

**Emmock 400 kV Substation
Environmental Impact Assessment (EIA) Volume 4
| Appendix 10.1**

Ornithology Survey Report

November 2024



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LIST OF ABBREVIATIONS

BoCC: Birds of Conservation Concern

BBS: Breeding Bird Survey

BTO: British Trust for Ornithology

CBC: Common Bird Census

EIA: Environmental Impact Assessment

GIS: Geographical Information System

NBN: National Biodiversity network

OHL: Overhead powerline

RSPB: Royal Society for the Protection of Birds

SPA: Special Protection Area

SSSI: Site of special Scientific Interest

VP: Vantage watch point

WCA: Wildlife and Countryside Act, 1981 (as amended)

WeBS: Wetland Bird Survey

ZOI: Zone of project Influence

1. INTRODUCTION

1.1 The Proposals

- 1.1.1 Scottish Hydro Electric Transmission plc (the Applicant) is applying to Angus Council for full planning permission under the *Town and Country Planning Act (Scotland) 1997*, to install and operate a new 400 kV substation at Emmock, near Tealing in Angus, with associated earthworks, the formation of platforms, landscaping, means of access, means of enclosure, site drainage, and temporary construction compounds.
- 1.1.2 This appendix presents the methods and results of the bird surveys undertaken to inform the Ornithological Impact Assessment relevant to the Emmock 400 kV Substation hereafter referred to as the Proposed Development.
- 1.1.3 It should be read in conjunction with **Chapter 3: Description of the Proposed Development** (Volume 2) of the Environmental Impact Assessment (EIA Report) for full details of the Proposed Development and **Chapter 10: Ornithology** for an assessment of the effects of the Proposed Development upon Ornithology.
- 1.1.4 This appendix is supported by the following figures with reference to **Figure 10.1: Ornithological Designated Sites** in **Chapter 10 Ornithology**:
- **Figure 10.2.1: Breeding Bird survey results;**
 - **Figure 10.2.2: Flight Activity survey results;** and
 - **Figure 10.2.3: Wintering bird foraging results.**

1.2 Requirement for the Report

- 1.2.1 LUC was commissioned by the Applicant to undertake bird surveys to aid the design process and to inform an assessment of the bird resource present and determine the presence or likely absence of Special Protection Area (SPA) qualifying species, species of conservation concern and Schedule1/Annex 1 species that may be affected by the Proposed Development.

1.3 Terminology and Survey Area

- 1.3.1 The following terminology will be used throughout this report:
- Site: All land within the red-line boundary (as shown in Figure 10.1.1: The Proposed Development and Survey Area);
 - Proposed Development: The infrastructure including the platform, bays, control buildings, access tracks, drainage and landscape features and temporary construction compounds (refer to **Chapter 3: The Proposed Development**); and
 - Breeding Bird Survey Area (BBS area): The Proposed Development plus a 250 m buffer.
 - Study Area: The area within which ornithology desk-based studies were undertaken (up to 20 km from the Site, as shown in Figure 10.1: Designated Ornithological Sites).
- 1.3.2 The above areas are all illustrated in **Figure 10.1.1: The Proposed Development and Survey Area**.

1.4 Relevant Legislation

- 1.4.1 Relevant legislation and guidance documents have been reviewed and considered as part of this ornithology assessment. Of relevance are:
- The European Council Directive on the Conservation of Wild Birds 2009/147/EC (the Birds Directive);
 - The Wildlife and Countryside Act 1981 (as amended);
 - The Conservation (Natural Habitats &c.) Regulations 1994 (as amended in Scotland); ('The Habitats Regulations');
 - The Nature Conservation (Scotland) Act 2004 (as amended); and
 - The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (the 'EIA Regulations').]

