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Technical Appendix 9.4

Kirkton Energy Park

Information to inform the Habitats Regulation Appraisal

Kirkton Wind Farm Ltd.

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1 Introduction and Background

1.1 Introduction

This Technical Appendix has been produced to support Chapter 8: Ecology and Chapter 9: Ornithology of the Environmental Impact Assessment Report (EIAR) for Kirkton Energy Park (the proposed development). It undertakes a shadow Habitats Regulations Appraisal for the proposed development. It addresses the presence of one Special Area of Conservation (SAC) and three Special Protection Areas (SPA) within the vicinity of the proposed development, summarising the information with respect to the SAC / SPAs and the respective qualifying features of the SAC / SPAs.

In Article 6(3) of the EC Council Directive (92/43/EEC), on the conservation of natural habitats and of wild fauna and flora – The Habitats Directive, any project or plan which is not directly connected with or necessary to the management of a European site but would be likely to have a significant effect either alone or in combination with other plans or projects shall be subject to an Appropriate Assessment of its implications for the European site in view of that site's conservation objectives. In light of the findings and subject to the provisions of Article 6(4) of the Habitats Directive, the Competent Authority shall agree to the plan or project only after ensuring that it will not affect the integrity of the European site. Whilst mitigation may be taken into account at the Appropriate Assessment stage, it is not to be considered when initially screening the project in order to determine whether or not an Appropriate Assessment is needed.

Article 6(4) makes provision that if a negative assessment is made of the implications of the project on the European site, and in the absence of other alternative solutions, the plan or project can go ahead for imperative reasons of overriding interest (IROPI) but that compensatory measures must be taken to ensure that the overall coherence of the European site is protected / maintained. A distinction is to be drawn between mitigation and compensation.

Since this is a project, as defined by the Habitats Directive, and transposed into Scottish law by the Conservation (Natural Habitats, &c.) Regulations 1994, which is not directly connected with or necessary to the management of any nearby European sites, then a Habitats Regulations Appraisal (HRA) will be required. This will be carried out by the Competent Authority, advised by the Statutory Nature Conservation Body. The recent departure of the UK from the European Union has not altered this requirement; it is still a requirement under Scottish law.

The purpose of this report, which has been commissioned by Kirkton Wind Farm Ltd. to support the planning application, is to carry out a shadow HRA, for discussion with the Competent Authority and Statutory Nature Conservation Body. To do this, three stages of assessment will be carried out:

- Screening – is there a likely significant effect on the SAC / SPAs as a result of the project?
- Appropriate Assessment
- Finalisation of HRA

1.2 Background

1.2.1 Site Location and Description

The site is situated approximately 2.1 km south of the village of Melvich, in the Scottish Highlands with an approximate grid reference of NC 87999 59788.

The site is located in an area of grazing land, planted native woodland and blanket bog ranging in altitude from 20 to 160 m Above Ordnance Datum (AOD). The highest area to the south comprises of large, nearly flat expanses of blanket bog.

The north of the site is rougly split into east and west sectors by the burn Allt na h-Eaglaise and its tributaries. The slopes to the west of this rise to a large block of commercial conifer plantation, and those to the east rise to a long hill at an altitude of approximately 100 m AOD. An access track runs south from Kirkton Farm and along the eastern hill.

The south of the site is split by the burns Allt nan Gall and Allt an Tigh-choinneimh that drain east into the Halladale River.

The site is used mainly for sheep and cattle grazing, although there is also some planted and semi-natural woodland. There is some evidence of grazing pressure from deer. The survey area contains a variety of plant communities including blanket bog, wet heath, dry heath, acid grassland, acid flush, areas of continuous bracken, broad-leaved woodland, improved grassland and marshy grassland.

There are two fields located immediately adjacent to the A836 that have been identified as suitable for the creation of turning areas: turning area A is located to the north west of the main site, adjacent to the building at Strathroy; and turning area B is located at the western edge of Melvich, adjacent to the road junction between the A836 and the road to Portskerra. Turning area A supports an improved grassland habitat and turning area B supports an improved grassland / marshy grassland mosaic.

1.2.2 European Sites

A review of European designated sites (Special Areas of Conservation (SACs) or Special Protection Areas (SPAs)) was carried out within 2 km of the proposed development, extending to 10 km for sites designated for avian or aquatic migratory species, and 20 km for sites with geese as a qualifying interest as a result of NatureScot guidance on connectivity (SNH, 2016).

The results of this review are shown in Table 1 and on Figure 9.1.

Table 1: European sites

Site Name	Designation	Distance from proposed development	Qualifying features
Caithness and Sutherland Peatlands	SAC	Immediately adjacent to the west of the proposed development [i]	Habitats: • Blanket bogs • Depressions on peat substrates • Acid peat-stained lakes and ponds • Wet heathland with cross-leaved heath *Erica tetralix* • Clear-water lakes or lochs with aquatic

