
Carn Fearn Wind Farm
on behalf of Statkraft UK Ltd
Year 1 Ornithology Survey Report 2019-20



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1 INTRODUCTION

1.1 Background

- 1.1.1 Statkraft UK Ltd is investigating the possibility of developing a wind farm located on land at Carn Fearna, near Garve, in Ross-shire, Highlands (approximate Site centre NH41691 62618).
- 1.1.2 The Site and preliminary layout was initially based on a 10-turbine scheme, but this has since been reduced to a 8-turbine scheme as shown in **Figure 1**.
- 1.1.3 As part of the investigation and to inform the subsequent design and assessment of the proposed development, Avian Ecology Ltd. (AEL) has been commissioned to undertake baseline ornithology surveys.

1.2 Consultation

- 1.2.1 In September 2019, NatureScot (formerly Scottish Natural Heritage; SNH) was consulted by AEL on the proposed scope and approach to baseline ornithology surveys to inform the proposed wind farm development within the Site. The consultation letter sent to NatureScot is provided as **Appendix 1**.
- 1.2.2 In their response of 24th October 2019, NatureScot (NS) advised they agreed with the scope and approach to surveys; however targeted survey work around two small waterbodies may be necessary, adding that NatureScot will provide further comment at the formal scoping stage and on receipt of additional detail.

1.3 Report Scope

- 1.3.1 This report presents the approach to baseline ornithology field surveys, desk study and an overview of findings from Year 1 ornithology surveys undertaken by AEL between September 2019 and August 2020.
- 1.3.2 It outlines survey methodologies, effort, results and discusses the proposed approach to Year 2 ornithology surveys.
- 1.3.3 The report includes confidential records, including the location of black grouse lek sites and Schedule 1 species breeding sites. The report is therefore for internal use only. The report will be amended to form the Technical Appendix to accompany any planning application, with the inclusion of results from the Year 2 ornithology surveys. A separate confidential appendix will be provided as necessary and in accordance with NatureScot guidance (SNH, 2016¹).

2 METHODOLOGY

2.1 Desk Study

- 2.1.1 An initial desk study was undertaken to inform the approach to baseline ornithology surveys, prior to their commencement, in accordance with NatureScot guidance (SNH, 2017²).
- 2.1.2 Desk study information has been obtained from:
- Royal Society for the Protection of Birds (RSPB)³; and,

¹ SNH (2016) *Environmental Statements and Annexes of Environmentally Sensitive Bird Information*. September 2016, version 2.

² SNH (2017) *Recommended bird survey methods to inform impact assessment of onshore wind farms*. March 2017, Version 2.

- Highland Raptor Study Group (HRSG)⁴.

2.1.3 The documentation which supported the previous Carn Gorm Wind Farm application (Ref: 13/04791/FUL; 5th September 2014) on-Site has also been reviewed. The Carn Gorm site boundary included part of the Site, particularly the central and eastern parts of the Site.

2.2 Target Species

2.2.1 Target species for survey and recording were identified in accordance with NatureScot guidance (SNH, 2017²), through a review of existing information obtained from key sources supported by a reconnaissance survey visit by a suitably competent ornithologist to establish habitats and likely bird population associations.

2.2.2 In accordance with NatureScot guidance (SNH, 2017² & SNH, 2018⁵) target species were identified as those which are afforded a higher level of legislative protection and potentially sensitive to wind farm developments, drawn from the following lists:

- Annex 1 of the EC Birds Directive;
- Schedule 1 of the Wildlife & Countryside Act 1981;
- Red-listed Birds of Conservation Concern (from Eaton *et al.*, 2015⁶); and,
- Annex 1 “Priority bird species for assessment when considering the development of onshore wind farms in Scotland” (SNH, 2018⁵).

2.3 Field Surveys

2.3.1 The following surveys have been undertaken between September 2019 and August 2020 (Year 1):

- Vantage Point (VP) Flight Activity Surveys;
- Moorland Breeding Bird Survey (MBBS);
- Breeding Annex 1 and Schedule 1 Raptor and Owl Searches;
- Breeding Woodland Grouse Searches; and,
- Breeding Diver Searches.

2.3.2 All surveys have been undertaken by suitably competent ornithologists; all of whom have extensive experience in the undertaking of bird surveys for proposed wind farm developments at comparable sites across Scotland.

2.3.3 Survey methodologies have made reference to the following key pieces of guidance:

- Scottish Natural Heritage (SNH) (2017) *Recommended bird survey methods to inform impact assessment of onshore wind farms*. Version 2. March 2017;

³ Search area: 6km from the approximate Site centre for all protected and notable species, and out to 10km for eagle records.

⁴ Search area: 2km from the approximate Site centre for all Annex 1/Schedule 1 raptors and owls, and out to 6km for eagles.

⁵ SNH (2018) *Assessing Significance of Impacts from Onshore Wind Farms Outwith Designated Areas*. SNH, Inverness.

⁶ Eaton, M., Aebischer, N., Brown, A., Hearn, R., Lock, L., Musgrove A., Noble, D., Stroud, D. & Gregory, R. (2015) Birds of conservation concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. *British Birds* 108, 708-746.

- Brown, A.F. & Shepherd, K.B. (1993) A method for censusing upland breeding waders. *Bird Study* 40, 189-195;
- Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013) *Raptors: a field guide to survey and monitoring*. Third Edition. The Stationery Office, Edinburgh; and,
- Gilbert, G., Gibbons, D.W. & Evans, J. (1998) *Bird monitoring methods*. A manual of techniques for key UK species. RSPB, Sandy, Bedfordshire.

VP Flight Activity Surveys

- 2.3.4 VP flight activity surveys were undertaken between September 2019 and August 2020, in accordance with NatureScot guidance (SNH, 2017²).
- 2.3.5 A total of four VP locations have been used to provide maximum visual coverage of the required VP study area, as summarised within **Table 2.1** and illustrated in **Figure 2**. Visible areas for each viewshed were calculated using a Digital Elevation Model (DEM), before being ground-truthed.
- 2.3.6 The VP study area has comprised preliminary turbine locations, plus a 500m buffer, in accordance with NatureScot guidance (SNH, 2017²). The VP study area was extended to include all part of the Site, given the turbine locations may be subject to change.