The European Council Directive on the Conservation of Wild Birds 2009/147/EC (the Birds Directive)

- 1.4.2 The Birds Directive aims to protect all naturally occurring wild bird species present in the EU and their most important habitats. In addition to halting the decline or disappearance of bird species, the Directive aims to allow bird species to recover and thrive over the long-term.
- 1.4.3 As part of the Birds Directive, member states (including the UK) must classify SPAs as part of the 'Natura 2000' network for species listed in annex 1 of the Birds directive.
- 1.4.4 The 'Natura 2000' network extends to a Europe-wide system of sites designated for their ecological value. Sites where there is designation for birds are designated as SPAs which qualify for their assemblages of birds and/or qualifying bird species where >1% of a population uses the area for breeding, roosting and/or during migration.
- 1.4.5 Ramsar sites, which support internationally important wetland habitats, are listed under the Convention on Wetlands of International Importance as 'Waterfowl Habitat' (Ramsar Convention, 1971), and form part of the Natura 2000 network. All Ramsar sites in Scotland are also Natura 2000 sites and are protected under the relevant statutory regimes.
- 1.4.6 Considerable protection is given to SPAs through regulations 48 and 49 of the Conservation (Natural Habitats et al) Regulations 1994 as amended (the 'Habitats Regulations')¹ and these protections are normally reflected in national and local planning policy. Where developments have the potential to affect SPAs, an assessment process (Habitat Regulations Assessment) must first be undertaken.
- 1.4.7 In order that potential effects on the 'Natura 2000' network can be fully understood, it is important that they are considered fully in EIA desk studies.
- 1.4.8 There is no change to the protection of SPAs, as identified under the 'Natura 2000' network, because of the United Kingdom's exit from the European Union.

The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)

- 1.4.9 In Scotland, the European Habitats Directive (Directive 92/42/EEC) has been transposed into national legislation via the Conservation (Natural Habitats &c.) Regulations 1994 (as amended). These Regulations provide the highest level of legal protection available to ornithological and ecological features.

The Wildlife and Countryside Act 1981 (as amended)

- 1.4.10 The Wildlife and Countryside Act 1981 (as amended) (WCA) is UK wide legislation that gives rise to designated sites, regulates the management of invasive species and provides protections for species of national conservation importance. Important features of the legislation in relation to birds are set out below.
- 1.4.11 All wild birds are protected by law under the WCA. It is an offence to:
- Kill or injure any wild bird;
 - Capture or keep (dead or alive) any wild bird;
 - Destroy or take the eggs of any wild bird;
 - Sell or advertise for sale any wild bird or its eggs; and
 - Destroy, damage, interfere with, take or obstruct the use of the nest of any wild birds while it is in use or being built.
- 1.4.12 This legislation means that birds are fully protected in Scotland, and that any planned activity, which may affect them, requires careful consideration to ensure both compliance and no significant ecological impact.
- 1.4.13 In addition, certain species are offered further protection whereby it is an offence to intentionally or recklessly disturb species on Schedule 1 of the WCA during the breeding season without a licence including while building a nest, while in, on, or near a nest with eggs or young, including the dependent young of such species.

¹ available online: [The Conservation \(Natural Habitats, &c.\) Regulations 1994 \(legislation.gov.uk\)](https://www.legislation.gov.uk)

1.5 Scope

Breeding Bird Surveys

- 1.5.1 Breeding bird surveys were carried out in summer 2023 and 2024 within the BBS area to inform this assessment as described below.

Winter foraging bird surveys

- 1.5.2 Surveys for foraging geese were carried out in early 2023 to inform the assessment in relation to SPA foraging birds within the development boundary.

Flight Activity Surveys

- 1.5.3 Flight activity surveys of target species were carried out in 2023/2024 across the Site and beyond to 2 km of the Proposed Development as part of surveys for the Kintore to Tealing 400 kV OHL to determine use of the air space associated with the OHL infrastructure in order to inform of potential collision risk to populations and to target mitigation steps.

2. METHODS

2.1 Baseline data collection

2.1.1 A desk study was undertaken to obtain historical ornithological information relating to the Site to identify potential breeding/site use of target species. The RSPB and local Raptor Study Group were approached for records and NBN was examined for relevant records.

2.2 Field surveys

Breeding Bird Surveys

2.2.1 Breeding bird surveys were carried out in 2023 (visits on the 10th and 31st May and 28th June) and again in 2024 (visits on the 19th April, 25th May and 6th June). Breeding bird surveys were focussed on waders and raptors (as per agreement with NatureScot – refer **Volume 2 Chapter 10: Ornithology**). As such, surveys in 2023 recorded the presence-only of other non-target species. For the 2024 breeding bird surveys a full field record of all species was noted.

2.2.2 All survey data was collected on GIS-enabled field tablets to increase accuracy and facilitate robust interpretation. The methods are outlined below.

