

2.1 Desk Study

2.1.1 Designated Sites of Ornithological Importance

2.1.1 A search for the following statutory sites of ornithological importance was completed, using Geographic Information System (GIS) data available via the NatureScot Spatial Data Hub[1], with details of these sites obtained via the NatureScot SiteLink website[2]:

- Sites of international ornithological importance, i.e., Special Protection Areas (SPAs) and Ramsar sites within 10 km of the Proposed Alignment and/or Alternative Alignment;
- Sites of international ornithological importance designated for geese within 20 km of the Proposed Alignment and/or Alternative Alignment; and
- Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs) designated for ornithological features within 2 km of the Proposed Alignment and/or Alternative Alignment.

2.1.2. Statutory site search areas are shown in **Volume 2: Figure V1-8.1a** for the Proposed Alignment and **Volume 2: Figure V5-6.1a** for the Alternative Alignment.

2.1.2 Data Requests

2.1.3 The following records of protected and sensitive bird species, recorded from 2014 onwards, were requested as part of the desk study:

- Breeding or roosting eagle species within 6 km of the Proposed Alignment and/or Alternative Alignment, and other breeding or roosting raptor species listed on Schedule 1 of the W&CA and / or Annex I of the Birds Directive within 2 km of the Proposed Alignment and/or Alternative Alignment, held by the Highland Raptor Study Group (HRSG); and
- Breeding or roosting eagle species within 6 km of the Proposed Alignment and/or Alternative Alignment, and other bird species of conservation concern (as defined in section 1.2) within 2 km of the Proposed Alignment and/or Alternative Alignment, held by the Royal Society for the Protection of Birds (RSPB).

2.1.4. Data request search areas are shown in **Volume 2: Figure V1-8.1b** for the Proposed Alignment and **Volume 2: Figure V5-6.1b** for the Alternative Alignment.

2.1.3 Review of Existing Data

Overview

2.1.5 The following datasets obtained for surrounding developments were reviewed as part of the desk-based study:

- Bird survey data collected for the proposed Strathy Wood Wind Farm Grid Connection, collected by Stagfire Ecological Surveys Ltd and WSP between October 2018 and August 2019;

[1] https://opendata.nature.scot/ [Accessed July 2024]

[2] https://sitelink.nature.scot/home [Accessed July 2024]

- Bird survey data collected for the (at the time) proposed Armadale Wind Farm Grid Connection[3], collected by Blairbeg Consulting between September 2021 and August 2022;
- Operational monitoring data from the operational Strathy North Wind Farm, collected by RPS in 2016-19 (inclusive) and 2021;
- Bird survey data for the consented Strathy Wood Wind Farm collected by Atmos Consulting during the 2018 and 2019 breeding seasons;
- Bird survey data collected for the proposed Melvich Wind Energy Hub collected by ITPEnergised between September 2020 and August 2022; and
- Bird survey data collected for the proposed Kirkton Energy Park collected by Atmos Consulting between September 2019 and August 2021.

2.1.6 An overview of the ornithology surveys completed at each of these developments is presented below and search areas are shown in **Volume 2: Figure V1-8.1c** for the Proposed Alignment and **Volume 2: Figure V5-6.1c** for the Alternative Alignment.

2.1.7 As there is limited overlap between the Proposed Alignment and Alternative Alignment and survey areas for the developments listed above, the review focussed on identifying the following records:

- Breeding raptors listed on Schedule 1 of the WCA and/or Annex I of the Birds Directive within 2 km of the Proposed Alignment and/or Alternative Alignment, extended to 6 km for eagle species;
- Breeding divers within 1 km of the Proposed Alignment and/or Alternative Alignment, and also in the wider area to the south (as birds may have to commute across the Proposed Alignment and/or Alternative Alignment to reach coastal foraging areas);
- Breeding wigeon and waders within 500 m of the Proposed Alignment and/or Alternative Alignment; and
- Any evidence of regular commuting flights across or towards the Proposed Alignment and/or Alternative Alignment.

Strathy Wood Wind Farm Grid Connection

2.1.8 Ornithology field surveys of the proposed Strathy Wood Wind Farm Grid Connection were carried out by Stagfire Ecological Surveys Ltd and WSP between October 2018 and August 2019, and comprised the following:

- Flight activity surveys (October 2018 to August 2019 inclusive);
- Black grouse lek survey (April to May 2019);
- Moorland breeding bird survey (April to July 2019); and
- Scarce breeding bird survey (April to July 2019) which included breeding diver surveys.

2.1.9. Relevant records were identified through a review of available raw data, supplemented by the Strathy Wood Wind Farm Grid Connection EIA Report (ASH, 2024).

Armadale Wind Farm Grid Connection

2.1.9 Ornithology field surveys of the proposed Armadale Wind Farm Grid Connection were carried out by Blairbeg Consulting Ltd. between September 2021 and August 2022 and comprised the following:

[3] S36 wind farm application has been withdrawn and will not be progressed further.

- Flight activity surveys (September 2021 to August 2022 inclusive); and
- Breeding bird survey (BBS) (April to July 2022).

2.1.10. Relevant records were identified through a review of available raw data.

Strathy North Wind Farm

2.1.10 Strathy North Wind Farm, which is located to the south-west of the Proposed Alignment, was granted planning consent in 2011 and became operational in 2015. Surveys for this development have taken place periodically since 2003, with the most recent surveys (operational monitoring) completed during the 2016-19 and 2021 breeding seasons.

2.1.11 The review of Strathy North data focussed on the operational monitoring surveys completed between 2016 and 2021, a summary of which is presented in **Table 2-1**.

Table 2-1: Summary of operational monitoring ornithology surveys completed at Strathy North Wind Farm in 2016-19 and 2021

Survey type	2016	2017	2018	2019	2021
Flight activity surveys	Jan-Aug	Apr-Aug	Apr-Aug	Apr-Aug	Apr-Aug
Breeding diver surveys	May-Aug	May-Aug	May-Aug	Jun-Aug	May-Aug
Diver focal watches	Jul-Aug	Jul	Jul-Aug	Jul	Aug
Breeding raptor surveys	Apr-Aug	Apr-Aug	Apr-Aug	Apr-Aug	Mar-Aug
Greenshank Vantage Point (VP) surveys	Jun	-	-	-	-
Breeding greenshank and wood sandpiper surveys	-	-	-	-	Apr-Jul
Moorland breeding bird surveys (MBBS)	Apr-Jul	Apr-Jul	Apr-Jul	Apr-Jul	Apr-Jul

2.1.10. Relevant records were identified through a review of available raw data.

Strathy Wood Wind Farm

2.1.12 Strathy Wood Wind Farm was consented in 2021. A range of ornithology surveys were carried out for this development between 2008 and 2019. Given the age of the data, the review focussed on identifying any records from 2018 and 2019, which are the most recent datasets available. This was primarily based on a review of available raw data, supplemented by the Further Environmental Information (FEI) Reports where relevant (Atmos Consulting, 2015; 2019).

2.1.13 The 2018 breeding season surveys comprised the following:

- Flight activity surveys (April to August inclusive), including targeted surveys to monitor diver activity;
- Breeding bird survey (April to July); and
- Breeding raptor surveys (April to July).

2.1.14 Note that the 2019 FEI only includes details of the 2018 surveys, but based on the available raw data, it is assumed that the surveys completed in 2018 were repeated in 2019, although the level of flight activity survey effort from VP 8 (which was used to monitor diver activity) was lower in 2019 (39 hours) compared with 2018 (81 hours).

Melvich Wind Energy Hub

2.1.15 Ornithology field surveys of the proposed Melvich Wind Energy Hub were carried out by ITPEnergised between September 2020 and August 2022 and comprised the following;

- Flight activity surveys (September 2020 to August 2022 inclusive);
- Breeding bird surveys (April to July 2021 and April to July 2022);
- Breeding raptor surveys (April to August 2021 and April to August 2022);
- Breeding diver and scoter surveys (June to July 2021 and June to July 2022); and
- Winter walkover surveys (three visits between October 2020 to March 2021 and two visits between February and March 2022).

2.1.16 Relevant records were identified through a review of available raw data, supplemented by the Melvich Wind Energy Hub EIA Report (ITPEnergised, 2023).

Kirkton Energy Park

2.1.17 Ornithology field surveys of the proposed Kirkton Energy Park were carried out by Atmos Consulting between September 2019 and August 2021 and comprised the following;

- Flight activity surveys (September 2019 to August 2021 inclusive);
- Breeding bird surveys (April to July 2020 and April to July 2021); and
- Breeding raptor surveys (March to July 2020 and April to July 20021).
- Diver surveys (June to August 2020 and May to August 2021).

2.1.18. Relevant records were identified through a review of available raw data, supplemented by the Kirkton Energy Park EIA Report (Atmos Consulting, 2022).

2.2 Field Surveys

2.2.1 Overview

2.2.1 Ornithology field surveys for the Proposed Alignment were carried out by Blairbeg Consulting Ltd. between May and August 2022 and comprised the following:

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

2.2.2 Additionally, the following ornithology surveys of the Alternative Alignment were completed by RPS between March and October 2023:

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

2.2.3 Further details of the survey methods for the Proposed Alignment and Alternative Alignment are presented in the following sections.

2.2.2 Proposed Alignment

Flight Activity Surveys

2.2.1 Monthly surveys were completed from six VP locations covering the optimal route at that time, which was similar to the Proposed Alignment. Details of VP locations are provided in **Table 2-2** and VP locations and viewsheds are shown in **Volume 2: Figure V1-8.2** and **Volume 2: Figure V5-6.2** of this EIA Report.

Table 2-2: Locations of VPs used for 2022 flight activity surveys of the Proposed Alignment

VP	X co-ordinate	Y co-ordinate	Bearing (degrees)
1	283265	961536	275
2	283900	963464	150
3	286227	963884	190
4	288069	962971	250
5	288265	959576	45
6	289629	961106	200

2.2.2 Surveys were completed in line with standard methods detailed in NatureScot (2017a) guidance, with timed watches competed from each VP during all survey months to record flight activity of target species.

2.2.3 A summary of monthly survey effort is presented in **Table 2-3.** Survey times were spread throughout the day. Further details of the surveys including weather data are presented in **Table 3-13, Annex B.**

Table 2-3: Summary of 2022 monthly flight activity survey effort (hours) completed for the Proposed Alignment

Month	VP1	VP2	VP3	VP4	VP5	VP6
May	6	6	6	6	6	6
June	6	6	6	3	6	6
July	6	10	12	9	6	6
August	6	6	6	6	6	6
Total	**24**	**28**	**30**	**24**	**24**	**24**

2.2.4 During each survey, flight lines of target species were recorded on large scale maps. Each flight line was numbered and cross-referenced to the following flight data:

- Flight start time;
- Species (where identification was uncertain observations were identified to species group);
- Number of birds; and
- Flight height, recorded at 15-second intervals[4] within the following height bands:
  - 1) <20 m;
  - 2) 20-40 m;
  - 3) 40-100 m;
  - 4) 100-150 m; and
  - 5) >150 m.

2.2.5 All flight activity data was entered into ArcView GIS.

Scarce Breeding Bird Survey (SBBS)

2.2.6 The SBBS comprised four survey visits completed between May and July 2022. Survey methods were based on relevant methodologies in Gilbert *et al*. (1998) and involved a walkover-style survey completed during the early mornings. All bird species seen or heard were mapped using standard British Trust for Ornithology (BTO) codes and symbology. Further details of the surveys including weather data are presented in **Table 3-14, Annex B**.

[4] Thus allowing flight duration within each height band to be determined (as well as the total flight duration).

2.2.7 The survey area, which is shown in **Volume 2: Figure V1-8.2** and **Volume 2: Figure V5-6.2** of this EIA Report, was based on the optimal route at that time, which was similar the Proposed Alignment, and a surrounding 500 m buffer.

2.2.8 Following completion of the surveys, territory analysis was completed for relevant species.

Territory Analysis Method

2.2.9 Following the methods in Brown & Shepherd (1993), breeding wader territories were identified on the basis of at least one registration of birds engaging in territorial behaviour, which included displaying, singing or alarm calling, distraction displays, territorial disputes or the detection of eggs, nests or young.

2.2.10 Simultaneous registrations of birds of the same species displaying such behaviours were used to identify different territories. Where this was not possible to record, registrations from the same survey visit and within 500 m of each other were assumed to be associated with the same territory, while registrations greater than 500 m apart were considered to be separate, neighbouring territories. The only exception was dunlin, for which a 200 m separation distance was used to identify different territories.

2.2.11 For registrations of the same species from different survey visits, birds within 1 km of each other (or 500 m for dunlin) were assumed to be from the same territory.

2.2.12 Confirmed or probable wildfowl territories were identified in a similar manner to that for waders. Breeding pairs were identified using relevant behaviours identified above (e.g., alarm calling, incubating adults and presence of young) and by the presence of male/female birds in suitable habitat based on the method in Gilbert *et al.* (1998) for interpreting the results of diving and dabbling duck breeding surveys.

2.2.13 As nest sites were not identified, each breeding territory location was digitised as the centre point of a cluster of relevant registrations.

2.2.3 Alternative Alignment

Flight Activity Surveys

2.2.1 Monthly flight activity surveys were carried out between March and October 2023 to record the flight activity of target species and their distribution over the Alternative Alignment, following standard methods detailed in NatureScot (2017a) guidance.

2.2.2 During the surveys, data was collected during timed watches from three VP locations, selected to provide full coverage of the Alternative Alignment [5] and a surrounding 500 m buffer. These surveys covered the section that deviated away from the Proposed Alignment. Details of VP locations are provided in **Table 2-4** and VP locations and viewsheds are shown in **Volume 2: Figure V1-8.3** and **Volume 2: Figure V5-6.3** of this EIA Report.

Table 2-4: Locations of VPs used for 2023 flight activity surveys of the Alternative Alignment

VP	X co-ordinate	Y co-ordinate	Bearing (degrees)
1	286357	963212	345
2	288325	962447	0
3	288428	962328	110

[5] Based on the optimal alternative route at the time; see **Volume 2: Figure V5-6.3**

2.2.3 The methods, which followed standard NatureScot (2017a) guidance, were the same as described above for the Proposed Alignment.

2.2.4 In total, 48 hours of survey was completed from each VP, including 36 hours per VP during the breeding season (March to August), which is in line with NatureScot (2017) guidance. In general, six hours of survey per VP was completed each month. The only exception was VP 3. Surveys from this location commenced in April (rather than March); 12 hours of survey were completed from this VP, with six hours per month completed thereafter.