Table 2.1: VP locations

VP	Grid reference	Radius (m)	Visible area (ha)
1	NH 43987 61589	2000	368
2	NH 42982 62942	2000	341
3	NH 41163 61165	2000	202.5
4	NH 40517 64992	2000	540.8

- 2.3.7 The total survey effort (hours) at each VP location is summarised in **Table 2.2**, achieving the minimum 72 hours required under NatureScot guidance, divided between a single consecutive non-breeding and breeding season for relevant target species.
- 2.3.8 Additional survey effort was weighted towards the February-April and September-October to respectively capture the main adult eagle display and juvenile eagle dispersal periods. Survey times were dispersed throughout the day and were also completed in a range of weather conditions, but always conducive to survey and safe access.
- 2.3.9 Each VP survey session was no more than three hours in duration.

Table 2.2: VP flight activity survey effort – 2019 / 2020

VP	2019					2020							Total Hrs
	Non-breeding Season (includes eagle juvenile dispersal)					Breeding Season (includes early season eagle display period)							
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	
VP1	12	12	6	6	6	3	12	12	6	9	9	6	99
VP2	12	12	6	6	6	12	12	12	6	9	9	6	108
VP3	12	12	6	6	6	3	12	12	6	9	9	6	99
VP4	12	12	6	6	6	12	12	12	6	9	9	6	108

- 2.3.10 Note the difference in hours between some of the VPs was due to adverse weather conditions in February which reduced hours surveyed at VPs 1 and 3. Subsequently Covid-19 restrictions which came into force in March 2020 meant that the deficit in hours at these two VPs could not be addressed. VP effort completed at all locations exceeds that recommended in current NatureScot guidance (SNH, 2017²).
- 2.3.11 Flight lines were mapped for all target species passing through the VP study area. Details of species, number of birds, flight height in bands, duration and direction were noted on standardised recording forms and field plans.
- 2.3.12 The following height bands were used in the field, to assign target species flight activity at, below or above collision risk height, based on the preferred candidate turbine specification:
- Height Band 1 = <10m;
 - Height Band 2 = 10–25m;
 - Height Band 3 = 25-150m;
 - Height Band 4 = 150-180m; and,
 - Height Band 5 = >180m.
- 2.3.13 Target species comprised all Annex 1 and Schedule 1 listed raptors and owls, all waders, all geese, swans, ducks, terns, black grouse *Tetrao tetrix*, divers and other wetland species (such as herons and egrets) as observed during survey.
- 2.3.14 Secondary species were also noted in approximately 15 minute summary intervals, with the number of birds present and general behaviour recorded in order to build an overall picture of activity.
- 2.3.15 Secondary species were defined as commoner raptors (buzzard *Buteo buteo*, kestrel *Falco tinnunculus* and sparrowhawk *Accipiter nisus*), all other gulls, feral species and raven *Corvus corax*, along with any large concentrations of Schedule 1 or Red Listed passerines (from Eaton *et al.* 2015⁶) as recorded during survey.

Moorland Breeding Bird Survey (MBBS)

- 2.3.16 A moorland breeding bird survey (MBBS) was undertaken following an adapted Brown and Shepherd (1993⁷) methodology, in accordance with NatureScot guidance (SNH, 2017²) and comprised four staggered visits, at least two weeks apart between April and July 2020.
- 2.3.17 The survey methodology is appropriate for the survey of breeding moorland and open country species including wildfowl, waders and gulls. Target species for the MBBS are typically wildfowl, waders and gulls.
- 2.3.18 The study area comprised all suitable open moorland habitats within the Site, extended out to 500m where access allowed.
- 2.3.19 During survey all observations of target species were recorded onto a base map, with the type of activity noted (e.g. calling, singing, seen, displaying). Incidental observations of Schedule 1 passerines were also recorded.

⁷ Brown, A.F. & Shepherd, K.B. (1993) A method for censusing upland breeding waders. *Bird Study* 40:3, 189-195.

2.3.20 All survey visits were undertaken in fine weather conditions conducive to survey and no limitations to the survey were experienced. Survey effort is summarised in **Table 2.3**. Given the extent of the survey area, survey visits were generally undertaken by a small team of surveyors and/or over consecutive days as suitable weather conditions allowed.

Table 2.3: Moorland breeding bird survey effort.

Visit	Date	Start time (24hrs)	Finish time (24hrs)
1	22/04/2020	08:30	14:40
	23/04/2020	08:00	13:35
2	06/05/2020	07:30	13:30
	07/05/2020	07:30	13:20
3	09/06/2020	08:30	14:30
	11/06/2020	09:15	15:15
4	08/07/2020	09:25	17:00
	09/07/2020	08:45	16:00

Annex 1 and Schedule 1 Breeding Raptor and Owl Searches

2.3.21 Searches for breeding Annex 1 and Schedule 1 listed raptors and owls were conducted between April and August 2020, adopting species-specific survey advice from Hardey *et al.* (2013⁸), in accordance with NatureScot guidance (SNH, 2017²).

2.3.22 The study area comprised the turbines and areas out to 2km for all Annex 1 and Schedule 1 listed raptor and owl species, extended to 6km for eagle species⁹. Searches consisted of a combination of walkover surveys and short point count watches over suitable habitat features to determine occupancy and/or any breeding/ territorial behaviour.

2.3.23 Survey effort is summarised in **Table 2.4**. All survey visits were undertaken in fine weather conditions conducive to survey. Given the extent of the survey area, searches were generally undertaken by a small team of surveyors and/or over consecutive days as suitable weather conditions allowed.

Table 2.4: Breeding raptor and owl search effort summary.

Date	Start time (24hrs)	Finish time (24hrs)
21/04/2020	08:20	17:30
29/04/2020	12:30	15:30
12/05/2020	09:40	12:35
14/05/2020	15:15	18:50
19/05/2020	10:30	16:30
20/05/2020	08:40	14:40
25/06/2020	16:35	19:35
30/06/2020	08:20	14:20

⁸ Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013) *Raptors: a field guide to survey and monitoring* (3rd edition). The Stationery Office, Edinburgh.

⁹ Note that any obvious nest sites of other Annex 1 and Schedule 1 raptors and owls out to 6km were also recorded.