2.2.3 In 2024 a territory mapping method, involving a scaled-down three visit version of the British Trust for Ornithology (BTO) Common Bird Census (CBC) methodology was used. A systematic search of the BBS area was completed. All evidence of habitat utilisation by birds was recorded and marked on a suitably scaled map. Recording methodology used standard BTO registration codes and standard CBC behaviour codes.

2.2.4 Analysis of the recorded mapped data was undertaken together with maximum count data to produce final distribution maps of all birds throughout the BBS area. The following criteria were used to establish whether birds were breeding:

2.2.5 For all birds:

- Presence of nest, eggs and/or chicks;
- Alarm calling indicative of nest, young or territory;
- Displaying or in song-flight;
- Performing a distraction display;
- Birds aggressively defending territories; and
- Birds seen carrying food to nest or young.

2.2.6 For all raptors:

- If a pair was attached to a territory.

2.2.7 For all passerines:

- Birds singing or alarm calling.

2.2.8 All other behaviour was considered as being indicative of non-breeding activities.

Species-specific breeding bird Surveys

2.2.9 Wading birds: Surveys following an adapted Brown and Shepherd method were undertaken during the 2023 and 2024 breeding seasons across areas identified using BTO/Desk Study records up to 250 m from the Proposed Development where suitable habitat was present

2.2.10 Scarce raptor surveys: Surveys were undertaken over the breeding season in 2023 and 2024 across focal areas of suitable habitat for species within 2 km of the Site and as informed by BTO/Desk Study records. Based on guidance given in Raptors: a field guide to survey and monitoring (Hardey et al. 2005) and Bird monitoring methods (Gilbert et al. 1998), the approach allowed for identifying the presence and location of species of breeding diurnal raptors that may be present within the study area. Based on NatureScot guidance for those species that may be present, the distance beyond the Development for which surveys for breeding

nest site locations were completed was 2 km². Target raptor species included all Schedule 1/Annex 1 species with potential breeding species at the Proposed Development considered by professional judgement and desk studies to be red kite and osprey.

2.2.11 The results of all the breeding bird surveys are presented in **Figure 10.2.1: Breeding Bird survey results**.

Flight Activity Surveys

2.2.12 Flight activity surveys were carried out for the Kintore to Tealing 400 kV OHL from appropriately spaced Vantage Points and the data gathered during these surveys has been used to define the baseline ornithology in the Study area. The VP watches were undertaken from 27th September 2023 to 19th March 2024 inclusive, to determine zones of potential collision risk. The flight activity surveys were focussed on the SPA target species with potential connectivity as well as other waterfowl, together with schedule1/Annex 1 raptor species.

2.2.13 Vantage Point (VP) surveys were carried out as per guidance given in Recommended bird survey methods to inform impact assessment of onshore wind farms³ (SNH 2017), flight activity levels of target species Kintore to Tealing 400 kV OHL and other interactions such as displacement or potential barrier effects.

2.2.14 A single VP (refer Figure 10.2.2: Flight Activity survey results) was selected to provide the best coverage of the study area.

2.2.15 The VP watches were of up to three hours in duration. Following confirmation with NatureScot, the survey effort for the winter periods was 18 hours across the season. The VP survey effort was therefore targeted to provide a good spread of coverage across the diurnal range. **Table 10.3: Vantage Point hours and weather conditions during watches** provides the hours watched across the winter period.

2.2.16 During each VP watch the area in view was scanned constantly by eye and using binoculars and telescope until a target species is detected in flight. Once detected, the bird/flock was visually followed until it ceased flying or was lost from view. The duration of the flight and the flight height was recorded, and the route followed by the bird flight mapped on a suitably scaled map. To characterise the flights, the following flight height bands were recorded to assess collision risk with the 400 kV OHL:

- 0-10 m;
- 10-30m;
- 30-65m; and
- >65m.

2.2.17 VPs were undertaken during all weather conditions, except when conditions prevented recording of target species' flights (refer **Table 10.2: Number of breeding bird territories recorded on survey visits: all NCI moderate sensitivity species**).

2.2.18 The results of the flight activity surveys are presented in **Figure 10.2.2: Flight Activity survey results**.

Winter foraging bird surveys

Surveys to determine the foraging distribution of wintering goose species were undertaken from 23rd January until 18th March 2023. Surveys involved systematic searches using the road network of the Study area and to at least 2 km beyond, to count and map foraging target species.