2.2.5 A summary of the monthly survey effort is presented in **Table 2-5**. A detailed breakdown of the survey effort and timings is presented in **Table 3-15, Annex B.**

2.2.6 Survey effort was spread throughout the daytime period to ensure temporal flight activity patterns would be captured. Each survey was carried out over a three-hour time frame by a single observer with a minimum 30-minute break between any two consecutive surveys. Surveys from the three VP locations were not carried out simultaneously. Similarly, surveys were scheduled to avoid periods when other ecological or ornithological survey work was being undertaken on site.

Table 2-5: Summary of 2023 monthly flight activity survey effort (hours) completed for the Alternative Alignment

Month	VP1	VP2	VP3
March	6	6	-
April	6	6	12
May	6	6	6
June	6	6	6
July	6	6	6
August	6	6	6
September	6	6	6
October	6	6	6
Total	**48**	**48**	**48**

Moorland Breeding Bird Survey (MBBS)

2.2.7 A MBBS was carried out between April and July 2023, following a modified version of the Brown & Shepherd (1993) method for censusing upland breeding waders, as summarised in Gilbert *et al*. (1998). In accordance with NatureScot (2017a) guidance, four survey visits were completed.

2.2.8 The survey area, which is shown in **Volume 2: Figure V1-8.3** and **Volume 2: Figure V5-6.3** included the Alternative Alignment[5] and a surrounding 500 m buffer.

2.2.9 Target species included wader and wildfowl species, but other non-passerine species seen/heard during the surveys were also recorded. BTO codes and symbology was used to record species seen or heard, along with their behaviour, on large-scale field maps.

2.2.10 Surveys were undertaken during optimal weather conditions (clear weather with good visibility and wind less than force 5 on the Beaufort scale). Further details of the surveys including weather data are presented in

2.2.11 **Table 3-16, Annex B**.

2.2.12 Survey records were entered into ArcView GIS software and then analysed to identify the minimum number of probable / confirmed breeding territories for all wader and wildfowl species recorded, following the same methods as described above for the Proposed Alignment.

Breeding Raptor Surveys

2.2.13 A breeding raptor survey was carried out between April and July 2023. Surveys were based on relevant methodologies in Hardey *et al*. (2013). Four survey visits were carried out to identify any breeding raptor territories present.

2.2.14 The survey area, which is shown in **Volume 2: Figure V1-8.3** and **Volume 2: Figure V5-6.3**, included the Alternative Alignment[5] and a surrounding 2 km buffer.

2.2.15 Surveys involved a combination of watches from suitable VP locations and/or walkovers to check for raptor signs in line with NatureScot (2017) guidance.

2.2.16 Observations of raptors (including flight lines) were mapped using standard BTO symbol and activity codes, including any breeding behaviour (such as display flights). The location of any nest sites was also recorded, as were any sightings and signs of activity (e.g. prey remains, plucking posts).

2.2 Details of the survey visit details (including hourly weather conditions) are presented in **Table 3-17, Annex B.**

Breeding Diver Surveys

2.2.1 Breeding diver surveys were carried out between May and July 2023. Surveys were based on the methodologies in Gilbert *et al.* (1998). Three survey visits were carried out by licenced surveyors to visit and check all potentially suitable nesting waterbodies within 1 km of the Alternative Alignment. All observations of diver species, including flight lines, were recorded on large scale field maps, with corresponding details taken to describe the species, number and behaviour.

2.2.2 The survey area, which is shown in **Volume 2: Figure V1-8.3** and **Volume 2: Figure V5-6.3** included lochs within 1 km of the Alternative Alignment[5].

2.3 Details of the survey visit details (including hourly weather conditions) are presented in **Table 3-18, Annex B**.

2.3 Limitations

2.3.1 Desk Study

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

2.3.2 It is assumed that data received from other developers were correct at the time of provision. It is noted that three records labelled as eider were included in the GIS flight activity survey dataset for the proposed Melvich Wind Energy Hub, but as no eider were reported in the EIA Report for that development, it is assumed that they were mis-labelled. Based on the EIA Report, two appear to be golden eagle records and have been included as such, whereas there is no corresponding record in the report for the third GIS record labelled as eider; therefore, this has been omitted.

2.3.3 A widespread moorland fire occurred in the Strathy area on 13/05/2019 and burned for approximately five days; this directly affected the eastern half of the 2018-19 ornithology survey area for the proposed Strathy Wood Wind Farm Grid Connection and there was evidence that the wildfire influenced the number and distribution of at least one target species present in the desk study search area in 2019; further details are presented in **Volume 4: Appendix V1-8.2**. However, datasets reviewed as part of the desk study cover a number of years and are supported by the field surveys for the Proposed Alignment and Alternative Alignment. Additionally, periodic muirburn and wildfires form part of the environmental conditions experienced by birds in the local and wider landscape. As such, the data are considered to be sufficient to inform a robust OIA.

2.3.4 For details of limitations associated with surveys of surrounding developments (reviewed as part of the desk study), refer to the relevant EIA Reports and associated appendices.

2.3.2 Field Surveys

Proposed Alignment

2.3.1 It is acknowledged that the breeding season flight activity surveys commenced in May (rather than April) and survey effort was less than the minimum recommendation in NatureScot (2017a) guidance of 36 hours per VP per season, this was due to delays in finalising suitable VP locations.

2.3.2 Similarly, the 2022 SBBS of the Proposed Alignment commenced in May rather than April due to late commissioning.

2.3.3 However, there are multiple supporting datasets available (from the Alternative Alignment and surrounding developments reviewed as part of the desk study), covering a period of several years. Consequently, it is considered that sufficient data exist to inform a robust OIA and it is unlikely that additional survey effort would reveal any new information regarding the ornithological baseline within and around the Proposed Alignment site.

2.3.4 Although the 2022 surveys for the Proposed Alignment were based on earlier iterations of the OHL alignment, this was very similar to the current OHL alignment. As such, the survey data are considered to be sufficiently robust.

Alternative Alignment

2.3.5 Although the 2023 surveys for the Alternative Alignment were based on an earlier iteration of the OHL alignment, this was very similar to the current OHL alignment. As such, the survey data are considered to be sufficiently robust.

2.3.6 While the 2023 surveys did not cover those parts of the route that were the same as the Proposed Alignment, it is considered that the extensive supporting datasets available (from the Proposed Alignment and surrounding developments reviewed as part of the desk study) are sufficient to inform a robust OIA.

3 RESULTS

3.1 Desk Study

3.1.1 Designated Sites of Ornithological Importance

3.1.1 There are four SPAs, two of which are also Ramsar sites, and three SSSIs (all of which are components of the Caithness and Sutherland Peatlands SPA) designated for ornithological importance within the search areas specified in section 2.1.1. The closest of these are the Caithness and Sutherland Peatlands SPA and Ramsar site, and West Halladale SSSI, all of which overlap both the Proposed Alignment and Alternative Alignment.

3.1.2 A summary of these sites is provided in **Table 3-1** below with the distances to the Proposed Alignment and Alternative Alignment. The location of each site is shown in **Volume 2: Figure V1-8.4** in relation to the Proposed Alignment, and **Volume 2: Figure V5-6.4** in relation to the Alternative Alignment.

3.1.3 It is also noted that the Proposed Alignment and Alternative Alignment are located within the proposed Flow Country World Heritage Site (WHS).

3.1.4 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 and Alternative Alignment (at the closest point).

Table 3-1: Designated sites of ornithological importance within desk study search areas, listed in order of proximity to the Proposed Alignment and Alternative Alignment

Site name and designation(s)	Approx. area (ha)	Qualifying features	Distance from Proposed Alignment (km) at closest point	Distance from Alternative Alignment (km) at closest point
Caithness and Sutherland Peatlands SPA	147,726.54	Qualifies under Article 4.1 of the Birds Directive by regularly supporting breeding populations of European importance of the following Annex I species: • Golden plover; • Dunlin; • Wood sandpiper; • Red-throated diver; • Black-throated diver; • Golden eagle; • Hen harrier; • Short-eared owl; and • Merlin. Further qualifies under Article 4.2 of the Birds Directive by regularly supporting populations of European importance of the following migratory species: • Wigeon; • Common scoter; and • Greenshank. Source: NatureScot (2023a; 2023, b)	0 km (overlaps the Proposed Alignment)	0 km (overlaps the Alternative Alignment)
Caithness and Sutherland Peatlands Ramsar site	145,960.53	The site qualifies under Ramsar criterion 2 by supporting (breeding) populations of the following species: • Golden plover; • Dunlin (subspecies *schinzii*). • Wood sandpiper; • Red-throated diver; and • Black-throated diver;	0 km (overlaps the Proposed Alignment)	0 km (overlaps the Alternative Alignment)

Site name and designation(s)	Approx. area (ha)	Qualifying features	Distance from Proposed Alignment (km) at closest point	Distance from Alternative Alignment (km) at closest point
		The site also qualifies under Ramsar criterion 4 by supporting the following waterbird species at a critical stage in their life cycle: • Wigeon (breeding); • Common scoter (breeding); and • Greenshank (breeding). Source*: NatureScot (2023b)[6]		
West Halladale SSSI**	8,658.85	Ornithological qualifying features: • Breeding black-throated diver; • Breeding common scoter; and • Breeding bird assemblage Source: NatureScot (undated a)	0 km (overlaps the Proposed Alignment)	0 km (overlaps the Alternative Alignment)
East Halladale SSSI**	8,503.36	Ornithological qualifying features: • Breeding bird assemblage; • Dunlin; and • Golden plover Source: NatureScot (undated b)	740 m to the east	740 m to the east
Lochan Buidhe Mires SSSI**	4,122.76	Ornithological qualifying features: • Breeding bird assemblage. Source: NatureScot (undated c)	1.89 km to the west	1.89 km to the west
North Caithness Cliffs SPA	14,628.79	Qualifies under Article 4.1 of the Birds Directive by regularly supporting a breeding population of European importance of the following Annex I species: • Peregrine. Further qualifies under Article 4.2 of the Birds Directive by regularly supporting populations of European importance of the following migratory species: • Kittiwake; • Common guillemot; • Razorbill; • Puffin; • Fulmar; and • Breeding seabird assemblage. Source: NatureScot (2017b)	2.51 km to the northeast	1.39 km to the northeast
Caithness Lochs SPA and Ramsar site***	1,381.65 (SPA) 1,381.19 (Ramsar site)	Qualifies as an SPA under Article 4.1 of the Birds Directive by regularly supporting, in winter, populations of European importance of the following Annex I species: • Whooper swan; and • Greenland white-fronted goose. Further qualifies as an SPA under Article 4.2 of the Birds Directive by regularly supporting, in winter, a population of European importance of the following species: • Greylag goose. Source: NatureScot (1999a; 2021)	12.71 km to the east	12.71 km to the east

[6] It is unclear whether breeding greylag goose is also a qualifying feature of the Caithness and Sutherland Peatlands Ramsar site – the NatureScot SiteLink website (NatureScot, 2024) lists it as a feature, whereas the SPA Ramsar site citation (NatureScot, 2023b) does not and the Ramsar site information sheet (RIS) contains conflicting information (Joint Nature Conservation Committee, 2005).

Site name and designation(s)	Approx. area (ha)	Qualifying features	Distance from Proposed Alignment (km) at closest point	Distance from Alternative Alignment (km) at closest point
North Sutherland Coastal Islands SPA	223.46	Qualifies under Article 4.1 of the Birds Directive by regularly supporting, in winter, populations of European importance of the following Annex I species: • Barnacle goose. Source: NatureScot (1999b)	18.76 km to the northwest	18.76 km to the northwest

*The NatureScot SiteLink website (https://sitelink.nature.scot/site/8412), Ramsar site information sheet (Joint Nature Conservation Committee, 2005) and Ramsar site citation (NatureScot, 2023b) all contain different information regarding qualifying features of the Caithness and Sutherland Peatlands Ramsar site; the latter document is assumed to be contain the most up-to-date information

**Forms part of the Caithness and Sutherland Peatlands SPA

***The boundaries of the Caithness Lochs SPA and Ramsar site are virtually contiguous, and the qualifying features are the same.

3.1.2 Non-Statutory Sites of Ornithological Importance

3.1.1 No non-statutory sites of ornithological importance were identified within 2 km of the Proposed Alignment or Alternative Alignment. However, it is noted that the Forsinard Flows RSPB nature reserve, which overlaps the Caithness and Sutherland Peatlands SPA, is located approximately 7.4 km to the south of both alignments (at the closest point).

3.1.3 Data Requests

RSPB

3.1.1 A total of 16 records of six bird species, including two records of a passerine species, namely twite, were received from the RSPB in August 2024. Passerines are not generally considered to be of concern in relation to potential impacts from power lines (NatureScot, 2016b). A summary of records of the remaining five species is provided in **Table 3-2** below. Some of these records were outside the requested search areas. Further details of individual records and their distances from the Proposed Alignment and Alternative Alignment are included in **Volume 4: Appendix V1-8.2**.

Table 3-2: Summary of RSPB data request records from the last 10 years (supplied in August 2024)

Species	Number of records	Year of most recent record
Common scoter	5	2013
Corncrake	2	2013
Golden eagle	2	2016
Hen harrier	3	2021
White-tailed eagle	2	2022

3.1.3.2 HRSG

3.1.1 The HRSG returned records of three species listed on Schedule 1 of the W&CA and/or Annex I of the Birds Directive (golden eagle, merlin and peregrine), two of which (merlin and peregrine) were breeding within the search areas specified in Section 2.1.2. Further details are presented in the **Volume 4: V1-Appendix 8.2**.

3.1.4 Review of Existing Data

Strathy Wood Wind Farm Grid Connection

Flight Activity

3.1.1 Six flights by two target species recorded during the 2018-19 flight activity surveys for Strathy Wood Wind Farm Grid Connection were within 500 m of both the Proposed Alignment and the Alternative Alignment. An additional flight by a third target species was within 500 m of the Alternative Alignment only. A summary is presented in **Table 3-3**.

Table 3-3: Summary of target species flights recorded within 500 m of the Proposed Alignment and/or Alternative Alignment during the 2018-19 flight activity surveys for the proposed Strathy Wood Wind Farm Grid Connection

Species	Date	No. of birds	Within 500 m?	
			Of Proposed Alignment	Of Alternative Alignment
Pink-footed goose	04/09/2019	220	No	Yes
Hen harrier	04/08/2019	1	Yes	Yes
	04/08/2019	1	Yes	Yes
	04/08/2019	1	Yes	Yes
	22/04/2019	1	Yes	Yes
	29/07/2019	1	Yes	Yes
Merlin	29/07/2019	1	Yes	Yes

3.1.2 With the exception of diver species and hen harrier, flight lines of target species (wildfowl, waders and Schedule 1-listed and Annex-I listed raptor species) recorded within 500 m of the Proposed Alignment during flight activity surveys for the proposed Strathy Wood Wind Farm Grid Connection are shown in **Volume 2: Figure V1-8.5e**, while those recorded within 500 m of the Alternative Alignment are shown in **Volume 2: Figure V5-6.5e**. Flight lines of diver species and hen harrier, which are confidential, are included in **Volume 4: Appendix V1-8.2**.