Date	Start time (24hrs)	Finish time (24hrs)
20/07/2020	12:15	15:15
23/07/2020	11:05	17:05
28/07/2020	13:30	19:30
12/08/2020	10:15	16:30

Breeding Woodland Grouse Searches

- 2.3.24 Searches for black grouse leks were undertaken in 2020, with reference to species-specific methodologies outlined in Gilbert *et al.* (1998¹⁰), as per NatureScot guidance (SNH, 2017²).
- 2.3.25 The breeding black grouse study area comprised suitable habitats within the turbines, extended out to at least 1.5km, as access allowed.
- 2.3.26 Search visits were undertaken in March and April. During searches all areas of suitable habitat (e.g. open moorland, woodland edges and tracks) within the study area were visited at dawn. All black grouse observed were recorded, with any leks more than 200m apart treated as separate leks.
- 2.3.27 Survey effort is summarised in **Table 2.5**.

Table 2.5: Breeding black grouse search effort summary.

Date	Start time (24hrs)	Finish time (24hrs)
18/03/2020	05:25	08:25
19/03/2020	05:20	08:20
23/04/2020	05:00	08:00
25/04/2020	04:35	07:35

Breeding Diver Searches

- 2.3.28 Searches for breeding divers were undertaken in 2020, with reference to species-specific methodologies outlined in Gilbert *et al.* (1998¹⁰), as per NatureScot guidance (SNH, 2017²).
- 2.3.29 This involved searches of lochs/lochans on, and within 1km of, the Site for the presence of divers in April and May 2020.
- 2.3.30 Survey effort is summarised in **Table 2.6**.

Table 2.6: Breeding diver search effort summary.

Date	Start time (24hrs)	Finish time (24hrs)
28/04/2020	08:30	14:00
07/05/2020	14:30	17:30
12/05/2020	13:20	16:20
21/05/2020	04:15	07:15

¹⁰ Gilbert, G., Gibbons, D.W. & Evans, J. (1998) *Bird monitoring methods*. The Royal Society for the Protection of Birds, Sandy, Bedfordshire.

2.4 Limitations

- 2.4.1 The natural topography of the Site results in limitations to achieving complete visual coverage of the VP study area required in accordance with NatureScot guidance (SNH, 2017²). DEM and ground-truthing were however used to ensure maximum visual coverage of the required VP study area has been achieved using the minimum number of VPs, in accordance with the NatureScot guidance (SNH, 2017²). Furthermore, NatureScot were consulted on the visual coverage and they confirmed that they were in principle satisfied.
- 2.4.2 The VP Flight Activity Survey effort did diverge very slightly from the survey effort, as agreed with NatureScot, due to adverse weather conditions in February 2020 resulting in a reduced number of hours at VP1 and VP3, which were not possible to catch up during the bird breeding season given the restrictions imposed due to the covid-19 pandemic. However, in accordance with the NatureScot guidance (SNH, 2017²), the minimum number of observational hours over a single consecutive breeding and non-breeding season exceeded 36hrs at each VP. Furthermore, a second year of ornithology surveys (including VP Flight Activity Surveys) is proposed which will capture another year of bird breeding season survey data.
- 2.4.3 During the breeding raptor and owl searches, MBBS and breeding black grouse searches, direct access to lands outside the Site for survey was restricted. Areas of direct access restrictions were however, sufficiently observable from public rights of way and adjoining areas of the Site. As such, no significant limitations to survey coverage are considered.

3 OVERVIEW OF BASELINE SURVEY RESULTS – YEAR 1

3.1 Desk Study

3.1.1 The desk study identified records of the following key species within the search area:

- Whooper swan *Cygnus Cygnus*;
- Goldeneye *Bucephala clangula*;
- Black grouse;
- Grey heron *Ardea cinerea*;
- Slavonian grebe *Podiceps auritus*;
- Red kite *Milvus milvus*;
- White-tailed eagle *Haliaeetus albicilla*;
- Hen harrier *Circus cyaneus*;
- Goshawk *Accipiter gentilis*;
- Golden eagle *Aquila chrysaetos*;
- Osprey *Pandion haliaetus*;
- Oystercatcher *Haematopus ostralegus*;
- Golden plover *Pluvialis apricaria*
- Lapwing *Vanellus vanellus*;
- Dotterel *Charadrius morinellus*;
- Common sandpiper *Actitis hypoleucos*;
- Barn owl *Tyto alba*;
- Short-eared owl *Asio flammeus*;
- Merlin *Falco columbarius*;
- Peregrine falcon *Falco peregrinus*;
- Crossbill *Loxia curvirostra*; and,
- Scottish crossbill *Loxia scotica*.

3.1.2 Statutory designated sites (designated for ornithological interest) within 10km of the Site, extended to 20km for Special Protection Areas (SPAs) with migratory waterfowl interests, are detailed in **Table 3.1** and shown on **Figure 3**. These sites were identified through review of SiteLink¹¹.

Table 3.1: Statutory ornithological designated sites. SPA: Special Protection Area; SSSI: Site of Special Scientific Interest.

Designated Site	Distance / Orientation	Qualifying Ornithological Interest
European Sites		
Ben Wyvis SPA	1.1km, north-east	Dotterel (2% of British breeding population)
Glen Affric to Strathconon SPA	3.1km, south-west	Golden eagle (2.2% of GB breeding population)
Cromarty Firth SPA and Ramsar	10.6km, east	<p><i>Breeding</i></p> <ul style="list-style-type: none"> • Osprey (1% of GB breeding population) • Common tern <i>Sterna hirundo</i> (2% of GB breeding population) <p><i>Wintering</i></p> <ul style="list-style-type: none"> • Whooper swan (1% of GB wintering population) • Bar-tailed godwit <i>Limosa lapponica</i> (3% of GB wintering population) • Greylag goose <i>Anser anser</i> (2% of

¹¹ <https://sitelink.nature.scot/home> (Accessed 19/11/2020).