2.2.19 Target species included SPA species pink-footed goose and greylag goose as well as other goose species and whooper swan. Field use by the species was recorded (foraging/loafing/roosting) as well as field type (crop/pasture/rough grassland). Only birds recorded on the ground were recorded during these surveys.

2.2.20 The results of all the breeding bird surveys are presented in **Figure 10.2.3: Wintering bird foraging results**.

2.3 Limitations

² 2 km was taken as the survey distance for red kite, osprey etc. with 1 km for northern goshawk

³ Available online - <https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms>

- 2.3.1 No access was granted to Balkemback Farm or private residential buildings to the north-east of the Site but within the BBS areas. The grounds were viewed from public accessible areas and given the scale of the works required for the Proposed Development, this is not considered to limit the conclusions of the report.
- 2.3.2 In addition, a field in the southwest of the Site was inaccessible due to land access limitations. This field could not be viewed fully from adjacent land or public roads due to topography, however, it is considered unlikely that target species were present given no occurrence of flight activity here. As such this is not considered to be a constraint to the conclusions of this report.

3. BASELINE CONDITIONS

3.1 Designated Sites

3.1.1 The following designated ornithological sites are present within 20 km of the Development:

- Firth of Tay and Eden Estuary Ramsar & SPA;
- Outer Firth of Forth and St. Andrews Bay SPA;
- Loch of Kinnordy SPA, Ramsar and SSSI; and
- Loch of Lintrathen SPA, Ramsar and SSSI.

3.1.2 The qualifying features of the named designated sites are noted in **Table 10.1: Statutory Designated Sites Associated with the Proposed Development and their qualifying features** as well as in **Volume 2 Chapter 10: Ornithology**.

Table 10.1. Statutory Designated Sites Associated with the Proposed Development and their qualifying features

Site Name	Qualifying Features	Distance from Proposed Development at its closest point	Connectivity with Proposed Development
Firth of Tay and Eden Estuary Ramsar & SPA	SPA/Ramsar: Bar-tailed godwit (<i>Limosa lapponica</i> ; non-breeding); common scoter (non-breeding); cormorant (<i>Phalacrocorax carbo</i> ; non-breeding); dunlin (non-breeding); eider (non-breeding); goldeneye (non-breeding); goosander (non-breeding); grey plover (<i>Pluvialis squatarola</i> ; non-breeding); greylag goose (non-breeding); Icelandic black-tailed godwit (<i>Limosa limosa islandica</i> ; non-breeding); little tern (<i>Sternula albifrons</i> ; breeding); long-tailed duck (non-breeding); marsh harrier (<i>Circus aeruginosa</i> ; breeding); oystercatcher (non-breeding); pink-footed goose (non-breeding); red-breasted merganser (non-breeding); redshank (non-breeding); sanderling (<i>Calidris alba</i> ; non-breeding); shelduck (non-breeding); velvet scoter (non-breeding); waterfowl assemblage (non-breeding)	7.5 km south of the Proposed Development	Potential connectivity with greylag and pink-footed geese as within core foraging range 20 km
Outer Firth of Forth and St. Andrews Bay SPA	SPA: Arctic tern (<i>Sterna paradisaea</i> ; breeding); black-headed gull (<i>Chroicocephalus ridibundus</i> ; non-breeding); common gull (non-breeding); common scoter (<i>Melanitta nigra</i> ; non-breeding); common tern (<i>Sterna hirundo</i> ; breeding); eider (non-breeding); gannet (<i>Morus bassanus</i> ; breeding); goldeneye (non-breeding); guillemot (breeding & non-breeding); herring gull (breeding & non-breeding); black-legged kittiwake (breeding & non-breeding); little gull (<i>Hydrocoloeus minutus</i> ; non-breeding); long-tailed duck (<i>Clangula hyemalis</i> ; non-breeding); Manx shearwater (<i>Puffinus puffinus</i> ; breeding); puffin (breeding); razorbill (non-breeding); red-breasted merganser (non-breeding); red-throated diver (<i>Gavia stellata</i> ; non-breeding); seabird assemblage (breeding and non-breeding); shag (<i>Phalacrocorax aristotelis</i> ; breeding & non-breeding); Slavonian grebe (<i>Podiceps auritus</i> ; non-breeding); velvet scoter (<i>Melanitta fusca</i> ; non-breeding); waterfowl assemblage (non-breeding)	7.5 km south of the Proposed Development	Potential connectivity with qualifying species due to distance from Proposed Development (gull mean foraging to 10.5 km from their breeding sites ⁴)