Site Name	Designation	Distance from proposed development	Qualifying features
			vegetation and poor to moderate nutrient levels • Transition mires and quaking bogs Species: • Otter *Lutra lutra* • Marsh saxifrage *Saxifraga hirculus*
Caithness and Sutherland Peatlands	SPA	Immediately adjacent to the west of the proposed development [i]	• Black-throated diver *Gavia arctica* – 26 pairs representing 16.3% of GB population [ii] (17 pairs [iii]) • Golden eagle *Aquila chrysaetos* – 5 pairs representing 1.3% of GB population [ii] (5 pairs [iii]) • Golden plover *Pluvialis apricaria* – 1064 pairs representing 4.7% of GB population [ii] (1922 pairs [iii]) • Hen harrier *Circus cyaneus* – 14 pairs representing 2.8% of GB population [ii] (18 pairs [iii]) • Merlin *Falco columbarius* – 54 pairs representing 4.2% of GB population [ii] (54 pairs [iii]) • Red-throated diver *Gavia stellata* – 89 pairs representing 9.5% of GB population [ii] (46 pairs [iii]) • Short-eared owl *Asio flammeus* – 30 pairs representing 3% of GB population [ii] (30 pairs [iii]) • Wood sandpiper *Tringa glareola* – 5 pairs representing 50% of GB population [ii] (6 pairs [iii]) • Common scoter *Melanitta nigra* – 27 pairs representing <0.1% of Western Siberian / Western & Northern Europe / North-western Africa population [ii] (26 pairs [iii]) • Dunlin *Calidris alpina schinzii* – 1860 pairs representing 16.9% of the Baltic / UK / Ireland population [ii] (1366 pairs [iii]) • Greenshank *Tringa nebularia* – 54 pairs representing 0.4% of the Europe / Western Africa population [ii] (653 pairs [iii]) • Wigeon *Anas penelope* – 43 pairs representing <0.1% of Western Siberian / North-western / North-eastern Europe population [ii] (43 pairs [iii])
North Caithness Cliffs	SPA	c. 3 km to the north	• Peregrine *Falco peregrinus* – 6 pairs representing 0.5% of GB population [iv] • Guillemot *Uria aalge* – 38,300 individuals representing 1% of the North Atlantic biogeographic population and 4% of GB population (1985 – 1987) [iv]

Site Name	Designation	Distance from proposed development	Qualifying features
			• Fulmar *Fulmarus glacialis* – 14,700 pairs representing 3% of GB population (1985 – 1987) [iv] • Kittiwake *Rissa tridactyla* – 13,100 pairs representing 3% of GB population (1985 – 1987) [iv] • Razorbill *Alca torda* – 4,000 individuals representing 3% of GB population (1985 – 1987) [iv] • Puffin *Fratercula arctica* – 2,080 pairs representing 0.4% of GB population and greater than 2,000 individuals (1985 – 1987) [iv] • Seabird assemblage – 110,000 individuals (1985 – 1987) [iv]
Caithness Lochs	SPA	c. 15 km to the east	• Greenland white-fronted goose *Anser albifrons flavirostris* – winter peak mean of 440 representing 3% of GB population, 1% of Greenlandic population (1993 / 1994 – 1997 / 1998) [v] • Greylag goose *Anser anser* – winter peak mean of 7,190 representing 7% of GB and Icelandic populations (1993 / 1994 – 1997 / 1998) [v] • Whooper swan *Cygnus cygnus* – winter peak mean of 240 representing 4% of GB population, 1% of Icelandic population (1993 / 1994 – 1997 / 1998) [v]

[i] The boundary of the proposed development does overlap slightly in the north west of the site. This is to incorporate the entirety of the forestry block there as this area will be the subject of peatland restoration proposals as part of a Habitat Management Plan (**TA 8.5: Draft Habitat Management Plan** refers).

[ii] 2001 Population Estimate (SNH, 2017)

[iii] 2007/2009 Most Recent Population Estimate

[iv] Figure from SPA citation (SNH, 2018)

[v] Figure from SPA citation (SNH, 1999)

Conservation Objectives

For each site, conservation objectives have been set. It is the maintenance of these conservation objectives which ensures the integrity of the European site and as such, consideration of whether these conservation objectives will continue to be met if the proposed development proceeds is a key assessment to be made. Typically conservation objectives are set for either habitats or species and are similar across all sites.

Conservation objectives for sites with habitats as qualifying features are:

- To avoid deterioration of the qualifying habitats thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and

- To ensure for the qualifying habitats that the following are maintained in the long term:
  - Extent of the habitat on site;
  - Distribution of the habitat within the site;
  - Structure and function of the habitat;
  - Processes supporting the habitat;
  - Distribution of typical species of the habitat;
  - Viability of typical species as components of the habitat; and
  - No significant disturbance of typical species of the habitat.

Conservation objectives for sites with species as qualifying features are:

- To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and
- To ensure for the qualifying species that the following are maintained in the long term:
  - Population of the species is a viable component of the site;
  - Distribution of the species within the site;
  - Distribution and extent of habitats supporting the species;
  - Structure, function and supporting processes of habitats supporting the species; and
  - No significant disturbance of the species.

1.3 Proposed Development

The proposed development will consist of up to eleven three-bladed horizontal axis wind turbines, each up to 149.9 m above ground level (agl) maximum blade tip height and a rotor diameter of 133 m. The final choice of turbine will be subject to a selection process which considers technical and commercial aspects of the turbines and would be based on the turbine models which are commercially available at the time of construction.

Associated infrastructure includes hard standing areas for erecting cranes at each turbine location, on-site access tracks and turning heads, an on-site substation and control building, and a temporary construction compound. The proposed development would be time limited to 30 years from the date of final commission.

2 Screening of Likely Significant Effects

This section describes in turn the presence or absence of qualifying species or habitats within the proposed development and vicinity and assesses whether there are any likely significant effects upon those features.

2.1 Caithness and Sutherland Peatlands SAC

2.1.1 Habitats

A full description of the habitats present within the proposed development is provided in **Technical Appendix 8.1: Extended Phase 1 Habitat and NVC Surveys**.