		Iceland/UK/Ireland biogeographic population) <ul style="list-style-type: none"> • Wintering bird assemblage in excess of 20,000 individual waterfowl, incl. redshank <i>Tringa tetanus</i>, curlew <i>Numenius arquata</i> and pintail <i>Anas acuta</i>
Inner Moray Firth SPA and Ramsar	16.4km, south-east	<i>Breeding</i> <ul style="list-style-type: none"> • Osprey (4% of GB breeding population) • Common tern (2% of GB breeding population) <i>Wintering</i> <ul style="list-style-type: none"> • Bar-tailed godwit (2% of GB wintering population) • Greylag goose (3% of Iceland/UK/Ireland biogeographic population) • Red-breasted merganser (1% of NW & Central Europe biogeographic population) • Redshank (1% of Eastern Atlantic biogeographic population) • Wintering bird assemblage in excess of 20,000 individual waterfowl, incl. curlew and goldeneye
Nationally Designated Sites		
Ben Wyvis SSSI	1.1km, north-east	Breeding dotterel

3.2 Field Surveys

3.2.1 **Table 3.2** below presents a summary of the main findings of the bird surveys carried out in Year 1 (2019-20).

Table 3.2: Bird survey Year 1 summary.

Survey type	Summary of Main findings
VP Flight Activity Surveys	Target species flight activity is summarised as follows, with flight lines illustrated on Figures 4.1-4.2 : <ul style="list-style-type: none"> • Whooper swan – 7 flights, 80 birds; • Pink-footed goose <i>Anser brachyrhynchus</i> 1 flight, 3 birds; • Greylag goose – 5 flights, 54 birds; • Teal <i>Anas crecca</i> – 2 flights, 4 birds; • Mallard <i>Anas platyrhynchos</i> – 3 flights, 5 birds; • Goosander <i>Mergus merganser</i> - 1 flight, 1 bird; • Red-throated diver <i>Gavia stellata</i> – 1 flight, 1 bird; • Red kite – 25 flights, 27 birds; • White-tailed eagle – 2 flights, 2 birds; • Golden eagle – 20 flights, 23 birds;

Survey type	Summary of Main findings
	<ul style="list-style-type: none"> • Osprey – 2 flights, 2 birds; • Golden plover – 5 flights, 47 birds; • Curlew – 3 flight, 4 birds; • Greenshank <i>Tringa nebularia</i> – 3 flights, 3 birds; • Snipe <i>Gallinago gallinago</i> – 1 flight, 1 bird; • Merlin – 3 flights, 3 birds; and, • Peregrine falcon – 2 flights, 5 birds.
MBBS	<p>The study area was found to support a small number of breeding territories, consisting of:</p> <ul style="list-style-type: none"> • Mallard – 2 territories; • Teal – 1 territory; • Snipe – 5 territories; • Curlew – 1 territory; • Greenshank – 1 territory; • Golden plover – 1 territory; and, • Common crossbill – 2 territories. <p>Most of these breeding territories were within the Site, with only the crossbill territories, two snipe territories and the golden plover territory off-Site.</p> <p>Figure 5 shows the approximate central location of breeding territories.</p>
Annex 1 and Schedule 1 Breeding Raptors and Owl Searches	<p>No evidence of breeding of Annex 1 and Schedule 1 raptors and owls were record within the Site.</p> <p>In the wider study area, a suspected golden eagle nest site, peregrine nest site, suspected barn owl nest site and up to three osprey nest sites were identified.</p> <p><u>The locations of these are considered sensitive.</u></p>
Breeding Woodland Grouse Searches	<p>Three black grouse leks were recorded, with two of these leks on-Site.</p> <p><u>The locations of these are considered sensitive.</u></p>
Breeding Diver Searches	<p>No breeding divers were recorded using any of the seven lochs/lochans on-Site or within 1km of Site, surveyed.</p> <p>Figure 8 shows the study area for the breeding diver searches.</p>

4 SUMMARY

- 4.1.1 Based on Year 1 ornithology surveys, there have been no ornithological constraints identified that are likely to have significant implications for the proposed development on-Site.
- 4.1.2 The main ornithology survey results from Year 1, is the presence of a small number of black grouse leks on-Site and moderate golden eagle activity through, and close to, the Site. Much of the golden eagle activity was adults (including a male and female). Furthermore, a suspected golden eagle nest site was recorded approximately 4km of the Site, and Year 2 ornithology surveys will determine whether the nest site is active.

- 4.1.3 The location of the black grouse leks should be considered in the scheme design; with 500m infrastructure buffers generally advised by NatureScot depending on the relative importance of the lek site (i.e. whether considered a 'main lek') and options for alternative mitigation/compensation measures (such as timing works to avoid the early morning period in April/May when grouse are lekking). All leks identified only consisted of small numbers of black grouse, however black grouse were recorded lekking at the northern lek during multiple Site visits, suggesting that this area is an established lek site. Year 2 black grouse surveys will confirm whether the three lek sites identified in Year 1 are used annually, and will help determine whether they constitute main leks.
- 4.1.4 A further notable finding was a breeding pair of greenshank using the habitats around the waterbodies on-Site. This is a Wildlife and Countryside Act 1981 (as amended) Schedule 1 species which, along with standard nest protection of all wild birds, is also protected when nesting from disturbance, and has a breeding range restricted to the north-west of Scotland. Although the presence of breeding greenshank will not have significant implications on the proposed development, not least because the location of the nest site will change annually, habitat enhancement opportunities to be explored for the habitat management plan (HMP) could aim to benefit breeding greenshank.
- 4.1.5 An assessment of collision risk of those species with a high number of 'at risk' flights will be required, and this is likely to include golden eagle and red kite.

Proposed Year 2 Ornithology Surveys

- 4.1.6 NatureScot guidance (SNH, 2017²) advises "*two years of survey will be required unless it can be demonstrated by the developer that a shorter period of survey is sufficient*". Furthermore, they state that it may be possible to use existing Site specific information up to five years old.
- 4.1.7 Ornithology survey data which supported the previous Carn Gorm Wind Farm application on-Site will be used to provide baseline ornithology survey data. The surveys were carried out 2010-13 and can therefore be considered as 'historic' (7-10 years old). A full second year of ornithology surveys is anticipated to be requested by NatureScot, particularly given the golden eagle activity near Site and the suspected golden eagle nest site to the east of the Site.
- 4.1.8 In correspondence from NatureScot to the developer for the previous Carn Gorm Wind Farm application, NatureScot stated that they had concerns with regards to the potential for effects of the proposed development on the golden eagle population of the Glen Affric to Strathconon SPA (and thus potential effects on the integrity of the SPA). It is likely this will be a subject that NatureScot will raise again and that Habitats Regulations Appraisal (HRA) will be necessary.
- 4.1.9 Year 2 ornithology surveys will continue to monitoring the golden eagle activity, and the suspected nest site will be surveyed to determine whether a breeding golden eagle pair is nesting east of the Site, or whether the eagle activity is likely birds from the SPA.
- 4.1.10 Collecting two years of ornithology survey data will ensure that sufficient information will be gathered to allow a robust and defensible assessment, and inform a HRA by the relevant competent authority.