3.1.3 There was no evidence of any regular commuting flights across either the Proposed Alignment site or Alternative Alignment site.

Lekking Black Grouse

3.1.4 No black grouse were recorded during the 2019 lekking surveys or observed during any other surveys.

3.1.5 Breeding Wildfowl and Wader Territories

3.1.6 As the MBBS area was more than 500 m from both the Proposed Alignment and Alternative Alignment, there were no relevant records of breeding birds from these surveys.

Breeding Territories of Schedule 1-listed Species

3.1.7 During the 2019 SBBS, single breeding territories of merlin and black-throated diver were recorded within the specified search areas. Further details are provided in **Volume 4: Appendix V1-8.2**.

3.1.8 No other scarce breeding birds were identified within the specified search areas.

Flight Activity

3.1.9 During the flight activity surveys carried out for the (at the time) proposed Armadale Wind Farm Grid Connection[3] between September 2021 and August 2022 a total of 52 flights by ten target species were recorded within 500 m of both the Proposed Alignment and the Alternative Alignment. A further 17 flights were recorded within 500 m of the Alternative Alignment only; this included two additional species, namely teal and crossbill species, although the latter is not typically recorded as a target species during flight activity surveys. A summary is presented in **Table 3-4**.

Table 3-4: Summary of target species flights recorded within 500 m of the Proposed Alignment and/or Alternative Alignment during 2021-2022 flight activity surveys for the (at the time) proposed Armadale Wind Farm Grid Connection

Species	Date	No. of birds	Within 500 m?	
			Of Proposed Development	Of Alternative Alignment
Greylag goose	16/10/2021	8	Yes	Yes
	18/01/2022	8	Yes	Yes
	22/04/2022	5	Yes	Yes
	27/04/2022	2	Yes	Yes
	20/05/2022	2	Yes	Yes
	10/06/2022	8	Yes	Yes
	28/07/2022	6	Yes	Yes
	22/08/2022	8	Yes	Yes
Pink-footed goose	27/09/2021	20	Yes	Yes
	27/09/2021	3	Yes	Yes
	27/09/2021	14	No	Yes
	16/12/2021	24	Yes	Yes
	19/12/2021	27	Yes	Yes
	30/12/2021	45	No	Yes
	15/02/2022	22	Yes	Yes
	15/02/2022	38	Yes	Yes
	10/03/2022	28	Yes	Yes
	10/03/2022	32	Yes	Yes
	26/03/2022	44	Yes	Yes
	27/04/2022	28	Yes	Yes
Mallard	18/01/2022	2	No	Yes
	26/03/2022	4	Yes	Yes
	27/04/2022	6	No	Yes
	12/07/2022	4	Yes	Yes
Teal	12/07/2022	9	No	Yes
Oystercatcher	15/02/2022	6	Yes	Yes
Golden plover	17/03/2022	2	Yes	Yes
	27/04/2022	2	Yes	Yes
	27/04/2022	1	No	Yes
	28/05/2022	1	Yes	Yes
Curlew	17/03/2022	1	Yes	Yes

Species	Date	No. of birds	Within 500 m?	
			Of Proposed Development	Of Alternative Alignment
	17/03/2022	1	Yes	Yes
	26/03/2022	1	Yes	Yes
	26/03/2022	1	Yes	Yes
	26/03/2022	1	Yes	Yes
	22/04/2022	1	Yes	Yes
	27/04/2022	1	Yes	Yes
	27/04/2022	1	No	Yes
	10/06/2022	1	Yes	Yes
	10/06/2022	1	Yes	Yes
Snipe	20/01/2022	1	Yes	Yes
	20/01/2022	1	Yes	Yes
	20/01/2022	1	Yes	Yes
	15/02/2022	1	Yes	Yes
	15/02/2022	1	Yes	Yes
	25/02/2022	1	Yes	Yes
	25/02/2022	1	Yes	Yes
	25/02/2022	1	Yes	Yes
	10/03/2022	1	No	Yes
	17/03/2022	1	Yes	Yes
	26/03/2022	1	Yes	Yes
	26/03/2022	1	No	Yes
	08/04/2022	1	No	Yes
	08/04/2022	1	No	Yes
	08/04/2022	1	No	Yes
	27/04/2022	1	Yes	Yes
	27/04/2022	1	No	Yes
	27/04/2022	1	No	Yes
	20/05/2022	1	Yes	Yes
Red-throated diver	28/07/2022	1	Yes	Yes
Osprey	10/06/2022	1	Yes	Yes
Hen harrier	16/10/2021	1	Yes	Yes
	20/05/2022	1	Yes	Yes
	20/05/2022	1	Yes	Yes
	12/07/2022	1	Yes	Yes
	28/07/2022	1	Yes	Yes
Crossbill species	25/02/2022	1	No	Yes
	25/02/2022	2	No	Yes
	25/02/2022	2	No	Yes

3.1.10 Flight lines of target species (wildfowl, waders and Schedule 1-listed and Annex I-listed raptor species) recorded within 500 m of the Proposed Alignment during flight activity surveys for the (at the time) proposed Armadale Wind Farm Grid Connection are shown in **Volume 2: Figure V1-8.5g** and **Figure V1-8.5h**, while those recorded within 500 m of the Alternative Alignment are shown in **Volume 2: Figure V5-6.5g and Figure V5-6.5h** for the Alternative Alignment. Flight lines of diver species and hen harriers, which are confidential, are included in **Volume 4: Appendix V1-8.2**.

Breeding Wildfowl and Wader Territories

3.1.11 During the BBS carried out from April to July 2022, 18 species were observed, including five wader species (oystercatcher, lapwing, golden plover, snipe and common sandpiper). However, since breeding bird territory analysis data were not available, no relevant breeding records were identified within 500 m of the Proposed Alignment or Alternative Alignment.

Strathy North Wind Farm

Flight Activity

3.1.12 A total of 11 flights by six identified target species plus a further two flights by unidentified goose species, were recorded within 500 m of the Proposed Alignment during flight activity surveys for Strathy North Wind Farm in 2016–2019 and 2021. A further 12 target species flights were recorded within 500 m of the Alternative Alignment only; this included four additional species, namely greenshank, hen harrier, white-tailed eagle and merlin. A summary of these flights is presented in **Table 3-5**

Table 3-5: Summary of target species flights recorded within 500 m of the Proposed Alignment and/or Alternative Alignment during flight activity surveys at Strathy North Wind Farm in 2016-19 and 2021

Species	Date	No. of birds	Within 500 m?	
			Of Proposed Alignment	Of Alternative Alignment
Greylag goose	06/01/2016	3	Yes	Yes
	19/05/2016	2	Yes	Yes
	27/05/2016	2	No	Yes
	19/07/2016	2	Yes	Yes
	29/08/2017	2	Yes	Yes
	06/04/2018	25	No	Yes
	07/04/2018	89	No	Yes
	12/04/2018	12	Yes	Yes
	24/06/2018	19	No	Yes
Pink-footed goose	05/05/2016	54	No	Yes
	07/04/2018	18	No	Yes
	11/04/2018	100	Yes	Yes
	28/04/2018	1	Yes	Yes
Unidentified goose species	18/04/2019	8	Yes	Yes
	07/06/2019	12	Yes	Yes
Mallard	06/04/2016	4	Yes	Yes
Greenshank	07/06/2018	1	No	Yes
Red-throated diver	01/08/2016	1	Yes	Yes
Osprey	26/05/2017	1	Yes	Yes
Hen harrier	12/05/2017	1	No	Yes
	03/07/2017	1	No	Yes
	22/06/2018	1	No	Yes
Red kite	30/07/2018	1	Yes	Yes
White-tailed eagle	02/07/2018	1	No	Yes
Merlin	06/06/2016	1	No	Yes

*It was considered likely that one flight (8 birds) was pink-footed goose and the other (12 birds) was likely greylag goose

3.1.13 With the exception of diver species and hen harrier, flight lines of target species (wildfowl, waders and Schedule 1-listed and Annex-I listed raptor species) recorded within 500 m of the Proposed Alignment during the 2016-19 and 2021 flight activity surveys at Strathy North Wind Farm Grid Connection, as well as during other surveys for this development, are shown in **Volume 2: Figure V1-8.5b** to **Figure V1-8.5e** and **Figure V1-8.5g**, while those recorded within 500 m of the Alternative Alignment are shown in **Volume 2: Figure V5-6.5b** to **Figure V5-6.5e** and **Figure V5-**

6.5g. Flight lines of diver species and hen harriers, which are confidential, are included in **Volume 4: Appendix V1-8.2**.

3.1.14 Details of diver commuting routes are also detailed in **Volume 4: Appendix V1-8.2**. There was no evidence of any regular flight paths by other species across either the Proposed Alignment site or Alternative Alignment site.

Breeding Wader Territories

3.1.15 Based on the results of the breeding wader surveys (MBBS, greenshank VP surveys, and breeding greenshank and wood sandpiper surveys) as well as incidental records during other surveys, single golden plover and snipe territories were identified within 500 m of both the Proposed Alignment and Alternative Alignment during 2021 monitoring at Strathy North Wind Farm. These are shown in **Volume 2: Figure V1-8.5a** for the Proposed Alignment, and **Volume 2: Figure V5-6.5a** for the Alternative Alignment. No other breeding wader territories were identified within 500 m of the Proposed Alignment or Alternative Alignment during other survey years (2016-2019).

Breeding Territories of Schedule 1-listed Species

3.1.16 Based on the results of the breeding raptor and diver surveys, as well as incidental records during other surveys, and records from the neighbouring Strathy Wood Wind Farm site, two black-throated diver territories and single territories of red-throated diver, hen harrier and merlin were identified within the specified search areas. Further details are provided in **Volume 4: Appendix V1-8.2**

Strathy Wood Wind Farm

Flight Activity

3.1.17 None of the target species flights recorded during the 2018 and 2019 breeding season flight activity surveys for Strathy Wood Wind Farm were within 500 m of the Proposed Alignment or Alternative Alignment.

3.1.18 Details of diver commuting routes are detailed in **Volume 4: Appendix V1-8.2**. There was no evidence of any regular flight paths by other species across either the Proposed Alignment site or Alternative Alignment site.

Breeding Wildfowl and Wader Territories

3.1.19 As the BBS area was more than 500 m from both the Proposed Alignment and Alternative Alignment, there were no relevant records of breeding birds from these surveys.

Breeding Territories of Schedule 1-listed Species

3.1.20 A single red-throated diver territory was identified within the specified search area. Further details are provided in **Volume 4: Appendix V1-8.2**.

Melvich Wind Energy Hub

Flight Activity

3.1.21 During the 2020-22 flight activity surveys for the proposed Melvich Wind Energy Hub, a total of 82 flights by 15 target species were recorded. A further 20 target species flights were recorded within

500 m of the Alternative Alignment only. A summary is presented in **Table 3-6**, with a more detailed breakdown provided in **Table 3-19, Annex C.**

Table 3-6: Summary of target species flights recorded within 500 m of the Proposed Development and/or Alternative Alignment during 2020-22 flight activity surveys for the proposed Melvich Wind Energy Hub

Species	Total number of flights recorded within 500 m		No. of birds per flight recorded within 500 m	
	Of Proposed Alignment	Of Alternative Alignment	Of Proposed Alignment	Of Alternative Alignment
Greylag goose	17	17	1-43	1-43
Pink-footed goose	19	20	1-163	1-163
Whooper swan	2	2	1-24	1-24
Oystercatcher	1	1	2	2
Lapwing	1	1	10	10
Golden plover	5	19	1-24	1-24
Curlew	5	5	1-2	1-2
Dunlin	2	2	1-2	1-2
Greenshank	1	1	2	2
Red-throated diver	8	8	1-2	1-2
Golden eagle	1	3	1	1
Hen harrier	3	3	1	1
White-tailed eagle	1	1	1	1
Merlin	1	1	1	1
Peregrine	15	15	1	1

3.1.22 With the exception of diver species and hen harrier, flight lines of target species (wildfowl, waders and Schedule 1-listed and Annex-I listed raptor species) recorded within 500 m of the Proposed Alignment during flight activity surveys for the proposed Melvich Wind Energy Hub are shown in **Volume 2: Figure V1-8.5f** to **Figure V1-8.5h**, while those within 500 m of the Alternative Alignment are shown in **Volume 2: Figure V5-6.5f** to **Figure V5-6.5h**.

Breeding Wildfowl and Wader Territories

3.1.23 The EIA Report for Melvich Wind Energy Hub (ITPEnergised, 2023) identifies eight breeding wader species (oystercatcher, lapwing, golden plover, curlew, dunlin, snipe, common sandpiper and greenshank). However, the locations of these breeding territories were restricted to a Confidential Annex which was not available. Therefore, it could not be determined whether any breeding wader records were present within 500 m of the Proposed Alignment or Alternative Alignment. No breeding wildfowl territories were reported (ITPEnergised, 2023).

Breeding Territories and Roost Sites of Schedule 1-listed Species

3.1.26 The Melvich Wind Energy Hub EIA Report (ITPEnergised, 2023) describes two red-throated diver territories and black-throated diver summering territory within the specified search areas. Further details are included in **Volume 4: Appendix V1-8.2.**

3.1.27 The EIA Report also describes the presence of a single merlin breeding territory and a pair of displaying hen harrier during 2021 surveys, as well as a breeding and roosting barn owl roost site that was active during both survey years. However, the locations of these breeding territories/roost

sites were restricted to a Confidential Annex which was not available**.** Therefore, it is unknown where they are located in relation to the Proposed Alignment and Alternative Alignment.

Kirkton Energy Park

Flight Activity

3.1.28 During the 2019-2021 flight activity surveys for the proposed Kirkton Energy Park, a total of 106 flights by ten species were recorded. Note that these included cuckoo, which is typically recorded as a secondary species rather than a target species A summary of these results is presented below in **Table 3-7** with a more detailed breakdown provided in **Table 3-20, Annex C**.

