



ARCUS

**HEATHLAND WIND FARM
APPENDIX A9.5: ORNITHOLOGY CONSULTATION REPORT
UPDATE: 2019 BREEDING SEASON SURVEYS**

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Prepared By:

Arcus Consultancy Services

7th Floor
144 West George Street
Glasgow
G2 2HG

T +44 (0)141 221 9997 | **E** info@arcusconsulting.co.uk
w www.arcusconsulting.co.uk

Registered in England & Wales No. 5644976

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1 INTRODUCTION

1.1 Background

Arcus Consultancy Services Limited (Arcus) has been commissioned by EDF Renewables (the client) to carry out breeding season ornithology surveys at the consented Heathland Wind Farm ('the Development') in South Lanarkshire/West Lothian.

A planning application for the Development (reference CL/16/0049) was submitted to South Lanarkshire Council in February 2016; and was consented on 26th October 2018. The consented application was for a 17-turbine layout. However, the client is now considering extending the Development into a small area of adjacent land to the east. The original boundary of the Development and the area of additional land are shown in Figure 1, Appendix 1. The following terminology is used for the different areas:

- The 'Heathland Site' refers to all land within the original boundary of the Development;
- The 'Woolfords Site' refers to the land within the additional area to the east of the original boundary of the Development; and
- The 'Combined Site' refers to the land within both the Heathland Site and the Woolfords Site.

A year of baseline ornithology surveys were undertaken for the Development between September 2012 and August 2013, with additional, targeted breeding raptor surveys completed in 2014. These surveys covered the Heathland Site (and appropriate buffer areas) only. The baseline survey dataset was used to inform the Environmental Impact Assessment (EIA)¹ for the Development.

As the layout of the Development is likely to change and may include the Woolford Site (which was not previously surveyed during baseline surveys), and since most of the recorded data are more than five years old, additional breeding season ornithology surveys will be completed between mid-March 2019 and August 2019 (inclusive). If a further planning application to optimise the Development is submitted, the results of these surveys will be used to inform an Ecological Impact Assessment (EcIA) of the potential impacts of the Development on important ornithological features.

This document follows on from a previous consultation report submitted in October 2018, and should be read in conjunction with the previous report.

A Site description and summary of nearby statutory sites of international importance is provided in the previous consultation report, and for brevity, this information is not repeated here.

This document includes a summary of the completed (2012-13) baseline ornithology survey methods and results, and details of the proposed 2019 breeding season ornithology surveys. A brief summary of relevant results recorded during the 2018/19 winter ornithology surveys is also provided.

We would appreciate feedback from Scottish Natural Heritage (SNH) regarding the proposed breeding season survey programme and methods detailed in this Ornithology Consultation Report, particularly with respect to the long-eared owl (*Asio otus*) surveys and the flight activity survey (FAS) schedule.

¹ Partnerships for Renewables. (2016). *Heathland Wind Farm Environmental Statement*. Planning application reference CL/16/0049. Available on the South Lanarkshire Council planning application search page: <https://publicaccess.southlanarkshire.gov.uk/online-applications/>

2 2012-14 BASELINE ORNITHOLOGY SURVEYS

An outline of the completed breeding season survey programme and key survey results are presented below, but full details of the survey methods and results of the 2012-14 baseline surveys are presented in the Ornithology Chapter of the Environmental Statement (ES)¹ and associated appendices, are not repeated here. This document should therefore be read in conjunction with the Ornithology Chapter of the ES and associated appendices.

Note that Arcus did not have access to the Ornithology Technical Appendix or Confidential Appendix during preparation of this report. Therefore details of survey methods and results are limited to the information provided in the Ornithology Chapter of the ES and associated Figures.

2.1 Breeding Season Survey Methods

As this report relates to breeding season surveys, methods for the 2013 and 2014 breeding season surveys are summarised below. A summary of the 2012 to 2014 non-breeding season survey methods is included in the previous Ornithology Consultation Report and not repeated here.

2.1.1 Flight Activity Surveys (FAS) (2013)

A minimum of 36 hours of survey effort was completed at each of five Vantage Point (VP) locations², during the breeding season (March to August 2013) to record target species flight lines over the Heathland Site and surrounding 500 m buffer.