The following Phase 1 habitats were recorded in the survey area (habitats in bold are present within the footprint of the proposed development site including a 250 m buffer from borrow pits or structures requiring foundations, and 100 m out from all infrastructure, i.e. areas which are considered to be potentially impacted upon by the development footprint; habitats underlined are listed as qualifying features of the adjacent SAC):

- **Semi-Natural Broad-leaved Woodland (A1.1.1)**;
- **Broad-leaved Plantation Woodland (A1.1.2)**;
- **Coniferous Plantation Woodland (A1.2.2)**;
- **Scattered Gorse Scrub (A2.2)**;
- **Semi-Improved Acid Grassland (B1.2)**;
- **Semi-Improved Acid Grassland (B1.2) / Continuous Bracken (C1.1)**;
- **Semi-Improved Acid Grassland (B1.2) / Acid/Neutral Flush (E2.1)**;
- **Semi-Improved Acid Grassland (B1.2) / Wet Dwarf Shrub Heath (D2)**;
- **Improved Grassland (B4)**;
- **Marshy Grassland (B5)**;
- **Marshy Grassland (B5) / Semi-Improved Acid Grassland (B1.2)**;
- **Marshy Grassland (B5) / Wet Dwarf Shrub Heath (D2)**;
- Marshy Grassland (B5) / Improved Grassland (B4);
- **Marshy Grassland (B5) / Continuous Bracken (C1.1)**;
- **Continuous Bracken (C1.1)**;
- **Acid Dry Dwarf Shrub Heath (D1.1)**;
- Acid Dry Dwarf Shrub Heath (D1.1) / Wet Dwarf Shrub Heath (D2);
- **Acid Dry Dwarf Shrub Heath (D1.1) / Continuous Bracken (C1.1)**;
- **Wet Dwarf Shrub Heath (D2)**;
- **Wet Dwarf Shrub Heath (D2) / Blanket Sphagnum bog (E1.6.1)**;
- **Blanket Sphagnum bog (E1.6.1)**;
- **Acid/Neutral Flush (E2.1)**;
- **Acid/Neutral Flush (E2.1) / Broad-leaved Plantation Woodland (A1.1.2)**; and
- **Acid/Neutral Flush (E2.1) / Acid Dry Dwarf Shrub Heath (D1.1) / Continuous Bracken (C1.1)**;

These are shown on Figure 8.2.

The following NVC vegetation communities were recorded in the survey area (habitats in bold are present within the footprint of the proposed development site including a 250 m buffer from borrow pits or structures requiring foundations, and 100 m out from all infrastructure, i.e. areas which are considered to be potentially impacted upon by the development footprint; habitats underlined are listed as qualifying features of the adjacent SAC):

- H10 *Calluna vulgaris – Erica cinerea* heath;
- **H10 *Calluna vulgaris – Erica cinerea* heath with planted broad-leaved trees**;
- **H10 *Calluna vulgaris – Erica cinerea* heath, sub-community a with planted broad-leaved trees**;
- H10 *Calluna vulgaris – Erica cinerea* heath / M17 *Trichophorum germanicum – Eriophorum vaginatum* blanket mire;
- **H10 *Calluna vulgaris – Erica cinerea* heath / U20 *Pteridium aquilinum – Galium saxatile* community**;
- **M6 *Carex echinata – Sphagnum fallax / denticulatum* mire, sub-community a**;
- M6 *Carex echinata – Sphagnum fallax / denticulatum* mire, sub-community c;
- M6 *Carex echinata – Sphagnum fallax / denticulatum* mire, sub-communities a and c;
- **M6 *Carex echinata – Sphagnum fallax / denticulatum* mire, mosaic of sub-communities a and b / U4 *Festuca ovina – Agrostis capillaris – Galium saxatile* grassland / H10 *Calluna vulgaris – Erica cinerea* heath**;
- **M6 *Carex echinata – Sphagnum fallax / denticulatum* mire, sub-community c / H10 *Calluna vulgaris – Erica cinerea* heath / U20 *Pteridium aquilinum – Galium saxatile* community**;
- **M6 *Carex echinata – Sphagnum fallax / denticulatum* mire, sub-community c / W4 *Betula pubescens – Molinia caerulea* woodland**;
- **M15 *Trichophorum germanicum – Erica tetralix* wet heath**;
- **M15 *Trichophorum germanicum – Erica tetralix* wet heath, sub-community b**;
- **M15 *Trichophorum germanicum – Erica tetralix* wet heath / *Juncus* pasture**;
- **M15 *Trichophorum germanicum – Erica tetralix* wet heath / H10 *Calluna vulgaris – Erica cinerea* heath**;
- **M15 *Trichophorum germanicum – Erica tetralix* wet heath / U4 *Festuca ovina – Agrostis capillaris – Galium saxatile* grassland**;
- M15 *Trichophorum germanicum – Erica tetralix* wet heath / M17 *Trichophorum germanicum – Eriophorum vaginatum* blanket mire;
- **M15 *Trichophorum germanicum – Erica tetralix* wet heath / M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire**;
- **M17 *Trichophorum germanicum – Eriophorum vaginatum* blanket mire**;
- **M17 *Trichophorum germanicum – Eriophorum vaginatum* blanket mire, sub-community b**;
- **M17 *Trichophorum germanicum – Eriophorum vaginatum* blanket mire, mosaic of sub-communities a and b**;
- M17 *Trichophorum germanicum – Eriophorum vaginatum* blanket mire / M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire;

- **M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire**;
- **M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire, sub-community a**;
- **M23 *Juncus effusus / acutiflorus – Galium palustre* rush-pasture**;
- **M23 *Juncus effusus / acutiflorus – Galium palustre* rush-pasture / U20 *Pteridium aquilinum – Galium saxatile* community**;
- **M28 *Iris pseudacorus – Filipendula ulmaria* mire / U20 *Pteridium aquilinum – Galium saxatile* community**;
- **MG6 *Lolium perenne – Cynosurus cristatus* grassland**;
- **U2 *Deschampsia flexuosa* grassland**;
- **U2 *Deschampsia flexuosa* grassland / M6 *Carex echinata – Sphagnum fallax / denticulatum* mire, sub-community c**;
- **U2 *Deschampsia flexuosa* grassland / M15 *Trichophorum germanicum – Erica tetralix* wet heath**;
- **U2 *Deschampsia flexuosa* grassland / U20 *Pteridium aquilinum – Galium saxatile* community**;
- **U4 *Festuca ovina – Agrostis capillaris – Galium saxatile* grassland / *Juncus* pasture**;
- **U20 *Pteridium aquilinum – Galium saxatile* community**;
- **U20 *Pteridium aquilinum – Galium saxatile* community, sub-community a**;
- **W4 *Betula pubescens – Molinia caerulea* woodland**;
- **W4 *Betula pubescens – Molinia caerulea* woodland, sub-community c**;
- **W17 *Quercus petraea – Betula pubescens – Dicranum majus* woodland**;
- **W23 *Ulex europaeus – Rubus fruticosus* scrub**;
- **Improved grassland**;
- ***Juncus* pasture**;
- **Low woodland**;
- **Mixed woodland**;
- **Coniferous plantation woodland**; and
- **Pasture**.