⁴ Thaxter CB, Ross-Smith VH, Bouten W, et al. Avian vulnerability to wind farm collision through the year: Insights from lesser black-backed gulls (*Larus fuscus*) tracked from multiple breeding colonies. *J Appl Ecol*. 2019;56:2410–2422. <https://doi.org/10.1111/1365-2664.13488>

Site Name	Qualifying Features	Distance from Proposed Development at its closest point	Connectivity with Proposed Development
Loch of Kinnordy SPA, Ramsar and SSSI	SPA: Greylag goose (non-breeding); pink-footed goose (non-breeding) SSSI/Ramsar: additionally – breeding bird assemblage	15.8 km north-west of the Proposed Development	Potential connectivity with greylag and pink-footed geese as within core foraging range (20 km)
Loch of Lintrathen SPA, Ramsar and SSSI	SPA/Ramsar/SSSI: Greylag goose (non-breeding).	19.5 km north-west of the Proposed Development	Potential connectivity with greylag geese as within core foraging range (20 km).

3.2 Desk Study

3.2.1 No Schedule 1 breeding bird records were noted in the RSPB data request of April 2023 for the Study area.

3.2.2 No response has been received from the Tayside Raptor Study Group following data requests in 2023 and 2024.

NBN data search provided the following list of target species and Birds of Conservation Concern (BoCC⁵) Red and Amber-listed species within the last 10 years and within 2 km of the Site (refer Table 10.2: Number of breeding bird territories recorded on survey visits: all NCI moderate sensitivity species). In addition, nesting barn owl (*Tyto alba*) (Schedule 1 species) has been recorded c. 1.7 km from the Site in 2010, quail *Coturnix coturnix* (over 2 km from the RLB) in 2011 and merlin *Falco columbarius* with records of birds in winter within 5 km of the RLB in 2021.

Greylag geese

3.2.3 Reference to Mitchell (2012) shows that traditional foraging sites for the qualifying species of geese from the SPAs noted in **Table 10.1: Statutory Designated Sites Associated with the Proposed Development and their qualifying features** are present within 5 km of the Proposed Development. However, foraging of both greylag and pink-footed goose species at these SPAs is predominantly at greater distance (the Mitchell data are based on findings over 10 years prior to the present survey work, however). The Firth of Tay and Eden SPA greylag geese which roost on the Firth were noted to fly to foraging sites to the north, notably over the Sidlaw hills and onto Strathmore area. Some foraging sites were recorded 5 km to the south-west of the Site. A decline in the number of foraging records was apparent from 2007/2008 onwards, with WeBS counts across the 5 years 2018/19 to 2022/23 averaging 300 birds on the Tay estuary with 1,200 birds as the SPA population from 1990/91 to 1994/95.

3.2.4 The foraging areas of Loch of Kinnordy SPA greylag geese point to feeding areas in Strathmore, especially to the south and southwest of the loch. Foraging of these birds was recorded to c. 5km of the Site, however, although it appears not to be a preferred area or direction of roost flighting. An average of 133 greylag geese (presumed Icelandic birds) have been recorded across the last 5 years' BTO WeBS counts; the SPA citation is of 910 individuals.

3.2.5 The Loch of Lintrathen SPA greylag geese have feeding areas in Strathmore to the south and east of the loch, with limited foraging only apparent within 10km of the Proposed Development. The last 5 year's WeBS counts averaged 139 Icelandic greylag geese roosting at Loch of Lintrathen. In comparison the SPA citation is of 2,100 individuals.

Pink-footed geese

3.2.6 Pink-footed geese of the Firth Tay and Eden SPA were noted as having largely abandoned the Firth in the middle of the last century, with no significant foraging areas recorded within approximately 10 km of the Site. Tay estuary WeBS counts average 3,183 pink-footed geese over the last 5 years; the 2022/23 counts were of 573 birds only. This does point to an increase in the population of the species, given that the SPA citation is of 2,800 individuals across both the Firth and estuary areas.