2.1.2 Black Grouse Surveys (2013)

Surveys for lekking black grouse (*Lyrurus tetrix*) were carried out between late March and May 2013, following SNH survey guidance³ and the methods set out in Gilbert *et al.* (1998)⁴. This involved two visits to all areas of potentially suitable lekking habitat within the Heathland Site plus a surrounding buffer of 1.5 km.

2.1.3 Moorland Breeding Bird Surveys (2013)

Breeding bird surveys were undertaken in areas of open habitat (e.g. moorland and unforested areas) within the Heathland Site and a surrounding buffer of 500 m, to document the presence of breeding moorland birds. Four survey visits were completed between April and July 2013. Survey methods followed Brown and Shepherd (1993)⁵.

2.1.4 Crossbill Surveys (2013)

Targeted surveys for crossbill were undertaken in January and March 2013⁶. During each survey visit, transects were walked through suitable and traversable areas of habitat within the Heathland Site and a surrounding buffer of 500 m.

2.1.5 Breeding Raptor Surveys (2013)

The Heathland Site plus a surrounding buffer of 2 km was surveyed monthly between March and July 2013 for all target breeding raptor and owl species. The surveys broadly

² Note that these VP locations differ from the ones current being used.

³ SNH (2010). Survey Methods for Use in Assessing the Impacts of Onshore Wind Farms on Bird Communities. SNH Guidance Note December 2010.

⁴ Gilbert, G., Gibbons, D.W. & Evans, J. (1998). *Bird Monitoring Methods*. RSPB, Sandy.

⁵ Brown, A., F. & Shepherd, K., B. (1993). A method for censusing upland breeding waders. *Bird Study* 40, 189-195.

⁶ Although not specified in the Ornithology Chapter of the EIA¹, it is assumed that these surveys were to target breeding crossbill.

followed species-specific survey methods described in Hardey *et al.* (2009⁷ and 2013⁸) and involved a combination of early season VP surveys in March, followed by walkover surveys in April, May, June and July.

2.1.6 Targeted Surveys for Breeding Long-eared Owl (2013 & 2014)

Two long-eared owl (*Asio otus*) surveys were conducted during the 2013 breeding season, following a reduced version of the survey methods detailed in Hardey *et al.* (2009⁷ and 2013⁸). This involved two nocturnal survey visits, the first between April and May aimed at locating calling territorial males, and the second between June and early July aimed at detecting calling juveniles. The survey area included all suitable long-eared owl habitat within the Heathland Site and a surrounding 1 km buffer.

Long-eared owl surveys were repeated in 2014. These took place over four evenings spread between March and June, following the full method detailed in Hardey *et al.* (2009⁷ and 2013⁸). The survey area was generally consistent with that covered during the 2013 surveys.

2.1.7 Targeted Surveys for Breeding Goshawk and Hen Harrier (2014)

Based on the 2013 raptor survey results, and in response to the recommendations of SNH, targeted goshawk and hen harrier surveys were undertaken between March and July 2014. These followed the same methods employed during the 2013 generic breeding raptor surveys, as summarised above.

2.2 Summary of 2013-14 Breeding Season Baseline Survey Results

As this Ornithology Consultation Report relates to breeding season surveys, results of the 2012-14 baseline surveys summarised below relate largely to those completed during the 2013-14 breeding seasons. However, since the FAS results presented in the Ornithology Chapter of the ES are not separated by season, a summary of FAS results across the full survey period is presented below.

2.2.1 FAS (2012-13)

A total of 15 target species were recorded during the FAS between September 2012 and August 2013, along with several observations of unidentified goose species and one of an unidentified swan species. Pink-footed goose was the species recorded most frequently (128 flights), followed by curlew (*Numenius arquata*; 68 flights) and goshawk (*Accipiter gentilis*; 62 flights).