Those qualifying habitats that occur within the footprint of the proposed development are outwith the boundaries of the SAC and are therefore not considered part of the SAC.

As a result of the separation distance between the SAC and infrastructure and constructions areas of the proposed development, no direct impacts could rise to a level where they would assume significance. However, removal of the forestry plantation at the north would have the potential to affect deer distribution and behaviour with potential for greater foraging within the SAC to occur. The effects of this could be locally significant on qualifying habitats and as a result Appropriate Assessment of this impact would be required.

2.1.2 Species

Given the qualifying interests of the SAC, the results of protected species surveys for otter is relevant. These can be found in detail in **Technical Appendix 8.3: Protected Mammal Surveys**.

Otters

Otter spraints and feeding signs in the form of predated fish were identified at points along the lower reaches of the Allt na h-Eaglaise watercourse, outwith the site boundary but within the survey area.

While no couches or holts were recorded, it is clear that otter are active in and around the area, and the proposed development site contains suitable habitat which supports this species.

Watercourses will be generally unaffected by the development and as such there will be no likely significant effects on habitat. Watercrossings will be built using industry best practice and as point locations, any impact on habitat will be too restricted to be considered significant. However, there is potential for disturbance and displacement effects to occur across the construction area during the construction stage, which has the potential to be significant given the location of the development running parallel to the SAC boundary. As a result of the finding of a likely significant effect screening has determined the need for Appropriate Assessment.

2.2 Caithness and Sutherland Peatlands SPA

There was no evidence of the following species within or around the proposed development and as such, they are screened out from further assessment:

- Common scoter;
- Short-eared owl;
- Wigeon; and
- Wood sandpiper.

Further details on Common scoter assessment, given the concerns expressed by RSPB Scotland are provided in **Technical Appendix 9.3: Common Scoter**. The remaining eight species (black-throated diver, red-throated diver, dunlin, golden plover, greenshank, golden eagle, hen harrier, merlin) were recorded on or over the proposed development, so there is potential that the SPA population could be associated with the proposed development site. As a result, each species will be screened individually.

2.2.1 Black-throated and Red-throated Diver

As detailed in **Technical Appendix 9.2: Confidential Ornithology**, there was activity by both species associated with lochans to the west of the proposed development, within the boundaries of the SPA. No territories were identified within the proposed development site.

With no recorded breeding on the proposed development site, and breeding territories confirmed on lochans to the west within the SPA, it is considered that the birds observed form part of the SPA populations of both species.

There was no recorded activity over the proposed development site by either species. Activity for Black-throated diver was beyond the disturbance distance for that species with the closest infrastructure more than 2 km from the territory. With no activity over the proposed development and given the distance between the proposed development and territory, there would be no likely significant effect of the proposed development on black-throated diver.

A pair of red-throated divers had a failed breeding attempt on a lochan in proximity to the proposed development in 2020; this lies outwith the disturbance zone for breeding red-throated diver and as such there would be no effects of the proposed development upon this territory. However a lochan within the published disturbance distance (Ruddock, 2007) did have a pair of birds present in two years; in both years there was no other evidence of breeding except for the presence of a pair, late in the breeding season. Pairs of red-throated diver are observed visiting non-breeding lochans late in the breeding season; this may be prospecting for suitable locations for the following year. As such, the possibility that this lochan could provide breeding habitat has been considered and this location is susceptible to disturbance/displacement during construction and operation. This could be significant given the SPA population size. As such Appropriate Assessment is required. There was no flight activity over the proposed development so there would be no predicted additional mortality.

2.2.2 Dunlin

As detailed in **Technical Appendix 9.1: Ornithological Survey Report 2019-2021**, flights of dunlin were recorded throughout the survey period and a limited number of breeding territories were identified within the proposed development site and the associated survey buffer.

All flight activity was observed during the two breeding seasons. While most records are likely to relate to birds from the territories on or close the to the proposed development the presence of birds from the SPA population cannot be discounted. Given the proximity of the SPA, it is considered that some birds observed in flight form part of the SPA population, although territories within the proposed development will not form part of the SPA population. However in both years the flight activity was very limited and in at least one year appeared to consist principally of short, local flights by territory holding birds within the proposed development. The collision risk estimated was less than one bird across the lifetime of the proposed development. As such, there would be no likely significant effect.

There is potential for likely significant effects on the ability to forage over the site which would result in a functional loss of habitat and potential for collision risk to affect the dunlin population of the SPA. Because birds breeding within the proposed development site would not form part of the SPA population then there would be no likely significant effect if breeding availability were to reduce within the proposed development site but there was one territory present in two years in the western survey buffer which lies within the SPA which could be affected by displacement or disturbance. However, the current estimated population is 1,366 breeding pairs, and therefore disturbance or displacement of one pair would not rise to a level which would be considered significant. Therefore no likely significant effects are identified and this species is screened out from further assessment.

2.2.3 Golden Plover

As detailed in **Technical Appendix 9.1: Ornithological Survey Report 2019-2021**, flights of golden plover were recorded throughout the survey period and a limited number of breeding territories were identified within the proposed development site and the associated survey buffer.