Table 3-7: Summary of target species flights recorded within 500 m of the Proposed Alignment and/or Alternative Alignment during 2019-21 flight activity surveys for the proposed Kirkton Energy Park

Species	Total number of flights recorded within 500 m		No. of birds per flight recorded within 500 m	
	Of Proposed Alignment	Of Alternative Alignment	Of Proposed Alignment	Of Alternative Alignment
Greylag goose	42	48	1-140	1-140
Pink-footed goose	15	17	18-150	18-150
Shelduck	0	1	0	1
Teal	2	2	1-14	1-14
Oystercatcher	2	2	1-4	1-4
Lapwing	13	8	1-6	1-6
Golden plover	3	17	1-2	1-2
Curlew	23	36	1-2	1-2
Snipe	10	14	1-3	1-3
Cuckoo	1	1	2	2

3.1.29 With the exception of diver flights, which were not available, flight lines of target species (wildfowl and waders[7]) recorded within 500 m of the Proposed Alignment during flight activity and raptor surveys for the proposed Kirkton Energy Park are shown in **Volume 2: Figure V1-8.5e** and **Figure V1-8.5g**, while those within 500 m of the Alternative Alignment are shown in **Volume 2: Figure V5-6.5e** to **Figure V5-6.5g**

3.1.30 Details of diver commuting routes are detailed in **Volume 4: Appendix V1-8.2**. There was no evidence of any regular flight paths by other species across either the Proposed Alignment site or Alternative Alignment site.

Breeding Wildfowl and Wader Territories

3.1.31 During the 2020 BBS single probable territories of oystercatcher and snipe, and single possible territories of lapwing and curlew[8] were identified within 500 m of both the Proposed Alignment and Alternative Alignment.

3.1.32 During the 2021 breeding bird surveys a single possible curlew territory was the only breeding wader species identified within 500 m of the Proposed Alignment and Alternative Alignment.

[7] None of the available Schedule 1-listed or Annex-I listed raptor flight lines were within 500 m of the Proposed Alignment or Alternative Alignment

[8] The terms “probable” and “possible” are used to categorise breeding territories according to certainty; where it was considered likely that a bird/pair was likely to be attempting to breed, it would be classed as a probable breeding territory, whereas if it was considered that a bird/pair may have been attempting to breed but there was a degree of uncertainty, it would be classed as a possible breeding territory

3.1.33 Breeding wader territories are shown in **Volume 2: Figure V1-8.5a** for the Proposed Alignment and **Volume 2: Figure V5-6.5a** for the Alternative Alignment.

3.1.34 No breeding wildfowl territories were identified within 500 m of the Proposed Alignment or Alternative Alignment during either survey year.

Breeding Territories of Schedule 1- listed Species

3.1.35 During surveys for the proposed Kirkton Energy Park single confirmed breeding territories of red-throated diver and black-throated diver were recorded within the desk study search areas in 2020 and 2021 respectively. Three additional possible red-throated diver territories were identified (with red-throated divers present at one of these during both survey years, and during a single survey year at the other two territories); however, there was no evidence of nesting at these sites and it was considered unlikely that breeding took place. Further details are included in **Volume 4: Appendix V1-8.2**.

3.1.36 No breeding territories of target raptor species were recorded, during either survey year.

3.2 Field Surveys

3.2.1 Proposed Alignment

Flight Activity Surveys

3.2.1 During the flight activity surveys carried out for the Proposed Alignment between May and August 2022, a total of 135 flight lines by 14 identified species were recorded, along with a further three flights by unidentified gulls. Details are summarised in **Table 3-8** below and further details of flight lines are presented in **Table 3-21, Annex C**. Note, however, that gull species are considered to be 'secondary' rather than target species.

3.2.2 With the exception of red-throated diver flights, which are included in **Volume 4: Appendix V1-8.2,** flight lines of target species (excluding gulls) are shown in **Volume 2: Figure V1-8.6a** (in relation to the Proposed Alignment) and **Figure V5-6.6a** (in relation to the Alternative Alignment).

Table 3-8: Summary of flights recorded during the May-August 2022 flight activity surveys for the Proposed Alignment

Species	Total number of flights	No. of birds per flight	Cumulative flight duration (secs)*
Greylag goose	6	1-12	570
Oystercatcher	19	1-4	615
Lapwing	2	1	45
Golden plover	15	1-12	480
Curlew	13	1-5	435
Snipe	1	1	45
Black-headed gull	1	2	165
Common gull	21	1-4	1440
Great black-backed gull	12	1-2	750
Herring gull	29	1-6	3345
Lesser black-backed gull	2	1	75
Red-throated diver	6	1-4	1065
Osprey	1	1	150
Hen harrier	7	1	720
Unidentified gull	3	1-5	390

*Based on total number of flights rather than individuals

Scarce Breeding Bird Survey

3.2.3 During the SBBS carried out for the Proposed Alignment between May and July 2022 20 breeding territories of seven wildfowl and wader species were identified. These are summarised below in **Table 3-9.** Not that some of these were more than 500 from both the Proposed Alignment and Alternative Alignment. Territories are shown in **Volume 2: Figure V1-8.6b** for the Proposed Alignment and **Figure V5-6.6b** for the Alternative Alignment.

3.2.4. Based on the results of the SBBS and flight activity surveys, a possible red-throated diver breeding territory was also identified. Further details are included in **Volume 4: Appendix V1-8.2.**

3.2.5. 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, indicating that they bred nearby, This waterbody is more than 500 m from the LoD of the OHL of both the Proposed Alignment and Alternative Alignment but is within 500 m of ancillary infrastructure associated with both alignments.

Table 3-9: Summary of breeding wildfowl and wader territories recorded during the 2022 scarce breeding bird surveys for the Proposed Alignment

Species	Total number within survey area	No. of breeding territories within 500 m of Proposed Alignment OHL LoD	within 500 m of Proposed Alignment ancillary infrastructure only*	within 500 m of Alternative Alignment OHL LoD	within 500 m of Alternative Alignment ancillary infrastructure only*
Mallard	2	1	1	1	1
Oystercatcher	3	2	-	2	-
Lapwing	3	3	-	3	-
Golden plover	5	4	-	4	-
Curlew	2	2	-	2	-
Snipe	3	1	-	1	-
Common sandpiper	2	-	1	-	1

*** Excluding territories that are also within 500 m of the Proposed/Alternative Alignment OHL LoD**

3.2.2 Alternative Alignment

Flight Activity Surveys

3.2.1 During the flight activity surveys carried out for the Alternative Alignment between March and October 2023, a total of 50 flight lines by 17 species were recorded, details of which are summarised in **Table 3-10** below with a more detailed breakdown provided in **Table 3-22**, Annex C. With the exception of hen harrier flights, which are included in **Volume 4: Appendix V1-8.2,** target species flight lines are shown in **Volume 2: Figure V5-6.7a** (in relation to the Alternative Alignment) and **Volume 2: Figure V1-8.7a** (in relation to the Proposed Alignment). Note, however, that red grouse and grey heron are considered to be a 'secondary' rather than target species and are not included on any Figures.

Table 3-10: Summary of flights recorded during the 2023 breeding season flight activity surveys for the Alternative Alignment

Species	Total number of flights	No. of birds per flight	Cumulative flight duration (secs)*
Greylag goose	2	13-14	435
Pink-footed goose	11	4-125	1905

Species	Total number of flights	No. of birds per flight	Cumulative flight duration (secs)*
Wigeon	1	3	75
Tufted duck	1	1	90
Red grouse	1	1	30
Oystercatcher	1	35	195
Lapwing	1	47	120
Golden plover	5	1-3	465
Whimbrel	1	1	165
Curlew	2	1	135
Snipe	4	1	165
Red-throated diver	1	2	105
Grey heron	1	1	165
Golden eagle	6	1	2070
Hen harrier	9	1	1335
White-tailed eagle	2	1	600
Peregrine	1	1	105

*Based on total number of flights rather than individuals

Moorland Breeding Bird Surveys

3.2.2 During the 2023 MBBS carried out for the Alternative Alignment between April and July 2023, six breeding wader species were recorded in low numbers within the survey area, as summarised below in **Table 3-11.** No breeding wildfowl territories were identified.

3.2.3 With the exception of greenshank, which is a Schedule 1-listed species and was not breeding within 500 m of either the Proposed Alignment or the Alternative Alignment, locations of the wildfowl and wader territories are shown in **Volume 2: Figure V1-8.7b**for the Alternative Alignment and **Figure V5-6.7b** for the Proposed Alignment.

Table 3-11: Summary of breeding wildfowl and wader territories recorded during the 2023 MBBS for the Alternative Alignment

Species	Total number within survey area	No. of breeding territories within 500 m of Alternative Alignment OHL LoD	within 500 m of Alternative Alignment ancillary infrastructure only*	within 500 m of Proposed Alignment OHL LoD	within 500 m of ancillary Proposed Alignment infrastructure only*
Lapwing	**2**	-	1	-	1
Golden plover	**1**	1	-	-	1
Curlew	**3****	-	3	-	3
Snipe	**1**	1	-	1	-
Common Sandpiper	**2**	1	1	1	1
Greenshank	**1**	-	-	-	-

*Excluding territories that are also within 500 m of the Alternative/Proposed Alignment OHL LoD;

One or more additional territories were identified just outside the survey area and are included on **Volume 2: Figure V1-8.7b and **Volume 2: Figure V5-6.7b** for completeness

Breeding Raptor Surveys

3.2.4 During the 2023 breeding raptor surveys carried out for the Alternative Alignment between April and July 2023, three raptor species were recorded: hen harrier (a single breeding territory), buzzard and kestrel. Hen harrier are listed on Schedule 1 of the W&CA and Annex I of the Birds Directive. Details are provided in **Volume 4: Appendix V1-8.2**. Hen harrier were also observed during the MBBS along with buzzard and kestrel and relevant results informed the assessment of

breeding raptor territories. No breeding raptor territories were identified within 500 m of the Proposed Alignment or Alternative Alignment. There may be potential for these species to be breeding in areas of suitable habitat surrounding the Proposed Alignment or Alternative Alignment, however low levels of flight activity were recorded.

3.2 However, since breeding bird territory analysis data were not available, no relevant breeding records were identified within 500 m of the Proposed Alignment or Alternative Alignment.

3.2.1 No breeding wildfowl territories were identified within 500 m of the Proposed Alignment or Alternative Alignment during either survey year.

Breeding Diver Surveys

3.2.2 During the 2023 breeding diver surveys carried out for the Alternative Alignment between May and July 2023, there was a single registration of a pair of black-throated divers within the survey area. There was also an incidental record of a single bird on the same loch during other surveys. Although there was no evidence of breeding in 2023, this meets the criteria of a summering territory (identified in Gilbert *et al*., (1998) as a pair/single adult recorded at the same site during two or more survey visits), and confirmed breeding took place at this loch in 2021. Further details, including the location, are provided in **Volume 4: Appendix V1-8.2.**

3.2.3 There were no observations of red-throated divers during the surveys.

REFERENCES

ASH. (2024). Strathy Wood Wind Farm Grid Connection Environmental Impact Assessment Report. Prepared for Scottish Hydro Electric Transmission plc (SHE Transmission).

Atmos Consulting (2015). Strathy Wood Wind Farm Further Environmental Information. Prepared for E.ON Climate & Renewables UK Developments Ltd.

Atmos Consulting (2019). Strathy Wood Wind Farm Further Environmental Information. Prepared for E.ON Climate & Renewables UK Developments Ltd.

Atmos Consulting. (2022). Kirkton Energy Park Environmental Impact Assessment Report.

BBC News. (2019). Aerial image shows scale of days-long wildfire in Sutherland. https://www.bbc.co.uk/news/uk-scotland-highlands-islands-48372260 [Accessed January 2025].

British Ornithologists' Union (2022). The British List: A Checklist of Birds of Britain (10th edition). Ibis 164, 860–910.

Brown, A.F. & Shepherd, K, B. (1993). A method for censusing upland breeding waders. Bird Study, 40:3 189-195.

Gilbert, G., Gibbons, D.W., & Evans, J. (1998) Bird Monitoring Methods: A Manual of Techniques for UK Key Species. The Royal Society for the protection of Birds, Sandy, Bedfordshire, England.

Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors. A Field Guide for Surveys and Monitoring – Third Edition. The Stationery Office.

ITPEnergised. (2023). Melvich Wind Energy Hub Environmental Impact Assessment Report. Prepared for Belltown Power UK Wind Ltd.

Joint Nature Conservation Committee (2005). Information Sheet on Ramsar Wetlands (RIS) for Caithness and Sutherland Peatlands.

NatureScot (1999a) Citation for Special Protection Area (SPA) Citation for Public Issue: Caithness Lochs, Highland Region (UK900171A). Available online at: https://sitelink.nature.scot/site/8477 [Accessed April 2024].

NatureScot (1999b) Citation for Special Protection Area (SPA) Citation for Public Issue; North Sutherland Coastal Islands, Highland (UK9001211). Available online at: https://sitelink.nature.scot/site/8559 [Accessed April 2024].

NatureScot (2016a). Environmental Statements and Annexes of Environmentally Sensitive Bird Information. Guidance for Developers, Consultants and Consultees. Version 2. Available online at: Environmental Statements, Confidential Annexes and Sensitive Environmental Information (nature.scot).

NatureScot (2017a). Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2. Available online at: Recommended bird survey methods to inform impact assessment of onshore windfarms | NatureScot

NatureScot (2017b). Citation for Special Protection Area (SPA) North Caithness Cliffs (UK9001181) with marine extension. Available online at: https://sitelink.nature.scot/site/8554 [Accessed July 2024].

NatureScot (2021). Citation for Ramsar site (Kampala criteria, 2005) Caithness Lochs (UK13004). Available online at: https://sitelink.nature.scot/site/8413 [Accessed April 2024].

NatureScot (2023a). Citation for Special Protection Area (SPA) Caithness and Sutherland Peatlands (UK9001151). Available online at: https://sitelink.nature.scot/site/8476 [Accessed July 2024].

NatureScot (2023b). Citation for Ramsar site (Kampala criteria, 2005) Caithness and Sutherland Peatlands (UK13003). Available online at: https://sitelink.nature.scot/site/8412 [Accessed July 2024].

NatureScot. (2024). Caithness and Sutherland Peatlands RAMSAR. Available online at: https://sitelink.nature.scot/site/8412 [Accessed December 2024].

NatureScot (undated a). Citation West Halladale Site of Special Scientific Interest Highland (Sutherland). Available online at: https://sitelink.nature.scot/site/1607 [Accessed July 2024].

NatureScot (undated b). Citation East Halladale Site of Special Scientific Interest Highland (Sutherland). Available online at: https://sitelink.nature.scot/site/585 [Accessed July 2024].

NatureScot (undated c). Citation Lochan Buidhe Mires Site of Special Scientific Interest Highland (Sutherland). Available online at: https://sitelink.nature.scot/site/1072 [Accessed July 2024].