There were also multiple flights of the following species: golden plover (*Pluvialis apricaria*; 27 flights), snipe (*Gallinago gallinago*; 24 flights), lapwing (*Vanellus vanellus*, 23 flights) and greylag goose (*Anser anser*; 22 flights); and occasional flights of the following: peregrine (*Falco peregrinus*; nine flights), unidentified goose species (seven flights), oystercatcher (*Haematopus ostralegus*; six flights) and hen harrier (*Circus cyaneus*; five flights). In addition, there were two flights of both whooper swan (*Cygnus cygnus*) and merlin (*Falco columbarius*), and single flights of mute swan (*Cygnus olor*), unidentified swan species, woodcock (*Scolopax rusticola*) and whimbrel (*Numenius phaeopus*).

⁷ Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2009). *Raptors: a field guide for surveys and monitoring*, 2nd edition. SNH, Inverness.

⁸ Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). *Raptors: a field guide for surveys and monitoring*, 3rd edition. SNH, Inverness.

2.2.1.1 Collision Risk Modelling

Based on the results of the 2013-14 baseline FAS, collision risk modelling (CRM) was carried out for five species, with the following estimated collision mortality estimates presented in the Ornithology Chapter of the ES:

- **Pink-footed goose:** 11.0 birds per year, all during the non-breeding season;
- **Golden plover:** 3.6 birds per year, almost all of during the non-breeding season;
- **Goshawk:** 0.60 birds per year, the majority during the breeding season;
- **Greylag goose:** 0.48 birds per year, all during the non-breeding season; and
- **Peregrine:** 0.02 birds per year, all during the breeding season.

2.2.2 Black Grouse Surveys (2013)

No black grouse were recorded during the targeted surveys for this species completed in 2013, or during any of the other 2012-14 baseline ornithology surveys.

2.2.3 Moorland Breeding Bird Survey (2013)

A total of 32 species were recorded during the moorland breeding bird surveys, of which nine are Red-listed Birds of Conservation Concern (BoCC)⁹: lapwing, curlew, skylark (*Alauda arvensis*), grasshopper warbler (*Locustella naevia*), song thrush (*Turdus philomelos*), mistle thrush (*T. viscivorus*), starling (*Sturnus vulgaris*), linnet (*Linaria cannabina*) and lesser redpoll (*Acanthis cabaret*). No breeding territories of any Annex I or Schedule 1 species were identified during the moorland breeding bird survey.

2.2.4 Crossbill Surveys (2013)

A total of 23 crossbills were recorded during the survey visit in January 2013, with 20 recorded during the second survey visit in March 2013.

2.2.5 Breeding Raptor Surveys (2013)

Two target raptor species were recorded during the breeding raptor surveys: goshawk and peregrine.

- **Goshawk:** an active goshawk territory was confirmed to be present within the raptor survey area, from which at least one chick was successfully reared and fledged.
- **Peregrine:** the only observation was of a single adult male bird (circling over the moorland and forest edge habitat close to the southern boundary of the Heathland Site. No areas of potentially suitable peregrine nesting habitat were identified within the survey area and no breeding activity was observed.

2.2.6 Targeted Surveys for Breeding Long-eared Owl (2013 & 2014)

No long-eared owls were recorded during the targeted surveys in 2013. However, the species was recorded incidentally within the survey area on two occasions, including a registration of at least two young birds calling just outside the north-western boundary of the Heathland Site.

During the 2014 surveys, male long-eared owls were heard giving territorial calls at three locations during the first survey visit. One of these was located within the north-western part of the Heathland Site, while the other two were to the west of the Heathland Site. During the final survey visit, juvenile long-eared owls were heard calling at four locations: two in the north of the Heathland Site and the third in the south. The fourth young long-eared owl was heard calling in the buffer area to the west of the Heathland Site.

⁹ Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746. Available online at britishbirds.co.uk/wp-content/uploads/2014/07/BoCC4.pdf

Based on the distribution of calling adult males and begging young recorded through both the targeted surveys and incidentally, it was estimated that at least three long-eared owl territories were located within the Heathland Site and surrounding 1 km buffer.

2.2.7 Targeted Surveys for Breeding Goshawk and Hen Harrier (2014)

During the 2014 targeted surveys for breeding goshawk and hen harrier an active goshawk territory was again confirmed to be present in the same general area as that identified in 2013. Monitoring of this nest site confirmed that at least one chick was successfully reared and fledged.