FIGURE 1: SITE PLAN AND INDICATIVE TURBINE LAYOUT.

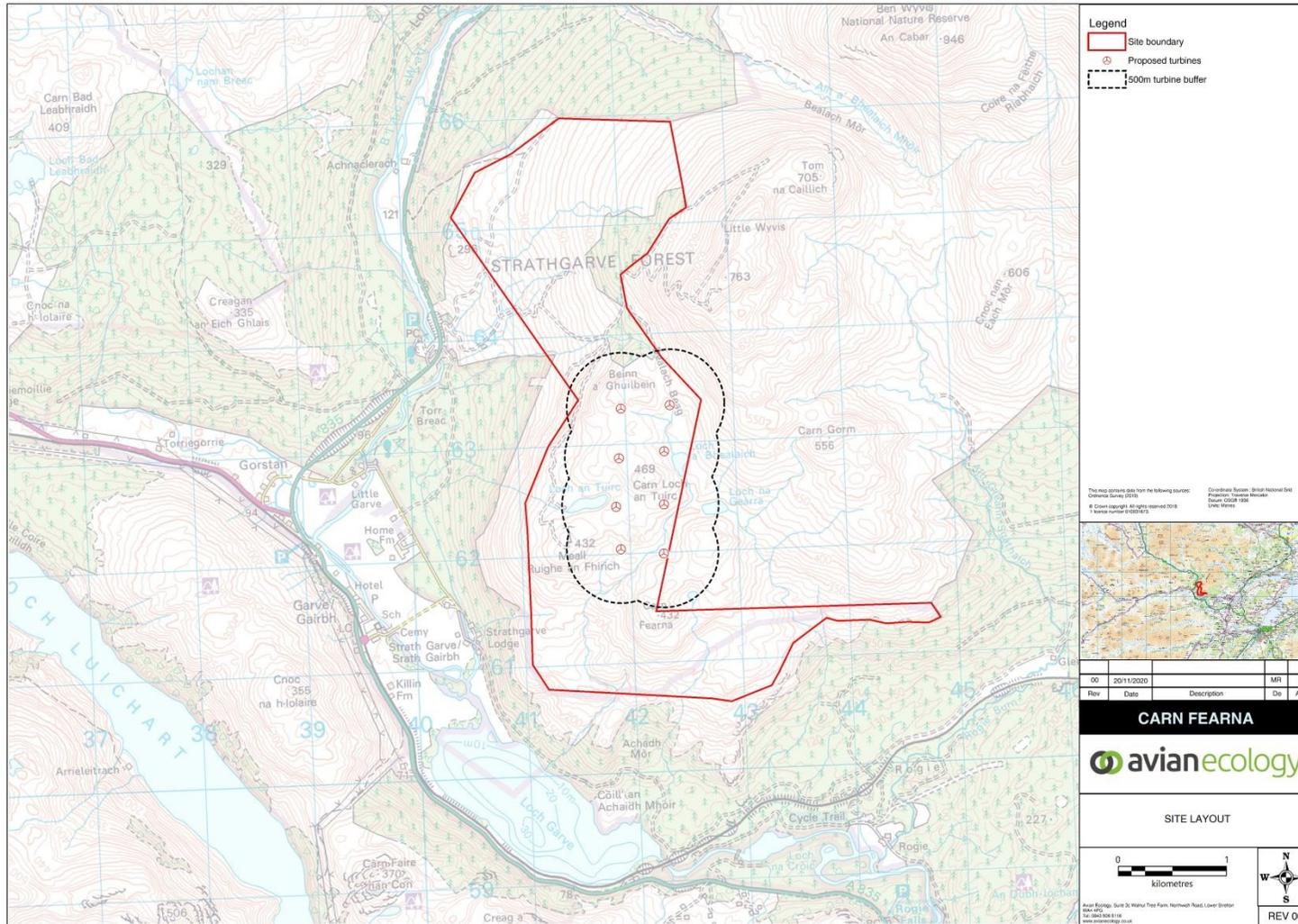


FIGURE 2: VP LOCATIONS AND VIEWSHEDS.