All flight activity was observed during the two breeding seasons. Given the proximity of the SPA, the foraging ecology of golden plover which can see them foraging far from breeding territories and the fact that territories were within the SPA, it is considered that at least some birds observed form part of the SPA population; although it should be noted that there were some territories recorded outwith the SPA boundary, but within the proposed development and survey buffer, and these pairs would not form part of the SPA population.

As such, there is potential for likely significant effects on the ability to forage over the site and breed in the vicinity of the site. Therefore effects of displacement and disturbance are screened in for further assessment as well as potential for collision risk to affect the golden plover population of the SPA.

2.2.4 Greenshank

As detailed in **Technical Appendix 9.1: Ornithological Survey Report 2019-2021**, flights of greenshank were recorded throughout the survey period but no breeding territory was identified within the proposed development site or survey buffer. There was no evidence of greenshank foraging within the proposed development site as there were no ground based observations of greenshanks across the two years of survey. There is therefore considered to be no likely significant effects related to disturbance or displacement of the species from the proposed development.

Given the proximity of the SPA, it is considered that birds overflying the proposed development site are likely to be from birds from the SPA population. However, this amounted to two flights over two years of observations and as such, did not occur at a frequency where there would be a likely significant effect.

There are therefore no likely significant effects identified for this species and the need for further assessment is screened out.

2.2.5 Golden Eagle

As detailed in **Technical Appendix 9.1: Ornithological Survey Report 2019-2021**, flights of golden eagle were recorded during September 2019 – February 2020 but no breeding territory was identified within the site or survey buffer. Given the historical evidence of breeding in the wider area, and given the proximity of the SPA, it is considered that the proposed development site is used infrequently by birds which are likely to form part of the SPA population.

With no breeding on or within the vicinity of the proposed development, there can be no impacts on breeding locations. However there is potential for likely significant effects on the ability to forage over the site which would result in a functional loss of habitat and potential for collision risk to affect the golden eagle population of the SPA. However, with only four flights observed during two years of survey, usage of the area is not considered to rise to a level where a significant effect would occur; there is no direct evidence of foraging over the proposed development, only of birds being

observed over the proposed development and while wind farms can displace foraging behaviour, the effect of this is limited in scope to the area associated with the array (Fielding A. &., 2015). As such, with such limited activity observed, the effect cannot be significant and so no likely significant effect is identified. This species is screened out from further assessment.

2.2.6 Hen Harrier

As detailed in **Technical Appendix 9.1: Ornithological Survey Report 2019-2021**, flights of hen harrier were recorded throughout the survey period but no breeding territory was identified within the site or survey buffer. Given the historical evidence of breeding in the wider area, and given the proximity of the SPA, it is considered that the proposed development site is used infrequently by birds which are likely to form part of the SPA population.

With no breeding on or within the vicinity of the proposed development site, there can be no adverse impacts on breeding locations. As such, there is potential for likely significant effects on the ability to forage over the site due to disturbance/displacement and potential for collision risk to affect the hen harrier population of the SPA. This species is screened into further assessment.

2.2.7 Merlin

As detailed in **TA 9.1: Ornithological Survey Report 2019-2021**, flights of merlin were recorded throughout the survey period but no breeding territory was identified within the site or survey buffer. Given the historical evidence of breeding in the wider area, and given the proximity of the SPA, it is considered that the proposed development site is used infrequently by birds which may form part of the SPA population.

With no breeding on or within the vicinity of the proposed development, there can be no impacts on breeding locations. As such, there is potential for likely significant effects on the ability to forage over the site which would result in a functional loss of habitat and potential for collision risk to affect the merlin population of the SPA. This means that this species is screened into further assessment.

2.3 North Caithness Cliffs SPA

There was no evidence of the following species within or around the proposed development and as such, they are screened out from further assessment:

- Guillemot;
- Fulmar;
- Kittiwake;
- Razorbill; and
- Puffin.

The remaining species (peregrine) was recorded on or over the proposed development, so there is potential that the SPA population could be associated with the proposed development site.

2.3.1 Peregrine

There was little peregrine activity over / on the proposed development. There were three flights observed, one of which was outwith the breeding season and so may not relate to a bird from the SPA population.

That indicates that the proposed development is either not close to any peregrine breeding sites or is unsuitable habitat for the species. In either case, with such low activity levels, there is no likely significant effect identified on the SPA population. This species is therefore screened out from further consideration.

2.4 Caithness Lochs SPA

There was no evidence of the following species within or around the proposed development and as such, they are screened out from further assessment:

- Greenland white-fronted goose.

The remaining qualifying species (greylag goose and whooper swan) were recorded on or over the proposed development.

2.4.1 Greylag Goose

Given the relatively large number of flights recorded in each of the breeding seasons, it can be assumed that the birds observed at that time form part of the breeding population of the Caithness and Sutherland Peatlands Ramsar and were therefore not associated with the Caithness Lochs SPA population.

Flights in winter are more likely to be migratory birds from Iceland rather than birds of the Ramsar breeding population, but it is likely both the resident and the migratory populations are observed.

There was limited use of the proposed development site during the breeding season, with activity in winter confined to overflying birds. The site does occupy a location which geese can fly over – either on migration or as feeding movements from roosts. It is noteworthy that Mitchell (2012) shows only one foraging record, from the area east of the proposed development, likely in the lower ground around the River Halladale with the majority of foraging observed north and east of the western most waterbody, Broubster Leans. This is further reflected in the survey area chosen in 2011/12 and 2012/13 for surveys of foraging waterbirds from the SPA (Patterson *et al* 2013). As a result, due to this and the fact the proposed development lies approximately 15 km west of the western most designated water body, it is considered observed birds do not form part of the SPA population. As a result, there would be no likely significant effect on the SPA population and further assessment would be screened out as not required.

2.4.2 Whooper Swan

Wintering non-breeding populations of whooper swan are a qualifying feature of the Caithness Lochs SPA.