There were no sightings of hen harrier during any of the 2014 targeted surveys for breeding goshawk and hen harrier.

2.2.8 Incidental Records of Breeding Goshawk

Although no dedicated ornithological surveys were carried out in 2015, during non-avian ecological surveys, an adult female goshawk was observed and made agitated alarm calls very close to the 2014 nest site on 11th August 2015. The calls of at least one bird, which were indicative of fledged young, were also heard in the vicinity of the nest site. On this basis it was considered highly probable that successful breeding had also taken place at this location in 2015.

2.2.9 EcIA

Based on the results of the 2012-14 baseline surveys, four bird species were scoped into the EcIA:

- Goshawk;
- Pink-footed goose;
- Greylag goose; and
- Golden plover.

No significant effects (including cumulative effects) were predicted for any of these species. However, slight (non-significant) impacts on goshawk were predicted and it was proposed that best practice measures would be followed during construction to protect breeding goshawk, followed by post-construction monitoring of this species.

2.3 Proposed Survey Methods

Based on the results of the 2012-14 baseline ornithology surveys, current SNH guidance¹⁰ (which has changed since the baseline surveys were completed) and professional experience, it is proposed that the 2019 breeding ornithology surveys comprise a combination of surveys, as described below.

2.3.1 FAS

Surveys will be undertaken from suitable VPs to record the flight activity of target species, which will include the following:

- All wild swan and goose species;
- All raptor and owl species listed on Schedule 1 and/or Annex I;
- All wader species; and
- Black grouse.

Five VP locations were identified for the winter ornithology FAS and the same locations are proposed to be used for the breeding season ornithology surveys; these are shown in Figure 2, Appendix 1. Note that, access was limited to the land within the Heathland and

¹⁰ SNH. (2017). *Recommended bird survey methods to inform impact assessment of onshore wind farms*. SNH.

Woolfords Site boundaries, and further constrained by active forestry operations within the Heathland Site. The topography of the Heathland Site and presence of mature conifer blocks further limited the availability of suitable VP locations. Consequently, two of the VP locations (VP 4 and VP 5) are located within the Heathland Site and a third (VP 3) is located beside a public road. It is acknowledged that using two VPs located within the Combined Site is not optimal, but options for alternative locations were exhaustively explored through a combination of viewshed analysis and multiple site visits, and no suitable alternatives were identified.

In response to the previous consultation report, SNH commented (via email dated 21/12/2018) that the location of VP4, whilst not ideal, was acceptable given the reasoning described (as stated above).

Survey methods will follow current SNH guidance¹⁰. Flight lines of all target species will be recorded on large scale maps, with the flight height of target species recorded at 15 second intervals. The following four height bands will be used:

- Height band 1: < 20 m
- Height band 2: 20 m to < 150 m
- Height band 3: 150 m to < 200 m
- Height band 4: >200 m.

In addition, the activity of secondary species will be summarised, as per SNH guidance. Secondary species include all other raptor species and raven (*Corvus corax*).

Due to the presence of the Slamannan Plateau and Westwater SPAs, which are designated for wintering geese, located within 20 km of the Combined Site¹¹, it is proposed that additional survey effort is carried out during the spring migration period to coincide with potential increased use of the Westwater SPA by roosting pink-footed geese. It is proposed that an average of nine hours of watches per VP per month will be carried out during the spring migration period (April and May 2019), but this will be reduced to an average of six hours per VP per month in summer (June to August 2019). Surveys will be stratified to cover all times of day, and will include regular surveys during dawn and dusk periods.

As part of the winter ornithology survey schedule, targeted goose roost surveys are currently being undertaken at Cobbinshaw Reservoir, along with surveys for foraging geese in the surrounding fields. These surveys will continue every two weeks until mid-May 2019.

2.3.2 Black Grouse Surveys

Black grouse surveys will be undertaken to identify lek sites within 1.5 km of the Combined Site. The surveys would be based on standard methods⁴. Two visits will be undertaken between late March and mid-May 2019 around the hours of dawn and/or dusk.