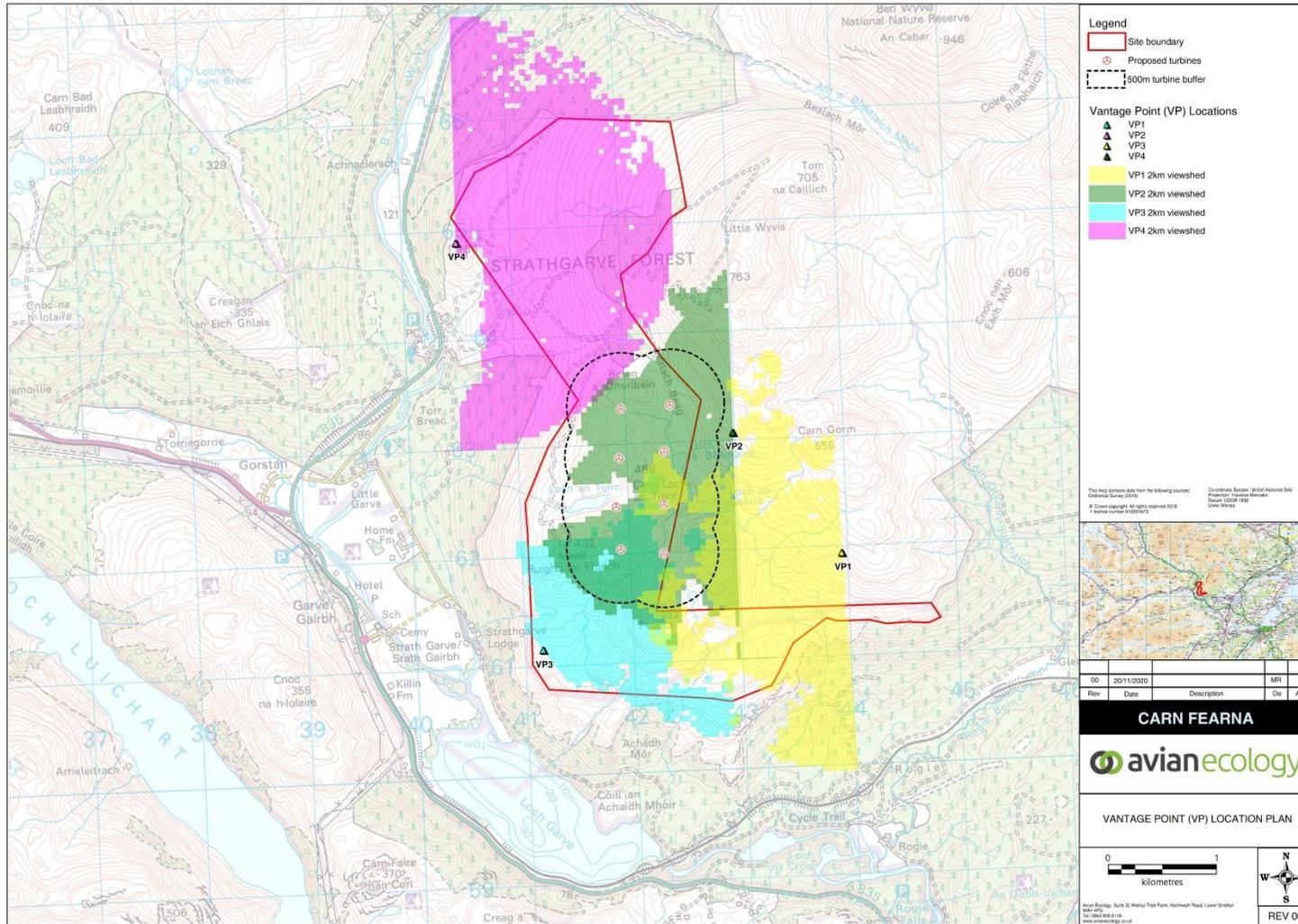


FIGURE 3: DESIGNATED SITES WITH ORNITHOLOGICAL INTEREST.

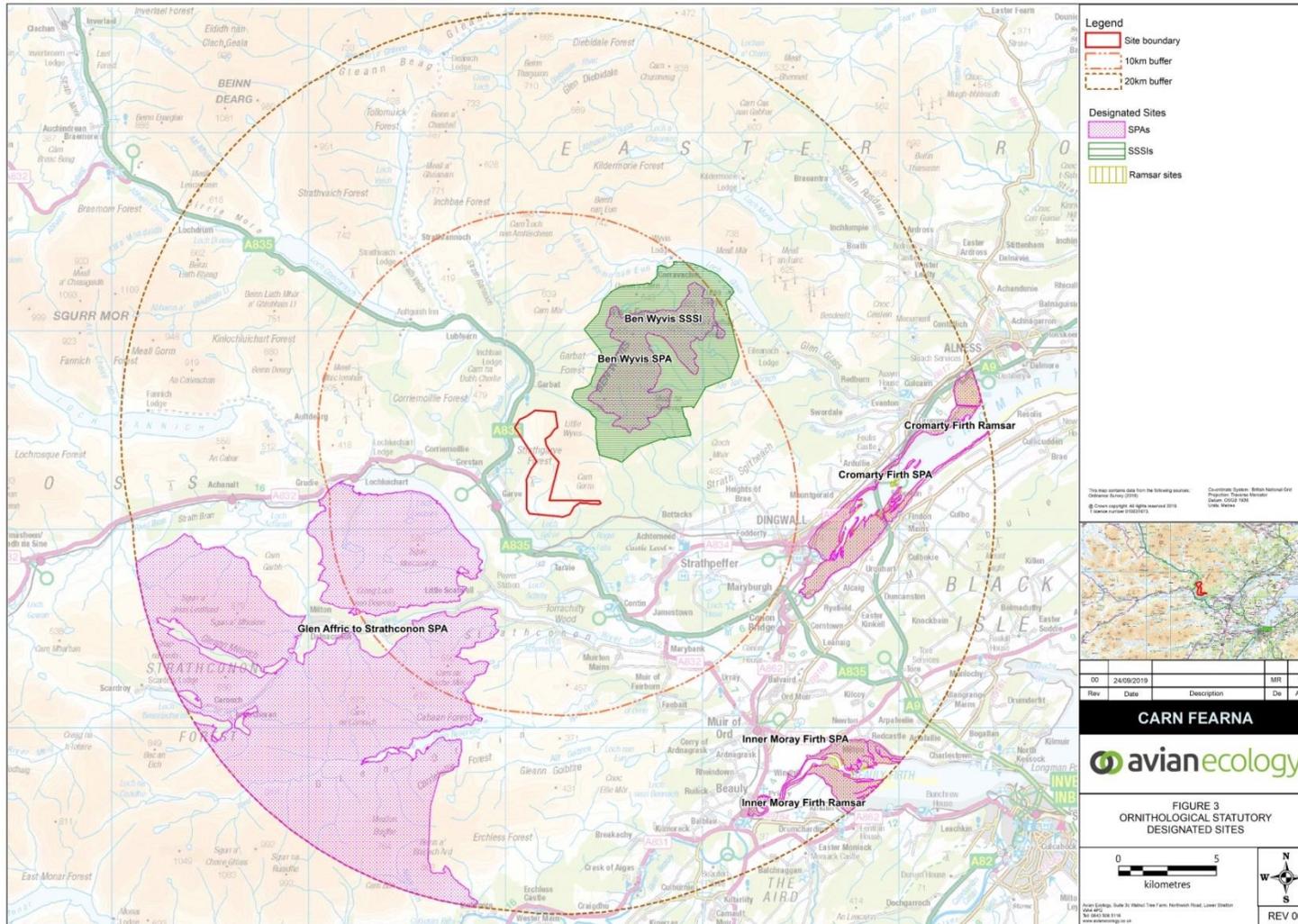


FIGURE 4.1: TARGET SPECIES ACTIVITY – RAPTOR AND OWL FLIGHTS.