⁵ Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. *British Birds* 114: 723-747. Available online at <https://britishbirds.co.uk/content/status-our-bird-populations>

- 3.2.7 Loch of Kinnordy SPA birds, as with greylags from this SPA, have preferred foraging grounds to the south and south-west of the loch with few birds now roosting on the Loch of Kinnordy, having switched to Loch of Lintrathen SPA; WeBs counts over the last 5 years average 7 birds roosting, only at Loch of Kinnordy in comparison the SPA citation is of 3,960 individuals. WeBs counts average 11,909 at Loch of Lintrathen, however.

Herring gull

- 3.2.8 Herring gull (also Red-listed on BoCC) are likely to forage to a similar distance as related species. As such, birds may range on average 10.5 km from breeding sites with some foraging flights potentially to greater distances⁶. The Outer Firth of Forth and St. Andrews Bay complex SPA was cited as holding 3,044 individuals of the species from 1980 to 2006 (1.1% of the then UK population). Birds from this population are likely to nest as close as 7.5 km from the Proposed Development in and around Dundee. However, the SPA population of the species is likely associated more heavily with the Fife coast and areas of cliffs and buildings within the confines of the SPA extent. Over 12,000 birds are supported by the SPA within the non-breeding season (roosting and foraging). These birds are also likely to forage to similar distances as the breeding birds but will likely inter-mingle with a wider North Sea population present in Scotland during the winter period. Tay estuary WeBS counts averaging 1,191 birds were recorded across the last 5 years with St. Andrews Bay area holding 152 birds.

3.3 Survey results

Breeding bird surveys

- 3.3.1 Breeding bird survey results are presented in **Figure 10.2.1: Breeding Bird survey results**, including, where present, breeding waders. **Table 10.2: Number of breeding bird territories recorded on survey visits: all NCI moderate sensitivity species** outlines Scottish biodiversity list and BoCC Red-list species recorded as breeding on Site.

⁶ Thaxter, C. B. et al. (2019) Avian vulnerability to wind farm collision through the year: Insights from lesser black-backed gulls (*Larus fuscus*) tracked from multiple breeding colonies. *Journal of Applied Ecology*, 56(11), p.2410-2422.

Table 10.2 Number of breeding bird territories recorded on survey visits: all NCI moderate sensitivity species

Species	BoCC (RAG)	Desk Records	Surveys	No. pairs in BBS area	No. pairs on Site	Scottish population ⁷
Curlew <i>Numenius arquata</i>	R	Y				58,800
Oystercatcher <i>Haematopus ostralegus</i>	A	Y	Y	2	2	84,500-116,500
Skylark <i>Alauda arvensis</i>	R	Y	Y	16	8	290,000-557,000
Willow Warbler <i>Phylloscopus trochilus</i>	A	Y				540,000-590,000
Grasshopper Warbler <i>Locustella naevia</i>	R	Y				900-3,700
Song thrush <i>Turdus philomelos</i>	R	Y				250,000-260,000
Redstart <i>Phoenicurus phoenicurus</i>	A	Y				20,000-30,000
Wheatear <i>Oenanthe oenanthe</i>	A	Y	Y	1	1	35,000-95,000
Spotted flycatcher <i>Muscicapa striata</i>	R		Y	1	0	10,000-20,000
Starling <i>Sturnus vulgaris</i>	R	Y				180,000-320,000
House Sparrow <i>Passer domesticus</i>	R	Y	Y	n/a	n/a	600,000-900,000
Tree sparrow <i>Passer montanus</i>	R		Y	8	6	4,600-8,100
Bullfinch <i>Pyrrhula pyrrhula</i>	A	Y				50,000-90,000
Greenfinch <i>Carduelis chloris</i>	R	Y				120,000-250,000
Twite <i>Carduelis flavirostris</i>	R	Y				5,600-13,800
Linnet <i>Linaria cannabina</i>	R	Y	Y	n/a	n/a	70,000-90,000
Yellowhammer <i>Emberiza citrinella</i>	R	Y	Y	7	4	140,000-220,000
Reed bunting <i>Emberiza schoeniclus</i>	A		Y	3	1	15,000-30,000

3.3.2 The BBS area supports an assemblage of species that would be expected from a site on lowland agricultural habitat in the east of Scotland. Table 10.2: Number of breeding bird territories recorded on survey visits: all NCI moderate sensitivity species provides a summary of the bird resource recorded in the BBS area and on Site. The maximum count, i.e. the greatest number of registrations of breeding activity on any single visit across the season together with professional judgement was used to assess the number of breeding pairs of each species on Site (Figure 10.2.1: Breeding Bird survey results shows the breeding bird territories across the BBS area taking the visit of maximum number for each species to show the distribution for that species). In

⁷ The Birds of Scotland (2007). Forrester R.W. and Andrews I.J eds.

addition, the 2023 breeding bird surveys, focussing on wading birds and raptors also recorded house sparrow and linnet within the BBS area; these species were not recorded in 2024, however and it is likely that these species were holding territory out with the survey area.