2.3.3 Moorland Breeding Bird Surveys

Moorland breeding bird surveys will be undertaken in areas of open habitat (e.g. moorland and unforested areas) located within the Combined Site and a surrounding buffer of 500 m. The survey methods will be based on standard guidance¹². Four visits will be undertaken between mid-April and early July with each visit carried out at least seven days apart in suitable weather conditions. Surveys will aim to record moorland and open country species including waders, gulls, red grouse and wildfowl species.

¹¹ The SNH (2016) guidance document *Assessing Connectivity with Special Protection Areas (SPAs)* cites a core foraging range of 15-20 km for pink-footed goose (the core foraging range for bean goose is not included in the guidance document).

¹² Calladine, J., Garner, G., Wernham, C. & Thiel, A. (2009) *The influence of survey frequency on population estimates of moorland breeding birds*. *Bird Study*, 56: 3, 381-388.

2.3.4 Breeding Raptor and Owl Surveys

Breeding raptor and owl Surveys will be undertaken to identify breeding territories of protected raptor and owl species¹³ within suitable habitat within the Combined Site and a buffer from the site boundary (1 km for goshawk and barn owl, 2 km for all other species). The survey methods will involve a combination of watches from suitable VPs and walkovers, and will be based on the most recent guidance for surveying raptors and owls⁸. A minimum of four visits will be undertaken between mid-March and July in order to cover different breeding cycles of key target species (goshawk, hen harrier, short-eared owl and merlin).

During the 2013-14 baseline surveys at the Heathland Site, goshawk was considered to be a key sensitivity due to high levels of flight activity. Therefore, a proportion of the breeding raptor surveys will be targeted towards detecting goshawk territories and activity within suitable habitat in the survey area. The remaining raptor surveys will focus on the open areas, including the Woolfords Site, which may present suitable habitat for breeding raptors such as hen harrier, short-eared owl, barn owl and merlin.

2.3.5 Targeted Surveys for Breeding Long-eared Owl

Long-eared owls were confirmed to be breeding within the Heathland Site in 2013 and 2014. If required, targeted surveys for Breeding Long-eared Owls can also be undertaken in 2019 to identify breeding long-eared owl territories in suitable habitats within the Combined Site and up to 1 km from the boundary. The survey methods would be based on the most recent guidance for surveying long-eared owls⁸. Up to four visits would be undertaken between March and July. Arcus would appreciate confirmation from SNH regarding whether it is necessary to undertake targeted surveys for long-eared owl at this stage, or if (as per crossbill – see below) surveys can be completed prior to construction.

2.3.6 Omission of Crossbill Surveys

Although Crossbill Surveys were undertaken during the baseline surveys in 2013 and the species was recorded within the Heathland Site during those surveys, SNH guidance¹⁰ has since been updated and states that, if required, crossbill surveys would be undertaken prior to construction after consent for the proposed wind farm. Therefore it is proposed that these surveys will not be necessary at this stage. However, any notable flocks of crossbill or evidence of breeding will be recording as incidental records during other surveys.

¹³ Species listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended) and/or Annex I of the EU Birds Directive.

2.4 Summary of Initial Results

2.4.1 FAS

A total of 36 hours of watches has been completed at each VP location between September and December 2018 during the winter ornithology surveys. During this period, a total of 133 flights by 15 target species were recorded, as summarised in Table 2.

Table 2: Summary of target species flights recorded during the September-December 2018 FAS

Species	Total no. of flights	No. of birds per flight
Whooper swan	1	2
Greylag goose	2	12-30
Pink-footed goose	57	1-500
Mute swan	2	2-3
Golden eagle (<i>Aquila chrysaetos</i>)	1	1
Goshawk	23	1
Hen harrier	9	1
Lapwing	4	13-60
Golden plover	16	4-52
Snipe	11	1-4
Woodcock	2	1
Merlin	1	1
Peregrine	2	1
Goosander	1	1
Grey heron	1	1

APPENDIX 1 – FIGURES

Figure 1: The Development Location

Figure 2: 2018-19 Vantage Point Locations and Viewsheds

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Figure 2: 2018-19 Vantage Point Locations and Viewsheds