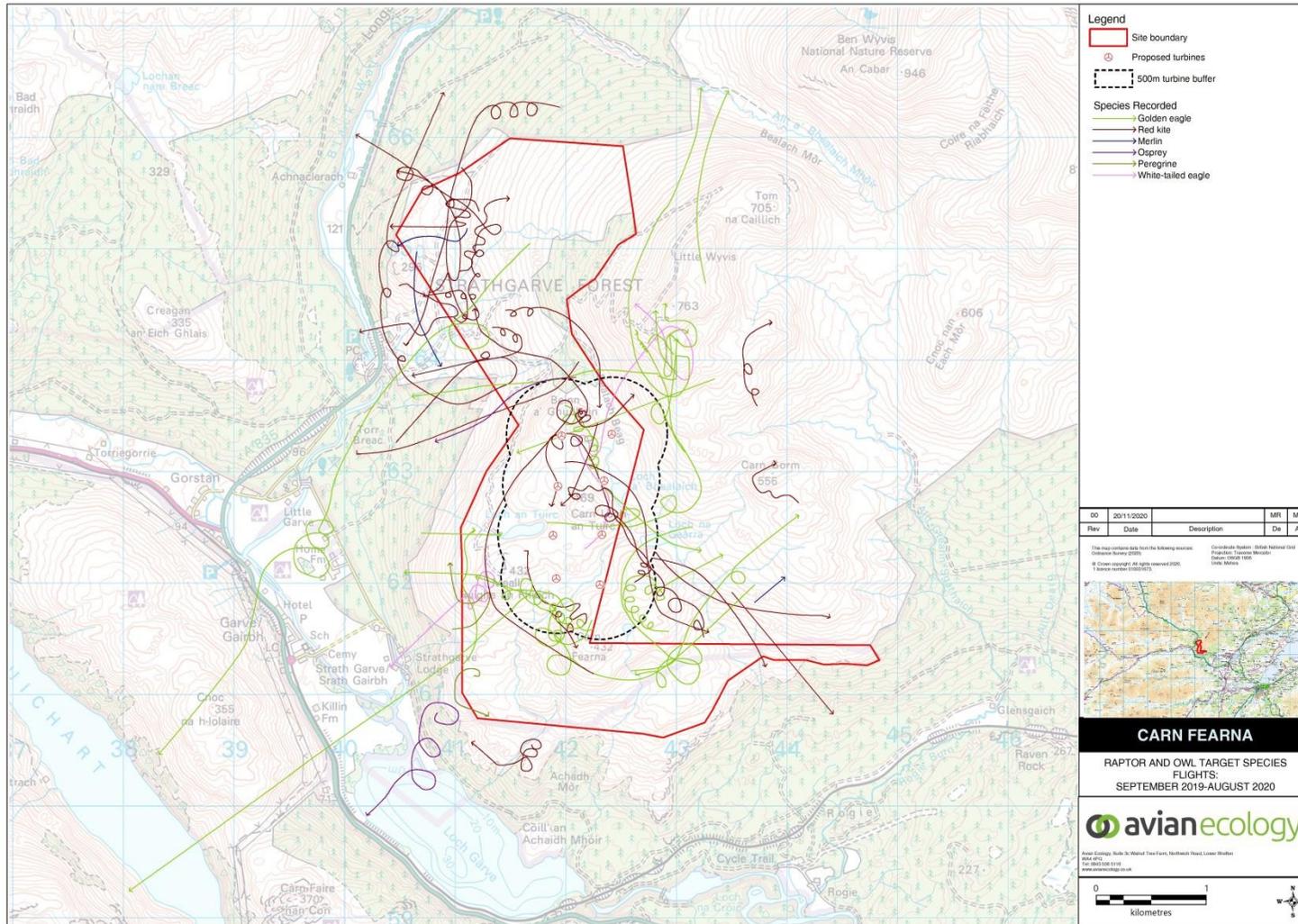


FIGURE 4.2: TARGET SPECIES FLIGHT ACTIVITY – WADERS, WATERFOWL AND OTHER WETLAND BIRDS.