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

ANNEXES

Annex A
Scientific Names of Bird Species

3.2.4 A list of scientific names, as well as details of relevant legislation and conservation status, of all bird species referred to in this TA is provided in **Table 3-12.**

Table 3-12: List of scientific names and conservation listings of bird species included in this TA

Species*		Schedule 1 / Annex I listings	Conservation listings**
English (British) vernacular name	Scientific name		
Barnacle goose	*Branta leucopsis*	Annex I	Amber; SBL
Greylag goose	*Anser anser*	Sch. 1.2	Amber
Pink-footed goose	*Anser brachyrhynchus*	-	Amber
Greenland white-fronted goose	*Anser albifrons flavirostris*	Annex I	Red; SBL
Whooper swan	*Cygnus cygnus*	Annex I; Sch. 1.1	Amber; SBL
Wigeon	*Mareca penelope*	-	Amber
Mallard	*Anas platyrhynchos*	-	Amber
Teal	*Anas crecca*	-	Amber
Common scoter	*Melanitta nigra*	Sch. 1.1	Red; SBL
Red grouse	*Lagopus lagopus scotica*	-	Amber; SBL***
Black grouse	*Lyrurus tetrix*	-	Red; SBL
Cuckoo	*Cuculus canorus*	-	Red; SBL
Woodpigeon	*Columba palumbus*	-	Amber
Oystercatcher	*Haematopus ostralegus*	-	Amber
Lapwing	*Vanellus vanellus*	-	Red; SBL
Golden plover	*Pluvialis apricaria*	Annex I	Green; SBL
Whimbrel	*Numenius phaeopus*	Sch. 1.1	Red
Curlew	*Numenius arquata*	-	Red; SBL
Dunlin	*Calidris alpina*	-	Red; SBL
Snipe	*Gallinago gallinago*	-	Amber
Common sandpiper	*Actitis hypoleucos*	-	Amber
Wood sandpiper	*Tringa glareola*	Annex I; Sch.1.1	Amber; SBL
Greenshank	*Tringa nebularia*	Sch. 1.1	Amber
Kittiwake	*Rissa tridactyla*	-	Red
Black-headed gull	*Chroicocephalus ridibundus*	-	Amber; SBL
Common gull	*Larus canus*	-	Amber
Great black backed gull	*Larus marinus*	-	Amber
Herring gull	*Larus argentatus*	-	Red; SBL
Common guillemot	*Uria aalge*	-	Amber
Razorbill	*Alca torda*	-	Amber
Puffin	*Fratercula arctica*	-	Red
Red-throated diver	*Gavia stellata*	Annex I; Sch. 1.1	Green; SBL
Black-throated diver	*Gavia arctica*	Annex I; Sch. 1.1	Amber; SBL
Fulmar	*Fulmarus glacialis*	-	Amber
Grey heron	*Ardea cinerea*	-	Green
Osprey	*Pandion haliaetus*	Annex I; Sch. 1.1	Amber
Golden eagle	*Aquila chrysaetos*	Annex I; Sch. 1.1/1A/A1	Green; SBL
Hen harrier	*Circus cyaneus*	Annex I; Sch.1.1 & 1A	Red; SBL

Species* English (British) vernacular name	Scientific name	Schedule 1 / Annex I listings	Conservation listings**
Red kite	*Milvus milvus*	Annex I; Sch. 1.1 & 1A	Green; SBL
White-tailed eagle	*Haliaeetus albicilla*	Sch. 1.1, 1A & A1; Annex I	Amber; SBL;
Buzzard	*Buteo buteo*	-	Green
Barn owl	*Tyto alba*	-	Green; SBL
Short-eared owl	*Asio flammeus*	Annex I	Amber; SBL
Kestrel	*Falco tinnunculus*	-	Amber; SBL
Merlin	*Falco columbarius*	Annex I; Sch. 1.1	Red; SBL
Peregrine	*Falco peregrinus*	Annex I; Sch. 1.1	Green; SBL
Crossbill	*Loxia curvirostra*	Sch1.1	Green

*Species names and order follow the British List maintained by the BOU (2022); **Red and Amber = UK BoCC Red and Amber lists respectively (Stanbury *et al*., 2021); SBL = included on the SBL, Sch1.2 (Outer Hebrides, Caithness, Sutherland and Wester Ross only); ***Applies to the race-level (*scotica*) only (not the species-level)

Proposed Alignment

3.2.5 Details of the 2022 ornithology surveys completed for the Proposed Alignment are presented in **Table 3-13** (flight activity surveys) and **Table 3-14** (SBBS).

Table 3-13: Details of the 2022 flight activity surveys completed for the Proposed Alignment

Date	VP	Start time	End time	Hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility
13/05/2022	6	17:15	20:15	1	4	270	0	4	1	2
				2	4	270	0	7	1	2
				3	3	270	0	8	1	2
14/05/2022	3	09:15	12:15	1	3	270	0	8	1	2
				2	4	270	0	8	1	2
				3	4	225	0	8	1	2
16/05/2022	2	06:12	09:12	1	4	90	0	3	1	2
		09:42	12:42	2	4	90	0	6	1	2
				3	4	90	0	8	1	2
				4	4	90	0	4	1	2
				5	4	135	0	6	1	2
				6	4	90	0	7	1	2
20/05/2022	4	12:34	15:34	1	3	180	0	8	1	2
				2	3	180	2	8	1	2
				3	3	180	2	8	1	2
21/05/2022	3	11:22	14:22	1	4	225	0	6	1	2
				2	4	270	2	4	1	2
				3	4	270	2	6	1	2
25/05/2022	5	16:39	19:39	1	4	270	2	5	1	2
		13:09	16:09	2	3	270	2	5	1	2
				3	4	270	3	7	1	1
25/05/2022	5	13:09	16:09	4	3	315	3	8	1	1
		16:39	19:39	5	4	270	2	6	1	2

Date	VP	Start time	End time	Hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility
				6	4	270	0	6	1	2
28/05/2022	1	10:23	13:23	1	4	315	0	7	1	2
				2	4	0	0	7	1	2
				3	4	315	0	6	1	2
29/05/2022	6	04:50	07:50	1	3	315	2	7	1	2
				2	3	315	0	8	1	2
				3	3	315	2	8	1	2
31/05/2022	4	05:42	08:42	1	1	90	0	8	1	2
		18:03	21:03	2	1	90	2	7	1	2
				3	0		0	8	1	2
31/05/2022	1	18:03	21:03	1	3	90	0	5	1	2
				2	3	90	0	5	1	2
				3	3	45	0	7	1	2
01/06/2022	5	10:07	13:07	1	0	0	2	2	2	2
				2	0	0	2	2	2	2
				3	0	0	2	2	2	2
02/06/2022	2	15:10	18:10	1	0	0	7	1	2	2
		11:40	14:40	2	0	0	1	2	2	2
				3	0	0	1	2	2	2
				4	0	0	6	1	2	2
				5	0	0	2	2	2	2
				6	0	0	1	2	2	2
05/06/2022	4	04:45	07:45	1		0	1	2	2	2
				2	135	0	2	2	2	2
				3	135	0	3	1	2	2
06/06/2022	3	06:03	09:03	1	135	0	8	1	2	2
		09:33	12:33	2	135	0	8	1	2	2
				3	135	0	8	1	2	2
				4	135	0	7	1	2	2
				5	90	0	8	1	2	2

Date	VP	Start time	End time	Hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility
				6	90	0	6	1	2	2
07/06/2022	1	09:20	12:20	1	135	0	7	1	2	2
		12:50	15:50	2	45	0	4	1	2	2
				3	45	0	4	1	2	2
				4	45	0	4	1	2	2
				5	45	0	4	1	2	2
				6	135	0	8	1	2	2
08/06/2022	5	06:06	09:06	1	135	0	8	1	2	2
				2	135	0	8	1	2	2
				3	90	0	8	1	2	2
22/06/2022	6	06:25	09:25	1	270	2	8	1	2	2
		09:55	12:55	2	270	0	7	1	2	2
				3	270	0	7	1	2	2
				4	270	0	8	1	2	2
				5	270	2	8	1	2	2
				6	270	0	6	1	2	2
01/07/2022	4	16:23	19:23	1	2	0	0	8	1	2
				2	2	0	2	8	1	2
				3	2	0	2	8	1	2
03/07/2022	2	04:42	11:42	1	3	225	0	8	1	2
				2	3	225	1	8	1	1
				3	3	225	1	7	1	2
11/07/2022	4	11:20	14:20	1	3	180	0	7	1	2
		14:50	17:50	2	3	180	0	8	1	2
				3	3	135	0	8	1	2
				4	3	135	0	8	1	2
				5	4	135	0	8	1	2
				6	3	225	0	7	1	2
16/07/2022	1	06:05	09:05	1	3	270	1	8	1	2
		09:35	12:35	2	3	225	0	8	1	2

Date	VP	Start time	End time	Hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility
				3	2	180	2	8	1	2
				4	3	180	0	8	1	2
				5	3	180	0	7	1	2
				6	2	180	2	7	1	2
17/07/2022	6	07:38	10:38	1	0		2	8	1	2
		11:08	14:08	2	2	270	0	7	1	2
				3	2	270	0	8	1	2
				4	2	270	0	7	1	2
				5	2	225	2	8	1	2
				6	1	45	2	8	1	2
26/07/2022	5	08:36	11:36	1	4	315	1	8	1	2
		12:06	15:06	2	4	315	2	7	1	2
				3	4	315	0	6	1	2
				4	4	315	0	5	1	2
				5	4	315	0	4	1	2
				6	4	315	0	7	1	2
				7	3	180	0	8	1	2
31/07/2022	3	09:48	12:48	1	3	315	0	2	1	2
		13:08	16:08	2	3	270	0	2	1	2
				3	3	315	0	2	1	2
				4	3	315	0	2	1	2
				5	2	315	0	2	1	2
				6	2	315	0	3	1	2
31/07/2022	2	05:55	08:55	1	2	225	0	6	1	2
				2	3	270	2	4	1	2
				3	1	180	0	5	1	2
05/08/2022	6	17:22	20:22	1	4	315	0	8	1	2
		12:25	15:25	2	3	0	0	8	1	2
				3	4	315	0	5	1	2
				4	4	315	0	5	1	2

Date	VP	Start time	End time	Hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility
				5	3	270	0	5	1	2
				6	4	270	0	6	1	2
06/08/2022	4	09:47	12:47	1	3	225	2	8	1	2
				2	3	225	2	8	1	2
				3	2	225	2	8	1	2
08/08/2022	1	09:50	12:50	1	3	180	2	8	1	2
				2	3	225	0	6	1	2
				3	3	180	0	6	1	2
08/08/2022	2	06:12	09:12	1	2	180	0	7	1	2
				2	3	225	0	8	1	2
				3	2	180	2	8	1	2
09/08/2022	3	16:40	19:40	1	4	225	0	4	1	2
				2	4	225	0	3	1	2
				3	4	225	0	5	1	2
09/08/2022	4	07:19	10:19	1	3	225	0	7	1	2
				2	3	225	2	8	1	2
				3	3	225	0	7	1	2
10/08/2022	3	05:28	08:28	1	3	180	0	1	2	2
				2	3	180	0	1	2	2
				3	4	180	0	1	1	2
10/08/2022	2	09:51	12:51	1	3	225	0	2	1	2
				2	4	225	0	3	1	2
				3	4	225	0	2	1	2
13/08/2022	1	05:47	08:47	1	1	180	0	8	1	1
				2	1	180	0	7	1	2
				3	1	180	0	8	1	1
16/08/2022	5	12:10	15:10	1	4	0	1	8	1	2
		15:40	18:40	2	4	0	1	8	1	2
				3	4	0	1	8	1	1
				4	4	0	1	8	1	2

Date	VP	Start time	End time	Hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility
				5	4	0	1	8	1	2
				6	4	0	0	7	1	2

Table 3-14: Details of the 2022 SBBS completed for the Proposed Alignment

Visit	Date	Start time	End time	Hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility
1	18/05/2022	05:20	10:15	1	4	NE	2	7	2	2
				2	4	NE	2	7	2	2
				3	4	NE	2	7	2	2
				4	4	NE	0	7	2	2
				5	4	NE	2	7	2	2
	19/05/2022	05:10	09:00	1	3	E	2	7	2	2
				2	3	E	2	6	2	2
				3	4	E	2	6	2	2
				4	4	E	2	6	2	2
	23/05/2022	05:00	09:30	1	2	N	2	8	2	2
				2	2	NE	2	8	2	2
				3	2	NE	0	6	2	2
				4	2	NE	0	4	2	2
				5	2	NE	0	4	2	2
2	13/06/2022	04:00	08:00	1	4	S	1	7	1	1
				2	5	S	1	7	1	1
				3	3	S	0	8	2	2
				4	3	S	1	8	2	2
	15/06/2022	04:30	08:20	1	3	E	1	8	1	1
				2	4	E	1	8	1	1
				3	4	E	1	8	1	2
				4	3	E	0	8	2	2
	16/06/2022	04:30	08:20	1	4	S	1	7	1	1

Visit	Date	Start time	End time	Hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility
				2	4	S	1	7	2	2
				3	3	S	1	5	2	2
				4	3	S	1	5	2	2
3	08/07/2022	04:40	08:30	1	5	S	0	1	2	2
				2	3	S	0	4	2	2
				3	3	S	0	7	2	2
				4	3	S	0	7	2	2
	09/07/2022	04:40	08:15	1	4	S	1	7	1	1
				2	4	S	1	8	2	2
				3	4	S	0	7	2	2
				4	4	S	0	8	2	2
	10/07/2022	04:45	08:30	1	3	S	0	0	-	2
				2	3	S	0	0	-	2
				3	4	S	0	1	2	2
				4	4	S	0	1	2	2
4	23/07/2022	05:00	08:45	1	3	N	0	3	2	2
				2	4	N	0	6	2	2
				3	4	NE	0	6	2	2
				4	4	N	0	6	2	2
	27/07/2022	05:30	08:50	1	3	S	1	6	2	2
				2	3	S	2	8	2	2
				3	3	S	2	8	2	2
				4	3	S	2	8	2	2
	28/07/2022	05:20	09:05	1	3	NE	0	4	2	2
				2	2	NE	0	5	2	2
				3	2	NE	0	5	2	2
				4	3	NE	0	5	2	2

A.1.2 Alternative Alignment

3.2.6 Details of the 2023 ornithology surveys completed for the Alternative Alignment are presented in **Table 3-15** to **Table 3-18**.