The site does occupy a location which swans can fly over – either on migration or as feeding movements from roosts. Given the separation distance between the site and the nearest element of the SPA, it is considered that the SPA is beyond the ranging distance of this species which is a maximum of 5km (SNH, 2016). Therefore, the birds

observed are not considered to form part of the SPA population and there are no likely significant effects on the SPA population.

Impacts on the SPA population are therefore screened out from further assessment.

2.5 Summary of Likely Significant Effects

After screening is completed, Table 2 summarises the features of different Natura sites for which likely significant effects cannot be ruled out at the screening stage and Appropriate Assessment will be required.

Table 2: Summary of likely significant effects

Natura Site	Receptor	Likely significant effect
Caithness and Sutherlands Peatlands SAC	Habitats	Grazing impacts of deer leading to habitat
Caithness and Sutherlands Peatlands SPA	Otter	Disturbance / displacement
Caithness and Sutherlands Peatlands SPA	Red-throated diver	Disturbance/displacement of breeding lochans
Caithness and Sutherlands Peatlands SPA	Golden plover	Potential displacement of breeding and foraging; additional collision risk
Caithness and Sutherlands Peatlands SPA	Hen harrier	Potential displacement of breeding and foraging; additional collision risk
Caithness and Sutherlands Peatlands SPA	Merlin	Potential displacement of foraging; additional collision risk

3 Appropriate Assessment

For those qualifying features for which a likely significant effect has not been ruled out at the screening stage, further assessment is carried out to establish if the proposed development will have an adverse effect on the Natura site. At this stage of the appraisal, mitigation may be taken into account.

3.1 Caithness and Sutherland Peatlands SAC

3.1.1 Habitats

Screening identified that there could be adverse effects on qualifying features as a result of the removal of forestry within the proposed development which could increase browsing/grazing pressure on the SAC as a result of displacement of deer from the forestry.

To counteract this, the Habitat Management Plan includes provision for deer management to reduce the impact of displaced deer on the SAC in the environs of the proposed development. It is expected that the HMP would be secured by a condition to the deemed planning permission meaning that it can be concluded there would be no impact of deer browsing on qualifying SAC habitats.

3.1.2 Otter

Otter are present on and around the proposed development, with activity recorded on the lower reaches of the Allt na h-Eaglaise watercourse, outwith the site boundary. No resting places were discovered within the study area and no evidence of otter presence within the site was encountered (although this cannot be ruled out). As such, there could be disturbance effects during construction and operation.

With pre-construction surveys providing up to date information on constraints and ECoW supervision ensuring that construction takes place in an appropriate manner, direct impacts as a result of destruction of otter resting places or disturbance of otter using resting places will not occur. Work will primarily take place during daylight hours and as such, it is considered that otter would not be disturbed during daylight hours, as they are likely to avoid the working area. This would be a temporary displacement effect, but otter could still access watercourses outside non-working hours and as a result, would not lose access to the resource and the connectivity across the landscape it brings.

There is potential for indirect impacts on otters to result from pollution from construction activities. Appropriate mitigation measures have been identified including the requirement for EnvCoW / ECoW and the requirement for pollution control during construction (to be taken forward within the proposed development Construction Environmental Management Plan (CEMP)). Potential for polluting events would be reduced and management will be clearly detailed as to what should happen in the unlikely event of an event, thereby mitigating the effects. As a result, while the potential can never be eliminated, in the unlikely event one were to occur it would likely have as short term effect which given the intermittent use of the area would not have adverse effects on the otter population of the SAC.

3.2 Caithness and Sutherland Peatlands SPA

3.2.1 Red-throated Diver

Red-throated diver were observed breeding within the survey area, although the territory which was present was outwith the area of the published disturbance distance (Ruddock, 2007). Breeding may not be limited to just this locale, so there is potential for disturbance during the breeding season during construction and displacement of the territory during construction and operation.

Breeding red-throated divers are protected from disturbance under the WCA. As a result, as with any specially protected bird species, surveys will be carried out to establish the presence of any breeding territories in the vicinity of the proposed development during the construction process. If territories are located then construction activities with potential to disturb would be restricted to ensure that no disturbance could occur on breeding birds. This would be overseen by the dedicated ECoW. It is expected this commitment will be secured by a condition or conditions to the deemed planning permission. As such, disturbance during construction will not occur and there would be no adverse effects on the SPA population.

Pairs of divers were seen on a lochan which lies relatively close to the proposed development. No breeding was observed here and the fact that pairs were potentially prospecting it but no breeding occurred could indicate it has low suitability. However, there is potential that it could be used in the future and if so, there could be ongoing effects upon any territories here.

Red-throated diver have been recorded continuing to breed at Burger Hill on Orkney (Orkney Wind 2019) where breeding territories continued in a loch adjacent to a wind farm and at Carraig Gheal wind farm where breeding persisted in the vicinity of the wind farm following construction and operation (RPS, 2021) but not at Smølla wind farm (Halley, 2007), where nests surrounded by turbines did not persist once the wind farm was constructed. The situation on this lochan is more akin therefore to Burger Hill and Carraig Gheal where the lochan is in proximity to, rather than surrounded by turbines.

There is no current evidence of breeding on the lochan in question, and the evidence is that breeding can and does persist in proximity to turbines. As a result, in the event that the lochan was considered suitable for breeding (and it is possible that felling associated with the development could improve the suitability), it would remain available as a breeding lochan for divers, and the proposed development would not operate a displacement effect. As such, the conservation objectives would be upheld for this species and there would be no adverse impact on the site integrity.

3.2.2 Golden Plover

A likely significant effect was identified with respect to disturbance/displacement effects for foraging and breeding golden plover and also for increased collision mortality with respect to flights over or through the proposed development.

There were two probable territories identified within the proposed development in 2021 which do not form part of the SPA population as they were outwith the SPA. There were a further three territories (one probable in 2020 and two possible in 2021) recorded within the survey buffer which do form part of the SPA population.