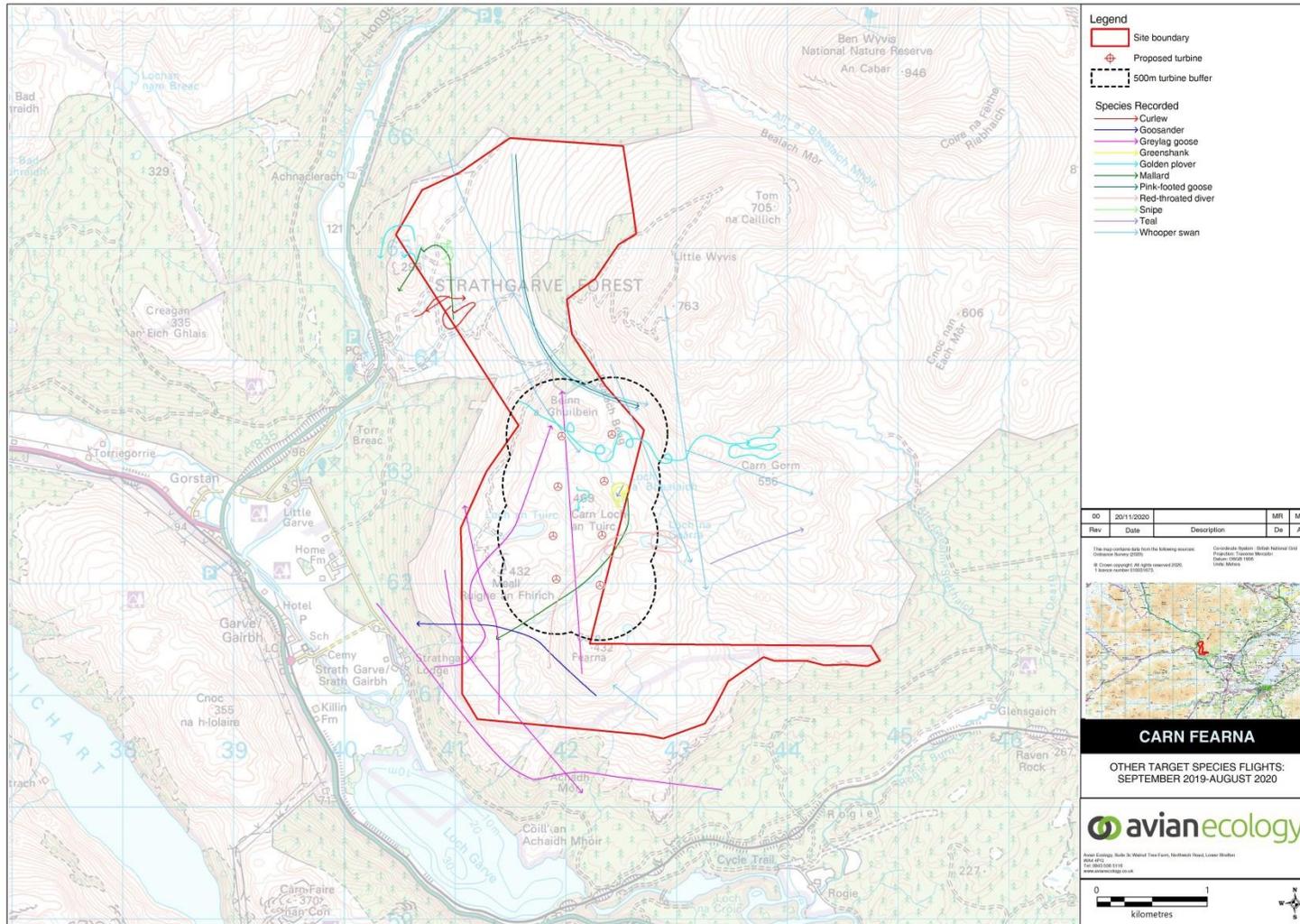


FIGURE 5: MBBS STUDY AREA AND RESULTS.

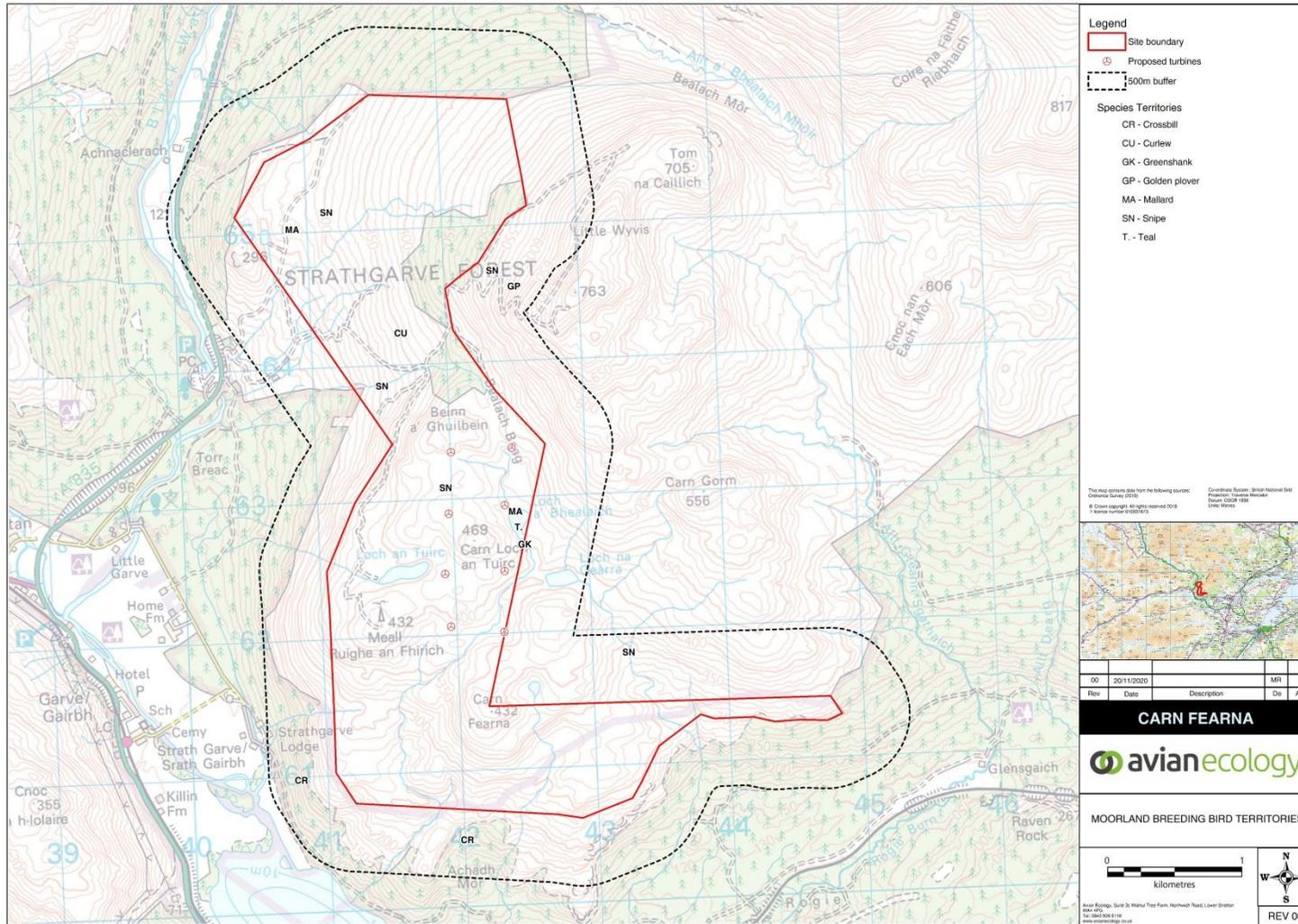


FIGURE 6: BREEDING RAPTOR AND OWL STUDY AREA AND RESULTS.

SENSITIVE INFORMATION - EXCLUDED

FIGURE 7: BLACK GROUSE STUDY AREA AND RESULTS.

SENSITIVE INFORMATION - EXCLUDED

FIGURE 8: BREEDING DIVER STUDY AREA.