Table 3-15: Details of the 2023 flight activity bird surveys completed for the Alternative Alignment

Date	VP	Observer	Start time	End time	Hour	Wind speed	Wind direction (compass degrees)	Rain	Cloud cover	Cloud height	Visibility
30/03/2023	1	WM	08:00 11:30	11:00 14:30	1	2	135	0	2	2	2
					2	2	135	0	4	2	2
					3	3	135	0	2	2	2
					4	2	135	0	2	2	2
					5	2	135	0	6	2	2
					6	2	180	0	6	2	2
31/03/2023	2	WM	08:15	11:15	1	1	225	1	8	0	1
					2	3	135	1	8	1	1
					3	4	135	0	8	1	1
					4	4	135	1	8	1	1
					5	4	135	0	7	1	1
					6	4	135	0	7	1	1
01/04/2023	3	WM	08:15 11:45	11:15 14:45	1	2	180	0	1	2	2
					2	4	180	0	4	2	2
					3	4	180	0	7	2	2
					4	4	180	0	7	2	2
					5	4	180	0	5	2	2
					6	4	180	0	6	2	2
15/04/2023	2	WM	06:30 09:35 12:40 15:45	09:30 12:35 15:40 18:45	1	0	135	0	0	2	2
					2	1	135	0	0	2	2
					3	2	135	0	0	2	2
					4	3	45	0	6	2	2
					5	4	45	0	6	2	2

Date	VP	Observer	Start time	End time	Hour	Wind speed	Wind direction (compass degrees)	Rain	Cloud cover	Cloud height	Visibility
					6	4	45	0	5	2	2
					7	2	135	0	0	2	2
					8	2	135	0	3	2	2
					9	3	45	0	5	2	2
					10	4	45	0	3	2	2
					11	3	45	0	4	2	2
					12	3	45	0	3	2	2
16/04/2023	2	WM	06:20 09:50	09:20 12:50	1	2	135	0	8	2	2
					2	4	135	0	8	2	2
					3	4	135	0	8	2	2
					4	3	135	0	7	2	2
					5	2	135	0	6	2	2
					6	1	135	0	7	2	2
23/05/2023	1	WM	08:30 12:00	11:30 15:00	1	4	315	0	8	2	2
					2	4	315	0	8	2	2
					3	4	315	0	8	2	2
					4	5	315	0	8	2	2
					5	4	315	1	8	2	2
					6	5	315	1	8	2	2
30/05/2023	2	MW	06:55 10:25	09:55 13:25	1	4	315	0	8	2	2
					2	4	315	0	8	2	2
					3	4	315	0	8	2	2
					4	3	315	0	8	2	2
					5	3	315	0	8	2	2
					6	3	315	0	8	2	2
31/05/2023	3	MW	07:05 10:35	10:05 13:35	1	3	270	0	6	2	2
					2	3	315	0	7	2	2

Date	VP	Observer	Start time	End time	Hour	Wind speed	Wind direction (compass degrees)	Rain	Cloud cover	Cloud height	Visibility
					3	3	270	0	6	2	2
					4	3	315	0	5	2	2
					5	4	315	0	6	2	2
					6	3	315	0	5	2	2
22/06/2023	2	DBu	10:45 14:15	13:45 17:15	1	3	135	0	2	2	2
					2	3	135	0	3	2	2
					3	3	135	0	3	2	2
					4	3	135	0	3	2	2
					5	4	135	0	3	2	2
					6	3	135	0	2	2	2
23/06/2023	1	DBu	05:15 08:45	08:15 11:45	1	3	90	0	8	2	2
					2	3	90	0	8	2	2
					3	3	90	0	8	2	2
					4	3	90	0	8	2	2
					5	3	90	0	8	2	2
					6	3	90	0	8	2	2
24/06/2023	3	CGr	17:00 20:30	20:00 23:30	1	2	180	0	5	2	2
					2	2	180	2	7	2	2
					3	1	180	0	6	2	2
					4	1	180	0	6	2	2
					5	1	180	0	6	2	2
					6	1	180	0	6	2	2
01/07/2023	3	CGr	10:00	13:00	1	2	270	2	8	2	2
					2	2	270	1	8	2	2
					3	2	270	0	6	2	2
02/07/2023	3	CGr	16:00	19:00	1	3	270	0	8	2	2
					2	3	270	0	7	2	2

Date	VP	Observer	Start time	End time	Hour	Wind speed	Wind direction (compass degrees)	Rain	Cloud cover	Cloud height	Visibility
					3	3	270	0	5	2	2
05/07/2023	1	CGr	06:45 10:15	09:45 13:15	1	2	180	1	8	2	2
					2	2	135	0	8	2	2
					3	2	135	0	7	2	2
					4	1	180	0	8	2	2
					5	2	180	0	8	2	2
					6	2	180	0	8	2	2
19/07/2023	2	DBu	15:30 19:00	18:30 22:00	1	3	315	2	8	2	2
					2	4	315	0	7	2	2
					3	3	315	0	7	2	2
					4	4	315	0	6	2	2
					5	3	315	0	7	2	2
					6	3	315	0	6	2	2
12/08/2023	1	CGr	08:45 12:15	11:45 15:15	1	3	135	0	2	2	2
					2	3	135	0	3	2	2
					3	3	135	0	5	2	2
					4	3	135	0	6	2	2
					5	3	135	2	8	2	2
					6	3	135	0	7	2	2
13/08/2023	2	CGr	09:00 12:30	12:00 15:30	1	1	225	0	6	2	2
					2	1	315	0	7	2	2
					3	2	0	2	6	2	2
					4	2	0	2	6	2	2
					5	2	315	2	7	2	2
					6	2	315	0	4	2	2
14/08/2023	3	CGr	16:00	19:00	1	2	0	0	2	2	2
					2	2	315	0	1	2	2

Date	VP	Observer	Start time	End time	Hour	Wind speed	Wind direction (compass degrees)	Rain	Cloud cover	Cloud height	Visibility
					3	1	315	0	1	2	2
15/08/2023	3	CGr	16:10	19:10	1	2	45	0	7	2	2
					2	2	315	0	7	2	2
					3	0		0	8	2	2
19/09/2023	1	ML	11:40 15:10	14:40 18:10	1	3	225	0	6	2	2
					2	4	225	0	4	2	2
					3	3	225	0	3	2	2
					4	3	225	0	5	2	2
					5	3	225	0	7	2	2
					6	3	225	2	7	2	2
20/09/2023	3	SMc	08:35 12:05	11:35 15:05	1	2	135	0	8	2	2
					2	1	135	2	8	2	2
					3	2	135	0	6	2	2
					4	2	180	0	6	2	2
					5	3	225	0	2	2	2
					6	4	180	0	3	2	2
21/09/2023	2	ML	07:25 10:55	10:25 13:55	1	4	225	0	7	2	2
					2	4	225	0	6	2	2
					3	4	225	0	7	2	2
					4	4	225	0	8	2	2
					5	4	225	0	8	2	2
					6	5	225	2	8	2	2
17/10/2023	3	SMc	11:25 14:55	14:25 17:55	1	2	225	0	3	2	2
	2				2	2	135	0	3	2	2
					3	2	45	0	6	2	2
					4	2	45	0	4	2	2
					5	2	90	0	5	2	2

Date	VP	Observer	Start time	End time	Hour	Wind speed	Wind direction (compass degrees)	Rain	Cloud cover	Cloud height	Visibility
					6	2	135	0	6	2	2
18/10/2023	2 3	DBu	10:15 13:45	13:15 16:45	1	4	135	0	6	2	2
					2	4	135	0	7	2	2
					3	4	135	0	7	2	2
					4	4	135	0	6	2	2
					5	5	135	0	7	2	2
					6	4	135	0	6	2	2
19/10/2023	1	DBu	07:30 11:00	10:30 14:00	1	5	135	0	8	2	2
					2	5	135	0	8	2	2
					3	5	135	1	8	2	2
					4	6	90	0	8	2	2
					5	6	135	1	8	2	2
					6	6	90	2	8	2	2

Table 3-16: Details of the 2023 MBBS completed for the Alternative Alignment

Date	Observer	Start time	End time	Hour	Wind speed	Wind direction (compass degrees)	Rain	Cloud cover	Cloud height	Visibility
22/04/2023	WM	09:00	15:00	1	4	45	0	8	2	2
				2	4	45	0	8	2	2
				3	4	45	0	8	2	2
				4	4	45	0	8	2	2
				5	4	45	0	8	2	2
				6	4	45	0	8	2	2
26/04/2023	WM	08:30	14:30	1	2	270	0	3	2	2
				2	2	315	0	3	2	2
				3	2	225	0	4	2	2
				4	4	270	0	5	2	2

Date	Observer	Start time	End time	Hour	Wind speed	Wind direction (compass degrees)	Rain	Cloud cover	Cloud height	Visibility
				5	4	225	0	5	2	2
				6	3	225	3	6	2	2
29/04/2023	WM	08:30	14:30	1	3	135	0	3	2	2
				2	2	45	0	2	2	2
				3	3	45	0	2	2	2
				4	3	45	0	3	2	2
				5	2	0	0	2	2	2
				6	3	45	0	2	2	2
12/05/2023	WM	09:35:00	15:30	4	135	0	1	2	2	4
				4	135	0	1	2	2	4
				3	135	0	2	2	2	3
				4	135	0	3	2	2	4
				2	135	0	8	2	2	2
				4	135	0	1	2	2	4
31/05/2023	WM	14:00:00	20:00							
25/06/2023	CGr	08:30	17:30	1	4	135	0	7	2	2
				2	2	270	2	8	2	2
				3	2	315	1	7	2	2
				4	3	135	0	6	2	2
				5	4	135	0	5	2	2
				6	2	270	1	8	2	2
				7	4	135	0	5	2	2
				8	4	135	0	6	2	2
				9	3	135	0	5	2	2
26/06/2023	CGr	08:30	17:30	1	4	270	0	4	2	2
				2	3	270	0	5	2	2
				3	3	315	0	5	2	2
				4	3	270	0	4	2	2
				5	3	270	0	5	2	2
				6	3	270	0	6	2	2
				7	3	270	0	5	2	2
				8	3	270	0	4	2	2

Date	Observer	Start time	End time	Hour	Wind speed	Wind direction (compass degrees)	Rain	Cloud cover	Cloud height	Visibility
				9	3	270	0	6	2	2
20/07/2023	DBu	08:50	14:50	1	3	315	0	6	2	2
				2	3	315	0	6	2	2
				3	4	315	0	7	2	2
				4	4	315	0	6	2	2
				5	3	315	0	6	2	2
				6	4	315	0	6	2	2

Table 3-17: Details of the 2023 breeding raptor surveys completed for the Alternative Alignment

Visit	Date	Observer	Start time	End time	Hour	Wind speed	Wind direction (compass degrees)	Rain	Cloud cover	Cloud height	Visibility
1	24/04/2023	WM	10:00	16:00	1	6	0	3	8	2	2
					2	5	0	1	6	2	2
					3	5	0	0	6	2	2
					4	5	0	2	6	2	2
					5	5	0	0	7	2	2
					6	5	0	0	5	2	2
	28/04/2023	WM	15:30	21:30	1	4	315	0	6	2	2
					2	4	315	0	7	2	2
					3	4	0	0	6	2	2
					4	3	315	0	6	2	2
					5	3	315	0	7	2	2
					6	4	0	0	5	2	2
2	06/05/2023	WM	14:25	20:25	1	4	135	2	5	2	2
					2	3	135	0	2	2	2
					3	4	135	1	4	2	2
					4	4	135	0	4	2	2
					5	4	135	0	4	2	2
					6	4	135	0	2	2	2

Visit	Date	Observer	Start time	End time	Hour	Wind speed	Wind direction (compass degrees)	Rain	Cloud cover	Cloud height	Visibility
	07/05/2023	WM	13:10	19:10	1	3	180	0	5	2	2
					2	2	135	0	2	2	2
					3	3	135	0	8	2	2
					4	3	180	0	5	2	2
					5	3	135	0	7	2	2
					6	2	135	0	7	2	2
3	26/06/2023	CGr	12:45	18:45	1	4	270	0	4	2	2
					2	3	270	0	5	2	2
					3	3	315	0	5	2	2
					4	3	270	0	4	2	2
					5	3	270	0	5	2	2
					6	3	270	0	6	2	2
4	07/07/2023	CGr	09:00	18:00	1	135	0	3	2	2	0
					2	180	0	3	2	2	0
					3	180	0	2	2	2	0
					4	180	0	3	2	2	0
					5	135	0	1	2	2	0
					6	135	0	1	2	2	0

Table 3-18: Details of the 2023 breeding diver surveys completed for the Alternative Alignment

Date	Observer	Start Time	End Time	Duration	Wind speed	Wind direction (compass degrees)	Rain	Cloud cover	Cloud height	Visibility
26/05/2023	WM	13:00	16:00	3	3	270	0	8	2	2
26/05/2023	WM	08:30	12:30	4	4	270	0	6	2	2
07/07/2023	CGr	09:00	18:00	9	180	0	3	2	2	0

Annex C
Detailed Results

Desk Study Data Review

2023 Incidental Records

3.2.7 During 2023 pre-felling checks by an Ecological Clerk of Works (ECoW) at a nearby development, an osprey nest and roosting white-tailed eagle were recorded within 2 km of both the Proposed Alignment and Alternative Alignment. Further details, including the locations, are included in **Volume 4: Appendix V1-8.2**.

Melvich Wind Energy Hub

3.2.8 Details of the target species flights recorded within 500 m of the Proposed Development and/or Alternative Alignment during the 2020-22 flight activity surveys for the proposed Wind Melvich Wind Energy Hub are summarised in **Table 3-19**, while those recorded during the 2019-21 flight activity surveys for the proposed Kirkton Energy Park are summarised in **Table 3-20**.