The evidence for the effects of wind farms on golden plover is contradictory. One study found a displacement effect within the turbine array extending out to 400 m from turbines during the operation phase which persisted into the construction phase (Samson, 2016). A longer-term study on another wind farm found no such effect (Fielding & Haworth, 2013). However since the territories within the SPA were not within 400 m of turbines (the closest was 490 m from the closest turbine, although there is some uncertainty as to precise territory location since the nest was not located) they are beyond the area of effect if this disturbance effect were to occur. There may be a small area which would become less attractive to breeding golden plover within the SPA adjacent to the turbines; there is an area of approximately 50 ha which lies within 400 m of turbines which is within the SPA. However the absence of records from this area, the small area on the boundary of the SPA (relative to the size of the SPA), and the uncertainty of the effect, given conflicting results from different sites as to the effect of wind turbines means that there would be no reduction in the breeding population of the SPA as a result.

The annual estimate of collision risk on this species was 0.008 birds per year, equating to less than one bird lost over the lifetime of the proposed development. This indicates that there was little flight activity over or through the proposed development, which underlines the findings of the surveys of little evidence of feeding on the proposed development. It also shows there would be very little or no additional mortality as a result of the proposed development.

Because of this, there would be a small area on the boundary of the SPA which could have reduced suitability for breeding Golden plover as a result of the presence of turbines adjacent to the area. There has been no evidence of breeding in this area and as such there would be no reduction in breeding population or area utilised by breeding birds. There would also be no increased mortality as a result of the proposed development. As such, the conservation objectives would be upheld for this species and there would be no adverse impact on the site integrity of the SPA.

3.2.3 Hen Harrier

There was no evidence of breeding recorded for hen harrier, but they are occasionally observed over the proposed development. As such it was considered there was a likely significant effect in terms of potential displacement from foraging areas and also increased mortality due to collision risk.

A displacement effect of flight activity within 500 m of turbines was identified in a multi-species, multi-site study (Pearce-Higgins, 2009), but more evidence of this effect in long term monitoring programmes has not been observed (e.g. (Fielding A. &., 2015)). Instead there seems to be little further evidence for an adverse effect (Haworth, 2013)

Given that and the limited use of the proposed development by hen harrier, there will not be a measurable effect on hen harrier usage as a result of the proposed development.

Pre-construction surveys will be carried out to identify any breeding attempts of this species, and mitigation would be put in place to protect any nest location from disturbance in the event breeding occurs.

With respect to potential collision risk, because the flight activity is low, collision risk is also estimated to be low, with an annual estimate of 0.001 per year. This results in an

estimated loss of 0.03 birds across the lifespan of the wind farm. As a result, the level of additional mortality would not impact the SPA population.

For cumulative impacts, Chapter 9: Ornithology identified that the currently consented cumulative annual estimate of collision risk across the SPA for this species is 0.5 birds per year; this would increase to 0.501. This increase in cumulative risk given that it is less than one bird across the lifetime of the proposed development is not sufficient to have an adverse effect on the SPA population.

The conservation objectives would be upheld for this species and there would be no adverse impact on the site integrity of the SPA.

3.2.4 Merlin

A likely significant effect was identified for merlin with respect to foraging activity and collision risk resulting in increased mortality.

A total of seven merlin flights were recorded over two years of surveys; there was no activity at collision risk height which is typical for this species. As a result there is no additional mortality estimated for this species.

The evidence of flight activity suggests that use of the proposed development is limited. While there is limited evidence of the impacts of wind turbines on merlin, they can tolerate human infrastructure (Ruddock, 2007), and the limited use of the proposed development would mean that if any displacement were to occur, the effects of it would be very limited and not rise to a level which could be considered significant disturbance. Pre-construction surveys will be carried out to identify any breeding attempts of this species, and mitigation would be put in place to protect any nest location from disturbance in the event breeding occurs.

As such, the conservation objectives for this species would be maintained and there would be no adverse effects on the site integrity of the SPA related to this species if the proposed development were to go ahead.

4 Conclusions

Table 3 provides a summary of the qualifying features of the SAC for which appropriate assessment was undertaken and reviews the conservation objectives for those qualifying features and how they would be affected by the development of the proposed development.

Table 3: Assessment of the effects of the proposed development on qualifying features of the SAC

Conservation objective	Qualifying habitats	Otter
To avoid deterioration of the qualifying habitats or habitats of the qualifying species or significant disturbance of the qualifying species thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features	No part of the proposed development infrastructure is within the SAC and as such, habitats will not be directly impacted. Potential for negative effects due to increased grazing pressure from deer displaced from woodland will be mitigated by a deer management plan to control impacts on the SAC. This conservation objective will be maintained.	No construction within the SAC. Watercourses are buffered from infrastructure, no resting places have been identified. Pre-construction surveys will be carried out and a species protection plan developed to prevent disturbance of the species during construction. This conservation objective will be maintained.
To ensure for the qualifying habitats that the following are maintained in the long term		
Extent of the habitat on site	All works are outwith the SAC. This conservation objective will be maintained.	NA
Distribution of the habitat within the site	All works are outwith the SAC. Deer management plan will manage potential effects of deer grazing. This conservation objective will be maintained.	NA
Structure and function of the habitat	All works are outwith the SAC. Deer management plan will manage potential effects of deer grazing. This conservation objective will be maintained.	NA
Processes supporting the habitat	All works are outwith the SAC. This conservation objective will be maintained.	NA
Distribution of typical species of the habitat	All works are outwith the SAC. Deer	NA