- 3.3.3 The presence of the following birds of note are expanded upon below: tree sparrow, spotted flycatcher, yellowhammer and skylark.
- 3.3.4 A maximum count of 16 registrations of breeding skylark was made on the third BBS visit to the BBS area in 2024, eight of which were on the Site. Skylark is a common and widespread bird in Scotland although many move south during the winter. The Scottish breeding population is estimated to be between 290,000-557,000 pairs with a much-reduced winter population of 13,000-40,000 birds. Skylark is listed on the Scottish Biodiversity List (Category – avoid negative impacts) and as a Red Listed Species under the BoCC.
- 3.3.5 A maximum count of eight tree sparrow pairs was recorded on the 1st (19th April) BBS visit in 2024, with six within the Site. Since the species is monomorphic, its song is not ‘obvious’ and the fact that it forms loose colonies to nest, the count is based on a total of 17 birds recorded on this visit. The Scottish population has been calculated as being of between 4,600 to 8,100 pairs with a population crash between the early 1970’s and the late 1990’s since when the population has started to increase. Tree sparrow is a Scottish Biodiversity List species (Category – avoid negative impacts) and as a Red Listed Species under the BoCC.
- 3.3.6 Yellowhammer were recorded as breeding across the hedgerows within the Site, with a maximum of four males recorded as singing within the BBS Area, and three along hedgerows on the Site. It is a widespread species in the UK, although linked to lower altitudes and to associated farming practices and as such is less widespread in Scotland. An estimated 140,000-220,000 pairs are present in Scotland. Changes in farming practices, notably where arable crops have ceased to be sown, has led to a decline in the Scottish population, notably in the west from the 1970’s onwards. As such, the species is on the BoCC red list and is a Scottish Biodiversity List species (Category – avoid negative impacts) species.
- 3.3.7 A pair of spotted flycatcher was recorded in trees at Balkemback cottages. The BoCC red-listed species (also a Scottish Biodiversity List species) has shown a decline in its population across the UK, with an estimated 10,000-20,000 pairs nesting in Scotland. Spotted flycatcher is a Scottish Biodiversity List species (Category – avoid negative impacts) and as a Red Listed Species under the BoCC.
- 3.3.8 In addition to the species outlined in **Table 10.2: Number of breeding bird territories recorded on survey visits** breeding registrations of the following (low NCI) species were recorded: dunnock *Prunella vulgaris* and wren *Troglodytes troglodytes*.

Species-specific breeding bird surveys

- 3.3.9 Common snipe *Gallinago gallinago* (BoCC Amber-listed species) was recorded on a single occasion in the drainage channel that runs north-south at the east of the Site on 10th May. No further records of the species were noted in 2024 surveys.
- 3.3.10 No lapwing or curlew were recorded as present during the breeding surveys, likely a reflection on the lower BTO wader sensitivity rating of the habitat present and that both species are in range contraction (both are Red-listed BoCC birds).
- 3.3.11 Oystercatcher (BoCC Amber-listed species) were recorded as breeding on Site in 2023 when two pairs were noted on newly ploughed fields (likely for spring-sown crops) at the east of the Site and in the west on the 10th May. It is unknown if these pairs were successful since no chicks were recorded during the late June visit. The Scottish population is between 84,500 to 116,500 pairs with the east coast of Scotland supporting the densest populations.
- 3.3.12 No target raptor species were recorded breeding within the study area; common buzzard (*Buteo buteo*) was seen, however during the winter VP/flight activity surveys. The open farmland with a lack of suitable tree cover and mature trees present in the vicinity of the Site suggests that there is little opportunity for nesting Schedule 1 raptor species that could be present in the local area.

Flight Activity Surveys

- 3.3.13 Flight activity surveys were undertaken with the survey times, survey periods and associated weather conditions as shown in **Table 10.3: Vantage Point hours and weather conditions during watches**. Flights of target species were recorded as in **Table 10.4: Vantage Point flight activity**.