Table 3-19: Details of target species flights recorded within 500 m of the Proposed Alignment and/or Alternative Alignment during 2020-22 flight activity surveys for the proposed Melvich Wind Energy Hub

Species	Date	Total no. of birds	Within 500 m? of Proposed Alignment	Within 500 m? of Alternative Alignment
Greylag goose	24/09/2020	2	Yes	Yes
	19/04/2021	8	Yes	Yes
	21/04/2021	1	Yes	Yes
	24/05/2021	2	Yes	Yes
	30/08/2021	6	Yes	Yes
	03/10/2021	43	Yes	Yes
	03/10/2021	22	Yes	Yes
	27/11/2021	2	Yes	Yes
	27/11/2021	24	Yes	Yes
	28/12/2021	8	Yes	Yes
	28/12/2021	29	Yes	Yes
	21/04/2022	6	Yes	Yes
	22/05/2022	6	Yes	Yes
	27/08/2022	14	Yes	Yes
	28/08/2022	28	Yes	Yes
	28/08/2022	21	Yes	Yes
	29/08/2022	18	Yes	Yes
Pink-footed goose	23/09/2020	93	Yes	Yes
	23/09/2020	51	Yes	Yes
	23/09/2020	60	Yes	Yes
	23/09/2020	163	Yes	Yes
	23/09/2020	54	Yes	Yes
	23/09/2020	1	Yes	Yes
	24/09/2020	21	Yes	Yes
	24/09/2020	93	Yes	Yes

Species	Date	Total no. of birds	Within 500 m? of Proposed Alignment	Within 500 m? of Alternative Alignment
	24/09/2020	25	Yes	Yes
	24/09/2020	21	No	Yes
	29/10/2020	11	Yes	Yes
	29/10/2020	26	Yes	Yes
	30/10/2020	12	Yes	Yes
	19/04/2021	26	Yes	Yes
	03/10/2021	11	Yes	Yes
	27/10/2021	62	Yes	Yes
	27/10/2021	53	Yes	Yes
	26/02/2022	94	Yes	Yes
	29/03/2022	68	Yes	Yes
	20/04/2022	138	Yes	Yes
	21/04/2022	34	Yes	Yes
Whooper swan	26/03/2021	1	Yes	Yes
	25/03/2021	24	Yes	Yes
Oystercatcher	23/07/2021	2	Yes	Yes
Lapwing	24/09/2020	10	Yes	Yes
Golden plover	19/04/2021	7	Yes	Yes
	22/06/2021	2	No	Yes
	22/06/2021	2	No	Yes
	23/07/2021	2	No	Yes
	23/07/2021	2	Yes	Yes
	29/08/2021	1	Yes	Yes
	30/03/2022	24	Yes	Yes
	20/04/2022	2	No	Yes
	21/05/2022	1	No	Yes
	21/05/2022	1	No	Yes
	21/05/2022	1	No	Yes
	21/05/2022	1	No	Yes
	21/05/2022	1	No	Yes
	22/05/2022	2	Yes	Yes
	17/06/2022	1	No	Yes
	22/06/2022	1	No	Yes
	22/06/2022	1	No	Yes
	22/07/2022	1	No	Yes
	22/07/2022	1	No	Yes
Curlew	19/04/2021	2	Yes	Yes
	19/04/2021	2	Yes	Yes
	19/04/2021	2	Yes	Yes
	30/08/2021	1	Yes	Yes
	20/04/2022	2	Yes	Yes
Dunlin	22/06/2021	2	Yes	Yes
	22/06/2021	2	No	Yes
	22/06/2021	2	Yes	Yes

Species	Date	Total no. of birds	Within 500 m? of Proposed Alignment	Within 500 m? of Alternative Alignment
	22/06/2021	2	No	Yes
	22/07/2022	1	No	Yes
Greenshank	21/04/2021	2	Yes	Yes
Red-throated diver	19/04/2021	2	Yes	Yes
	19/04/2021	2	Yes	Yes
	21/04/2021	2	Yes	Yes
	24/07/2021	2	Yes	Yes
	24/07/2021	1	Yes	Yes
	23/07/2021	1	Yes	Yes
	22/07/2022	1	Yes	Yes
	23/07/2022	1	Yes	Yes
Golden eagle	23/01/2021	1	No	Yes
	25/02/2021	1	No	Yes
	28/11/2021	1	Yes	Yes
Hen harrier	29/08/2021	1	Yes	Yes
	29/08/2021	1	Yes	Yes
	31/08/2021	1	Yes	Yes
White-tailed eagle	19/04/2021	1	Yes	Yes
Merlin	24/09/2020	1	Yes	Yes
Peregrine	21/01/2021	1	Yes	Yes
	23/05/2021	1	Yes	Yes
	24/07/2021	1	Yes	Yes
	23/07/2021	1	Yes	Yes
	01/09/2021	1	Yes	Yes
	26/10/2021	1	Yes	Yes
	27/11/2021	1	Yes	Yes
	28/11/2021	1	Yes	Yes
	28/12/2021	1	Yes	Yes
	25/02/2022	1	Yes	Yes
	22/05/2022	1	Yes	Yes
	22/05/2022	1	Yes	Yes
	22/05/2022	1	Yes	Yes
	18/06/2022	1	Yes	Yes
	27/08/2022	1	Yes	Yes

Table 3-20: Details of target species flights recorded within 500 m of the Proposed Alignment and/or Alternative Alignment during 2019-21 flight activity surveys for the proposed Kirkton Energy Park

Species	Date	Total no. of birds	Within 500 m? of Proposed Alignment	Within 500 m? of Alternative Alignment
Greylag goose	10/10/2019	100	Yes	Yes
	10/10/2019	140	Yes	Yes
	10/10/2019	45	Yes	Yes
	10/10/2019	42	Yes	Yes

Species	Date	Total no. of birds	Within 500 m? of Proposed Alignment	Within 500 m? of Alternative Alignment
	10/10/2019	91	Yes	Yes
	10/10/2019	140	Yes	Yes
	14/01/2020	6	Yes	Yes
	03/03/2020	15	No	Yes
	03/03/2020	15	Yes	Yes
	05/03/2020	12	Yes	Yes
	05/03/2020	12	Yes	Yes
	05/03/2020	23	Yes	Yes
	22/04/2020	2	Yes	Yes
	30/04/2020	2	No	Yes
	01/05/2020	2	Yes	Yes
	20/05/2020	2	Yes	Yes
	15/06/2020	5	Yes	Yes
	22/08/2020	2	Yes	Yes
	24/08/2020	42	Yes	Yes
	26/08/2020	84	Yes	Yes
	28/08/2020	17	Yes	Yes
	06/10/2020	12	No	Yes
	21/01/2021	2	Yes	Yes
	08/03/2021	4	Yes	Yes
	18/03/2021	2	Yes	Yes
	18/04/2021	2	Yes	Yes
	20/04/2021	2	Yes	Yes
	28/04/2021	2	Yes	Yes
	01/05/2021	2	Yes	Yes
	01/05/2021	2	Yes	Yes
	05/05/2021	2	No	Yes
	05/05/2021	1	Yes	Yes
	21/05/2021	2	No	Yes
	29/05/2021	2	Yes	Yes
	09/06/2021	2	Yes	Yes
	09/06/2021	2	Yes	Yes
	09/06/2021	2	Yes	Yes
	26/06/2021	2	Yes	Yes
	26/06/2021	2	Yes	Yes
	27/06/2021	2	Yes	Yes
	27/06/2021	2	Yes	Yes
	17/07/2021	2	Yes	Yes
	23/07/2021	2	Yes	Yes
	24/07/2021	11	Yes	Yes
	24/07/2021	11	Yes	Yes
	27/06/2021	2	No	Yes
	11/08/2021	16	Yes	Yes
	11/08/2021	12	Yes	Yes

Species	Date	Total no. of birds	Within 500 m? of Proposed Alignment	Within 500 m? of Alternative Alignment
Pink-footed goose	09/10/2019	45	Yes	Yes
	10/10/2019	39	Yes	Yes
	10/10/2019	30	Yes	Yes
	10/10/2019	60	Yes	Yes
	10/10/2019	18	Yes	Yes
	17/09/2020	26	Yes	Yes
	10/04/2021	150	Yes	Yes
	10/04/2021	150	Yes	Yes
	10/04/2021	41	No	Yes
	10/04/2021	41	Yes	Yes
	18/04/2021	52	No	Yes
	18/04/2021	18	Yes	Yes
	18/04/2021	18	Yes	Yes
	20/04/2021	26	Yes	Yes
	20/04/2021	75	Yes	Yes
	24/04/2021	52	Yes	Yes
	24/04/2021	85	Yes	Yes
Shelduck	10/12/2019	1	No	Yes
Teal	09/10/2019	14	Yes	Yes
	20/11/2019	1	Yes	Yes
Oystercatcher	20/05/2020	1	Yes	Yes
	17/06/2020	4	Yes	Yes
Lapwing	30/05/2020	1	Yes	Yes
	15/06/2020	1	No	Yes
	15/06/2020	1	No	Yes
	29/08/2020	5	No	Yes
	06/06/2021	1	Yes	Yes
	09/06/2021	6	Yes	Yes
	09/06/2021	5	Yes	Yes
	09/06/2021	5	Yes	Yes
	09/06/2021	6	Yes	Yes
	18/06/2021	1	No	Yes
	18/06/2021	1	No	Yes
	16/07/2021	2	Yes	Yes
	24/07/2021	2	Yes	Yes
Golden plover	17/05/2020	2	No	Yes
	17/05/2020	2	No	Yes
	30/05/2020	1	No	Yes
	22/08/2020	1	No	Yes
	29/08/2020	1	No	Yes
	18/04/2021	1	No	Yes
	18/04/2021	1	No	Yes
	28/04/2021	2	No	Yes
	06/06/2021	1	Yes	Yes

Species	Date	Total no. of birds	Within 500 m? of Proposed Alignment	Within 500 m? of Alternative Alignment
	26/06/2021	1	No	Yes
	03/07/2021	2	No	Yes
	16/07/2021	1	No	Yes
	17/07/2021	1	No	Yes
	24/07/2021	1	No	Yes
	24/07/2021	1	Yes	Yes
	24/07/2021	1	No	Yes
	24/07/2021	1	Yes	Yes
Curlew	15/05/2020	1	Yes	Yes
	15/05/2020	1	No	Yes
	19/06/2020	2	No	Yes
	02/07/2020	1	Yes	Yes
	02/07/2020	1	Yes	Yes
	02/07/2020	1	Yes	Yes
	03/07/2020	1	No	Yes
	13/07/2020	1	No	Yes
	16/07/2020	1	Yes	Yes
	16/07/2020	1	Yes	Yes
	16/07/2020	1	No	Yes
	16/07/2020	1	No	Yes
	16/07/2020	1	Yes	Yes
	22/08/2020	2	Yes	Yes
	29/08/2020	1	Yes	Yes
	29/08/2020	2	Yes	Yes
	29/08/2020	2	No	Yes
	29/08/2020	1	Yes	Yes
	18/03/2021	1	No	Yes
	11/04/2021	1	No	Yes
	18/04/2021	2	Yes	Yes
	01/05/2021	1	No	Yes
	05/05/2021	1	Yes	Yes
	21/05/2021	2	Yes	Yes
	29/05/2021	1	No	Yes
	29/05/2021	1	No	Yes
	29/05/2021	1	No	Yes
	06/06/2021	1	Yes	Yes
	09/06/2021	2	Yes	Yes
	26/06/2021	2	Yes	Yes
	26/06/2021	2	Yes	Yes
	16/07/2021	2	Yes	Yes
	17/07/2021	1	Yes	Yes
	23/07/2021	1	Yes	Yes
	24/07/2021	1	Yes	Yes
	24/07/2021	1	Yes	Yes

Species	Date	Total no. of birds	Within 500 m? of Proposed Alignment	Within 500 m? of Alternative Alignment
Snipe	30/05/2020	2	Yes	Yes
	15/06/2020	1	Yes	Yes
	29/08/2020	1	No	Yes
	29/08/2020	1	Yes	Yes
	10/12/2020	3	Yes	Yes
	09/06/2021	2	Yes	Yes
	09/06/2021	1	Yes	Yes
	09/06/2021	2	Yes	Yes
	27/06/2021	1	No	Yes
	27/06/2021	1	No	Yes
	16/07/2021	1	Yes	Yes
	16/07/2021	1	Yes	Yes
	17/07/2021	1	No	Yes
	23/07/2021	1	Yes	Yes
Cuckoo	15/06/2020	2	Yes	Yes

A.1.3 Proposed Alignment

3.2.9 Details of the 2022 flight activity surveys completed for the Proposed Alignment are presented in **Table 3-21**.

Table 3-21: Details of target species flights recorded during the 2022 flight activity surveys for the Proposed Alignment

Date	VP	Species	No. of birds	Time	Height band						Flight time (secs)	Gender (where recorded)
					Band 1	Band 2	Band 3	Band 4	Band 5	Band 6		
16/05/2022	2	Herring gull	2	09:08	0	135	0	0	0	0	135	
02/06/2022	2	Black-headed gull	2	17:44	0	60	75	30	0	0	165	
07/06/2022	1	Herring gull	1	15:05	0	120	60	0	0	0	180	
08/08/2022	2	Great black-backed gull	1	06:12	0	30	0	0	0	0	30	
08/08/2022	2	Hen harrier	1	06:53	240	15	0	0	0	0	255	Male
08/08/2022	2	Osprey	1	09:04	0	0	150	0	0	0	150	
13/05/2022	6	Greylag goose	2	17:51	15	60	0	0	0	0	75	
13/05/2022	6	Herring gull	1	17:53	0	0	0	105	0	0	105	
13/05/2022	6	Herring gull	1	17:55	0	0	0	120	0	0	120	
13/05/2022	6	Oystercatcher	1	18:08	15	0	0	0	0	0	15	
13/05/2022	6	Herring gull	1	18:10	0	30	0	0	0	0	30	
13/05/2022	6	Herring gull	2	18:15	0	0	75	0	0	0	75	
13/05/2022	6	Oystercatcher	1	18:17	15	0	0	0	0	0	15	
13/05/2022	6	Herring gull	6	18:31	30	90	120	0	0	0	240	
13/05/2022	6	Great Black-backed gull	1	18:45	0	0	75	0	0	0	75	
13/05/2022	6	Oystercatcher	1	18:52	15	0	0	0	0	0	15	
13/05/2022	6	Curlew	2	18:54	45	0	0	0	0	0	45	
13/05/2022	6	Great Black-backed gull	1	19:19	0	0	30	0	0	0	30	
13/05/2022	6	Oystercatcher	3	19:27	0	0	30	0	0	0	30	
20/05/2022	4	Curlew	5	14:44	30	0	0	0	0	0	30	
20/05/2022	4	Herring gull	4	14:46	0	90	0	0	0	0	90	
20/05/2022	4	Curlew	2	14:47	0	15	0	0	0	0	15	
20/05/2022	4	Curlew	1	14:49	0	15	0	0	0	0	15	
20/05/2022	4	Curlew	1	14:59	15	0	0	0	0	0	15	

Date	VP	Species	No. of birds	Time	Height band						Flight time (secs)	Gender (where recorded)
					Band 1	Band 2	Band 3	Band 4	Band 5	Band 6		
20/05/2022	4	Curlew	2	15:03	30	60	0	0	0	0	90	
25/05/2022	5	Curlew	1	15:32	0	15	0	0	0	0	15	
25/05/2022	5	Golden plover	2	13:23	15	0	0	0	0	0	15	
25/05/2022	5	Golden plover	3	18:05	0	0	45	0	0	0	45	
25/05/2022	5	Curlew	1	17:30	0	15	0	0	0	0	15	
25/05/2022	5	Lapwing	1	16:51	15	0	0	0	0	0	15	
29/05/2022	6	Oystercatcher	3	04:59	0	30	0	0	0	0	30	
29/05/2022	6	Herring gull	1	05:00	0	30	0	0	0	0	30	
29/05/2022	6	Curlew	2	05:05	0	45	0	0	0	0	45	
29/05/2022	6	Curlew	1	05:06	30	0	0	0	0	0	30	
29/05/2022	6	Common gull	1	05:11	0	30	0	0	0	0	30	
29/05/2022	6	Oystercatcher	4	05:12	0	30	15	0	0	0	45	
29/05/2022	6	Great black-backed hull	1	05:22	0	0	45	0	0	0	45	
29/05/2022	6	Curlew	1	05:31	0	15	30	0	0	0	45	
29/05/2022	6	Great black-backed gull	1	05:37	30	45	0	0	0	0	75	
29/05/2022	6	Common gull	4	05:42	0	45	0	0	0	0	45	
29/05/2022	6	Common gull	2	05:44	0	30	0	0	0	0	30	
29/05/2022	6	Great black-backed gull	1	05:46	15	45	0	0	0	0	60	
29/05/2022	6	Common gull	4	05:53	60	60	0	0	0	0	120	
29/05/2022	6	Great black-backed gull	1	05:54	0	0	15	0	0	0	15	
29/05/2022	6	Oystercatcher	2	06:00	30	0	0	0	0	0	30	
29/05/2022	6	Great black-backed gull	1	06:01	105	15	0	0	0	0	120	
29/05/2022	6	Common gull	2	06:14	30	0	0	0	0	0	30	
29/05/2022	6	Herring gull	2	06:33	0	45	0	0	0	0	45	
29/05/2022	6	Great black-backed gull	1	07:21	30	30	0	0	0	0	60	
31/05/2022	4	Greylag goose	2	06:10	0	0	30	0	0	0	30	
31/05/2022	4	Greylag goose	12	06:39	0	0	75	0	0	0	75	
31/05/2022	4	Red-throated diver	4	07:11	0	60	180	120	0	0	360	
31/05/2022	4	Greylag goose	10	08:38	0	0	120	105	0	0	225	