Conservation objective	Qualifying habitats	Otter
	management plan will manage potential effects of deer grazing. This conservation objective will be maintained.	
Viability of typical species as components of the habitat	All works are outwith the SAC. Deer management plan will manage potential effects of deer grazing. This conservation objective will be maintained.	NA
No significant disturbance of typical species of the habitat	All works are outside the SAC. This conservation objective will be maintained.	NA
To ensure for the qualifying species that the following are maintained in the long term		
Population of the species is a viable component of the site	NA	No additional otter mortality will occur as a result of the works. This conservation objective will be maintained.
Distribution of the species within the site	NA	All works are outwith the SAC. This conservation objective will be maintained.
Distribution and extent of habitats supporting the species	NA	No change as a result of the proposed development. This conservation objective will be maintained.
Structure, function and supporting processes of habitats supporting the species;	NA	Watercourses and waterbodies are largely unaffected. Water crossings will adopt industry best practice standards and pollution prevent programmes will be in place. This conservation objective will be maintained.
No significant disturbance of the species	NA	No otter resting places were identified on site. Pre-construction surveys and a Species Protection Plan will be developed prior to construction to ensure mitigation is in place to manage disturbance on this species. This conservation objective will be maintained.

Table 4 provides a summary of the qualifying features of the SPA for which appropriate assessment was undertaken and reviews the conservation objectives for those qualifying features and how they would be affected by the development of the proposed development.

Table 4: Assessment of the effects of the proposed development on qualifying features of the SPA

Conservation objective	Red-throated diver	Golden plover	Hen harrier	Merlin
To avoid deterioration of the habitats of the qualifying species or significant disturbance of the qualifying species thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features	No effects on SPA habitats as all infrastructure is outside the SPA. No use of the proposed development site. Any breeding will be protected by mitigation. This conservation objective will be maintained.	No effects on SPA habitats as all infrastructure is outside the SPA. Birds breeding within the SPA would be subject to a species protection plan, which would manage disturbance on this species. This conservation objective will be maintained.	No effects on SPA habitats as all infrastructure is outside the SPA. Levels of use of the proposed development mean that even if displacement occurred, this would not be considered significant but there is also little evidence to show displacement would occur. Any breeding will be protected by mitigation. This conservation objective will be maintained.	No effects on SPA habitats as all infrastructure is outside the SPA. Limited use of the proposed development suggest that any displacement would not be significant. Any breeding will be protected by mitigation. This conservation objective will be maintained.
To ensure for the qualifying species that the following are maintained in the long term				
Population of the species is a viable component of the site	There was no additional mortality predicted for this species as a result of the collision risk so the population will remain unaffected. The conservation objective will be maintained.	Predicted collision risk is less than one bird across the lifetime of the proposed development. This means there would be no additional mortality and there would be no cumulative impacts. The conservation objective will be maintained.	Predicted collision risk is less than one bird across the lifetime of the proposed development. This means there would be no additional mortality and there would be no cumulative impacts. The conservation objective will be maintained.	There was no additional mortality predicted for this species as a result of the collision risk so the population will remain unaffected. The conservation objective will be maintained.
Distribution of the species within	There would be no effect on	There would be no effect on	There would be no effect on	There would be no effect on

Conservation objective	Red-throated diver	Golden plover	Hen harrier	Merlin
the site	the distribution of the species within the site. The conservation objective will be maintained.	the distribution of the species within the site; no golden plover were breeding within the area where displacement has been reported from operational turbines on some windfarms; the effect does not appear to be universal. There may be a small area which becomes less favourable to breeding golden plover; however this will mean potentially birds are displaced into the area where breeding was already occurring and as such, the effect, if any, would not be noticeable. The conservation objective will be maintained.	the distribution of the species within the site. The conservation objective will be maintained.	the distribution of the species within the site. The conservation objective will be maintained.
Distribution and extent of habitats supporting the species	There will be no change to habitats supporting this species as a result of the proposed development. This conservation objective will be maintained.	There will be no change to habitats supporting this species as a result of the proposed development. This conservation objective will be maintained.	There will be no change to habitats supporting this species as a result of the proposed development. This conservation objective will be maintained.	There will be no change to habitats supporting this species as a result of the proposed development. This conservation objective will be maintained.
Structure, function and supporting processes of habitats supporting the species	There would be no effect on this as a result of the proposed development. This conservation objective will be maintained.	There would be no effect on this as a result of the proposed development. This conservation objective will be maintained.	There would be no effect on this as a result of the proposed development. This conservation objective will be maintained.	There would be no effect on this as a result of the proposed development. This conservation objective will be maintained.
No significant disturbance of the species	Pre-construction surveys would identify any breeding	Pre-construction surveys would identify breeding	Pre-construction surveys would identify any breeding	Pre-construction surveys would identify any breeding

Conservation objective	Red-throated diver	Golden plover	Hen harrier	Merlin
	attempts in the vicinity of the proposed development during construction and mitigation would be put in place to prevent disturbance. No divers are currently breeding in proximity to the proposed development. It is not considered the wind farm would prevent future use of the lochans due to evidence from other locales. This conservation objective will be maintained.	attempts in the vicinity of the proposed development during construction and mitigation would be put in place to manage disturbance. No golden plover were breeding within the SPA in the area in the vicinity of turbines where displacement has been reported on some wind farms so no displacement of existing territories is predicted. This conservation objective will be maintained.	attempts in the vicinity of the proposed development during construction and mitigation would be put in place to prevent disturbance. There was no evidence of harriers breeding in proximity to the proposed development and the level of use of by foraging birds was limited. There is no evidence of displacement by wind turbines for breeding hen harriers and limited evidence for foraging harriers. As a result any disturbance would not be considered significant and conservation objective will be maintained.	attempts in the vicinity of the proposed development during construction and mitigation would be put in place to prevent disturbance. There was no evidence of merlin breeding in proximity to the proposed development. Use by foraging birds was occasional and limited. It is known that merlin will tolerate human infrastructure but there is no direct evidence for their response to wind turbines. However their limited use of the proposed development would mean that should displacement occur, it would not be considered significant. The conservation objective will be maintained.

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