Date	VP	Species	No. of birds	Time	Height band						Flight time (secs)	Gender (where recorded)
					Band 1	Band 2	Band 3	Band 4	Band 5	Band 6		
01/06/2022	5	Golden plover	3	10:17	15	30	0	0	0	0	45	
01/06/2022	5	Hen harrier	1	10:17	45	0	0	0	0	0	45	Male
01/06/2022	5	Golden plover	2	11:19	15	15	0	0	0	0	30	
05/06/2022	4	Red-throated diver	4	05:57	0	0	150	0	0	0	150	
06/06/2022	3	Golden plover	1	06:16	15	0	0	0	0	0	15	
06/06/2022	3	Golden plover	1	06:22	15	0	0	0	0	0	15	
06/06/2022	3	Golden plover	2	06:25	15	0	0	0	0	0	15	
06/06/2022	3	Golden plover	2	06:29	15	0	0	0	0	0	15	
08/06/2022	5	Herring gull	1	06:34	0	45	0	0	0	0	45	
08/06/2022	5	Golden plover	2	06:50	15	0	0	0	0	0	15	
08/06/2022	5	Golden plover	10	06:56	0	60	15	0	0	0	75	
08/06/2022	5	Lapwing	1	06:59	30	0	0	0	0	0	30	
08/06/2022	5	Golden plover	2	07:08	30	15	0	0	0	0	45	
08/06/2022	5	Curlew	1	07:27	0	30	0	0	0	0	30	
08/06/2022	5	Golden plover	12	08:00	30	0	0	0	0	0	30	
08/06/2022	5	Golden plover	1	08:10	15	0	0	0	0	0	15	
08/06/2022	5	Herring gull	1	08:25	0	45	0	0	0	0	45	
08/06/2022	5	Golden plover	1	08:45	45	30	0	0	0	0	75	
08/06/2022	5	Golden plover	1	08:58	15	15	0	0	0	0	30	
22/06/2022	6	Common gull	1	10:09	45	0	0	0	0	0	45	
22/06/2022	6	Common gull	1	10:11	30	0	0	0	0	0	30	
22/06/2022	6	Lesser black-backed gull	1	11:01	0	30	0	0	0	0	30	
22/06/2022	6	Common gull	1	11:32	0	30	30	0	0	0	60	
22/06/2022	6	Curlew	1	11:42	0	15	30	0	0	0	45	
22/06/2022	6	Herring gull	1	11:51	0	30	0	0	0	0	30	
22/06/2022	6	Common gull	1	12:50	0	30	0	0	0	0	30	
22/06/2022	6	Oystercatcher	2	06:47	0	45	0	0	0	0	45	
22/06/2022	6	Oystercatcher	2	07:18	0	45	0	0	0	0	45	
22/06/2022	6	Greylag goose	1	07:33	0	60	0	0	0	0	60	

Date	VP	Species	No. of birds	Time	Height band						Flight time (secs)	Gender (where recorded)
					Band 1	Band 2	Band 3	Band 4	Band 5	Band 6		
22/06/2022	6	Great black-backed gull	1	07:40	0	45	0	0	0	0	45	
22/06/2022	6	Oystercatcher	1	07:51	30	30	30	0	0	0	90	
22/06/2022	6	Oystercatcher	1	08:01	15	0	0	0	0	0	15	
22/06/2022	6	Herring gull	1	08:16	15	45	0	0	0	0	60	
22/06/2022	6	Oystercatcher	1	08:05	15	0	0	0	0	0	15	
22/06/2022	6	Common gull	1	08:24	15	0	0	0	0	0	15	
22/06/2022	6	Common gull	2	08:28	30	0	0	0	0	0	30	
22/06/2022	6	Oystercatcher	2	08:30	0	30	0	0	0	0	30	
22/06/2022	6	Common gull	1	08:46	15	0	0	0	0	0	15	
22/06/2022	6	Herring gull	1	08:54	0	30	0	0	0	0	30	
22/06/2022	6	Common gull	1	09:16	30	0	0	0	0	0	30	
22/06/2022	6	Common gull	1	09:25	15	0	0	0	0	0	15	
02/07/2022	3	Hen harrier	1	07:30	15	60	0	0	0	0	75	Male
02/07/2022	3	Snipe	1	09:00	0	30	15	0	0	0	45	
02/07/2022	3	Hen harrier	1	07:45	15	0	0	0	0	0	15	Male
11/07/2022	4	Red-throated diver	1	13:24	15	90	0	0	0	0	105	
17/07/2022	6	Unidentified gull	1	11:29	90	0	0	0	0	0	90	
17/07/2022	6	Common gull	1	13:07	0	90	0	0	0	0	90	
17/07/2022	6	Oystercatcher	1	07:50	15	0	0	0	0	0	15	
17/07/2022	6	Oystercatcher	3	07:53	15	45	0	0	0	0	60	
17/07/2022	6	Oystercatcher	1	07:56	30	0	0	0	0	0	30	
17/07/2022	6	Oystercatcher	1	07:57	30	0	0	0	0	0	30	
17/07/2022	6	Herring gull	1	08:03	45	75	0	0	0	0	120	
17/07/2022	6	Oystercatcher	1	08:08	30	0	0	0	0	0	30	
17/07/2022	6	Herring gull	1	08:20	0	30	0	0	0	0	30	
17/07/2022	6	Common gull	3	09:05	45	45	0	0	0	0	90	
17/07/2022	6	Common gull	2	09:19	30	45	0	0	0	0	75	
17/07/2022	6	Common gull	1	09:21	60	0	0	0	0	0	60	
17/07/2022	6	Oystercatcher	1	10:18	30	0	0	0	0	0	30	

Date	VP	Species	No. of birds	Time	Height band						Flight time (secs)	Gender (where recorded)
					Band 1	Band 2	Band 3	Band 4	Band 5	Band 6		
26/07/2022	5	Hen harrier	1	09:44	90	0	0	0	0	0	90	Male
26/07/2022	5	Unidentified gull	5	13:19	0	0	45	120	45	0	210	
05/08/2022	6	Herring gull	1	12:36	0	0	60	0	0	0	60	
05/08/2022	6	Greylag goose	1	13:47	15	30	60	0	0	0	105	
05/08/2022	6	Herring gull	1	14:17	45	30	0	0	0	0	75	
05/08/2022	6	Common gull	1	17:33	15	45	0	0	0	0	60	
05/08/2022	6	Great black-backed gull	1	17:52	15	30	0	0	0	0	45	
05/08/2022	6	Herring gull	2	17:53	465	15	0	0	0	0	480	
05/08/2022	6	Herring gull	3	17:56	465	15	0	0	0	0	480	
05/08/2022	6	Common gull	2	17:57	480	0	0	0	0	0	480	
05/08/2022	6	Herring gull	5	18:31	0	15	45	45	0	0	105	
05/08/2022	6	Herring gull	1	18:39	0	45	0	0	0	0	45	
05/08/2022	6	Herring gull	1	18:45	45	120	0	0	0	0	165	
05/08/2022	6	Herring gull	1	18:41	0	45	0	0	0	0	45	
05/08/2022	6	Herring gull	1	18:57	30	90	30	0	0	0	150	
05/08/2022	6	Herring gull	1	19:11	0	45	0	0	0	0	45	
05/08/2022	6	Common gull	2	19:15	45	15	0	0	0	0	60	
05/08/2022	6	Herring gull	2	19:18	120	120	0	0	0	0	240	
05/08/2022	6	Herring gull	1	19:34	0	45	0	0	0	0	45	
05/08/2022	6	Great black-backed gull	2	19:36	0	30	120	0	0	0	150	
05/08/2022	6	Lesser black-backed gull	1	19:51	0	45	0	0	0	0	45	
09/08/2022	4	Red-throated diver	1	08:43	0	75	105	135	0	0	315	
09/08/2022	4	Red-throated diver	1	08:59	15	15	0	0	0	0	30	
09/08/2022	4	Red-throated diver	2	09:18	0	30	60	15	0	0	105	
16/08/2022	5	Hen harrier	1	12:34	150	15	0	0	0	0	165	Female
16/08/2022	5	Hen harrier	1	13:19	75	0	0	0	0	0	75	Female
16/08/2022	5	Unidentified gull	1	16:01	0	0	90	0	0	0	90	

A.1.4 Alternative Alignment

3.2.10 Details of the 2023 flight activity surveys completed for the Alternative Alignment are presented in **Table 3-22.**

Table 3-22: Details of target species flights recorded during the 2023 flight activity surveys for the Alternative Alignment

Date	VP	Species	No. of birds	Time	Height band						Flight time (secs)	Gender (where recorded)
					Band 1	Band 2	Band 3	Band 4	Band 5	Band 6		
30/03/2023	1	Golden eagle	1	13:49	0	0	180	30	135	0	345	
30/03/2023	1	Pink-footed goose	90	9:13	0	0	0	0	195	0	195	
30/03/2023	1	Pink-footed goose	35	12:01	0	0	0	0	135	0	135	
30/03/2023	1	Pink-footed goose	46	11:36	0	0	0	60	150	0	210	
31/03/2023	2	Pink-footed goose	26	9:02	15	15	105	0	0	0	135	
31/03/2023	2	Pink-footed goose	35	9:31	15	30	180	0	0	0	225	
31/03/2023	2	Pink-footed goose	30	9:58	15	30	90	0	0	0	135	
31/03/2023	2	RG	1	10:02	30	0	0	0	0	0	30	
31/03/2023	2	Pink-footed goose	4	10:51	0	0	75	0	0	0	75	
01/04/2023	3	Pink-footed goose	90	14:37	15	30	75	90	0	0	210	
01/04/2023	3	Hen harrier	1	8:34	135	180	0	0	0	0	315	
01/04/2023	3	Wigeon	3	8:55	75	0	0	0	0	0	75	
01/04/2023	3	Pink-footed goose	125	13:49	30	30	60	90	0	0	210	
01/04/2023	3	Pink-footed goose	60	14:33	45	0	60	120	0	0	225	
15/04/2023	3	Grey heron	1	15:46	0	165	0	0	0	0	165	
15/04/2023	3	Golden eagle	1	12:05	0	0	15	45	120	0	180	
15/04/2023	2	Curlew	1	8:33	90	0	0	0	0	0	90	
15/04/2023	2	Hen harrier	1	9:07	135	0	0	0	0	0	135	Female
15/04/2023	2	Hen harrier	1	14:07	0	75	0	0	0	0	75	Female
15/04/2023	2	Hen harrier	1	14:41	105	0	0	0	0	0	105	Female
15/04/2023	2	Hen harrier	1	15:10	0	165	0	0	0	0	165	Female
15/04/2023	3	Golden plover	3	11:14	0	75	0	0	0	0	75	
15/04/2023	3	Curlew	1	11:21	45	0	0	0	0	0	45	
15/04/2023	3	Hen harrier	1	11:47	0	45	0	0	0	0	45	Female
15/04/2023	3	Golden eagle	1	11:57	0	330	165	45	120	0	660	

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Date	VP	Species	No. of birds	Time	Height band						Flight time (secs)	Gender (where recorded)
					Band 1	Band 2	Band 3	Band 4	Band 5	Band 6		
15/04/2023	2	Hen harrier	1	7:53	75	0	0	0	0	0	75	Female
16/04/2023	1	Golden plover	2	10:26	0	105	0	0	0	0	105	
16/04/2023	1	Pink-footed goose	22	9:51	0	150	0	0	0	0	150	
02/07/2023	3	Snipe	1	16:18	15	0	0	0	0	0	15	
05/07/2023	1	Snipe	1	11:32	30	0	0	0	0	0	30	
05/07/2023	1	White-tailed eagle	1	12:51	0	60	75	105	150	0	390	Male
05/07/2023	1	Tufted duck	3	9:16	0	90	0	0	0	0	90	
05/07/2023	1	Golden plover	1	9:24	30	0	0	0	0	0	30	
12/08/2023	1	Golden plover	1	9:42	0	0	90	0	0	0	90	
13/08/2023	2	Red-throated diver	2	10:44	0	45	60	0	0	0	105	
14/08/2023	3	Lapwing	47	18:24	15	15	90	0	0	0	120	
14/08/2023	3	Oystercatcher	35	18:28	0	0	0	195	0	0	195	
14/08/2023	3	Whimbrel	1	18:32	0	0	0	165	0	0	165	
15/08/2023	3	Peregrine	1	19:02	0	0	105	0	0	0	105	Male
20/09/2023	3	Snipe	1	10:11	45	15	0	0	0	0	60	
20/09/2023	3	Golden eagle	1	12:26	0	0	75	135	0	0	210	
20/09/2023	3	White-tailed eagle	1	12:26	0	0	30	180	0	0	210	
20/09/2023	3	Golden eagle	1	13:01	0	0	0	0	0	285	285	
21/09/2023	2	Golden plover	1	11:52	75	45	45	0	0	0	165	
17/10/2023	3	Golden eagle	1	11:58	0	0	0	45	210	135	390	
17/10/2023	3	Hen harrier	1	13:02	0	0	0	135	225	0	360	Male
17/10/2023	3	Hen harrier	1	14:08	60	0	0	0	0	0	60	
17/10/2023	2	Greylag goose	14	16:16	0	0	75	105	45	0	225	
18/10/2023	2	Snipe	1	10:16	60	0	0	0	0	0	60	
18/10/2023	3	Greylag goose	13	14:07	0	0	210	0	0	0	210	