Table 10.3 Vantage Point hours and weather conditions during watches

Session	Date	Start time	End time	Cloud cover (tenths)	Cloud base (m)	Wind force (Beaufort scale)	Wind direction	Visibility (km)	Precipitation
230927_VP25_SK	27/09/2023	12:40	13:40	8	700	4	ESE	5	Intermittent light rain
		13:40	14:40	8	700	4	ESE	5	Intermittent light rain
		14:40	15:40	8	700	4	ESE	5	Intermittent light rain
231101_VP25_SK	01/11/2023	12:40	13:40	10	800	3	ENE	2	Heavy rain
		13:40	14:40	10	800	3	ENE	2	Heavy rain
		14:40	15:40	10	800	3	ENE	2	Heavy rain
231205_VP25_AM	05/12/2023	14:10	15:10	5	3000	2	N	5	Dry
		15:10	16:10	3	3000	2	N	5	Dry
		16:10	17:10	2	4000	1	W	5	Dry
240117_VP25_JND	17/01/2024	08:05	09:05	0	600	2	W	5	Dry
		09:05	10:05	0	600	1	W	5	Dry
		10:05	11:05	0	750	1	W	5	Dry
240215_VP25_DW	15/02/2024	07:10	08:10	10	200	1	NNE	1	Dry
		08:10	09:10	10	200	1	NNE	5	Dry
		09:10	10:10	10	100	1	NNE	1	Dry
240319_VP25_JND	19/03/2024	17:00	18:00	7	750	2	W	5	Dry
		18:00	19:00	7	750	2	W	5	Dry
		19:00	20:00	7	750	2	W	5	Dry

Table 10.4: Vantage Point flight activity

Session	Species	Number	Over Site
230927_VP25_SK	PG - Pink footed goose	8	Yes
230927_VP25_SK	PG - Pink footed goose	57	Yes
230927_VP25_SK	PG - Pink footed goose	52	Yes
231205_VP25_AM	WS - Whooper swan	3	Yes
240117_VP25_JND	PG - Pink footed goose	1200	No
240117_VP25_JND	PG - Pink footed goose	750	No
240117_VP25_JND	PG - Pink footed goose	450	No
240117_VP25_JND	PG - Pink footed goose	425	No
240117_VP25_JND	PG - Pink footed goose	30	No
240215_VP25_DW	PG - Pink footed goose	1	Yes
240215_VP25_DW	PG - Pink footed goose	12	Yes
240319_VP25_JND	PG - Pink footed goose	235	Yes
240319_VP25_JND	PG - Pink footed goose	235	Yes

3.3.14 Flight activity was recorded in relation to the proposed Kintore to Tealing 400 kV OHL and to 2 km from the VP position, and only a proportion of flights were identified as occurring over the Site.

3.3.15 The SPA species pink footed goose was recorded on four of the six surveys with a flight of whooper swan (three birds) recorded on a single occasion only on 5th December 2023. No greylag geese were recorded during VP watches. Eight of the twelve goose

flights recorded involved flight activity over the Site – the larger flights of c. 1,200 and c. 750 pink-footed geese were out with the Site boundary.

- 3.3.16 Pink-footed geese were recorded as a foraging flock during the surveys 19th March 2024, where c. 235 birds were noted as flying to and then from a field to the south of the Site with flight activity recorded over the Site. Larger flocks were noted in flight out with the Site boundary, however.

Winter foraging bird surveys

- 3.3.17 No foraging pink-footed geese (SPA species) were recorded within the Site. A flock of approximately 950 birds was recorded on 20th February 2023 with birds foraging in a field north of the Fithie Burn but south of the Site (**Figure 10.2.3: Wintering bird foraging results**). As noted in the flight activity surveys, a flock of approximately 235 pink-footed geese was present during the watch of the 19th March 2024, again foraging to the south of the Site.
- 3.3.18 Greylag geese (SPA species) were recorded foraging in pasture fields c. 750 m from the Site.
- 3.3.19 Herring gull (SPA species) was not recorded as foraging in fields during the winter surveys. Occasional flights of the species were recorded during the breeding bird and winter surveys; however, no birds were recorded as using the Site.

4. SUMMARY

4.1 Designated sites and their qualifying features

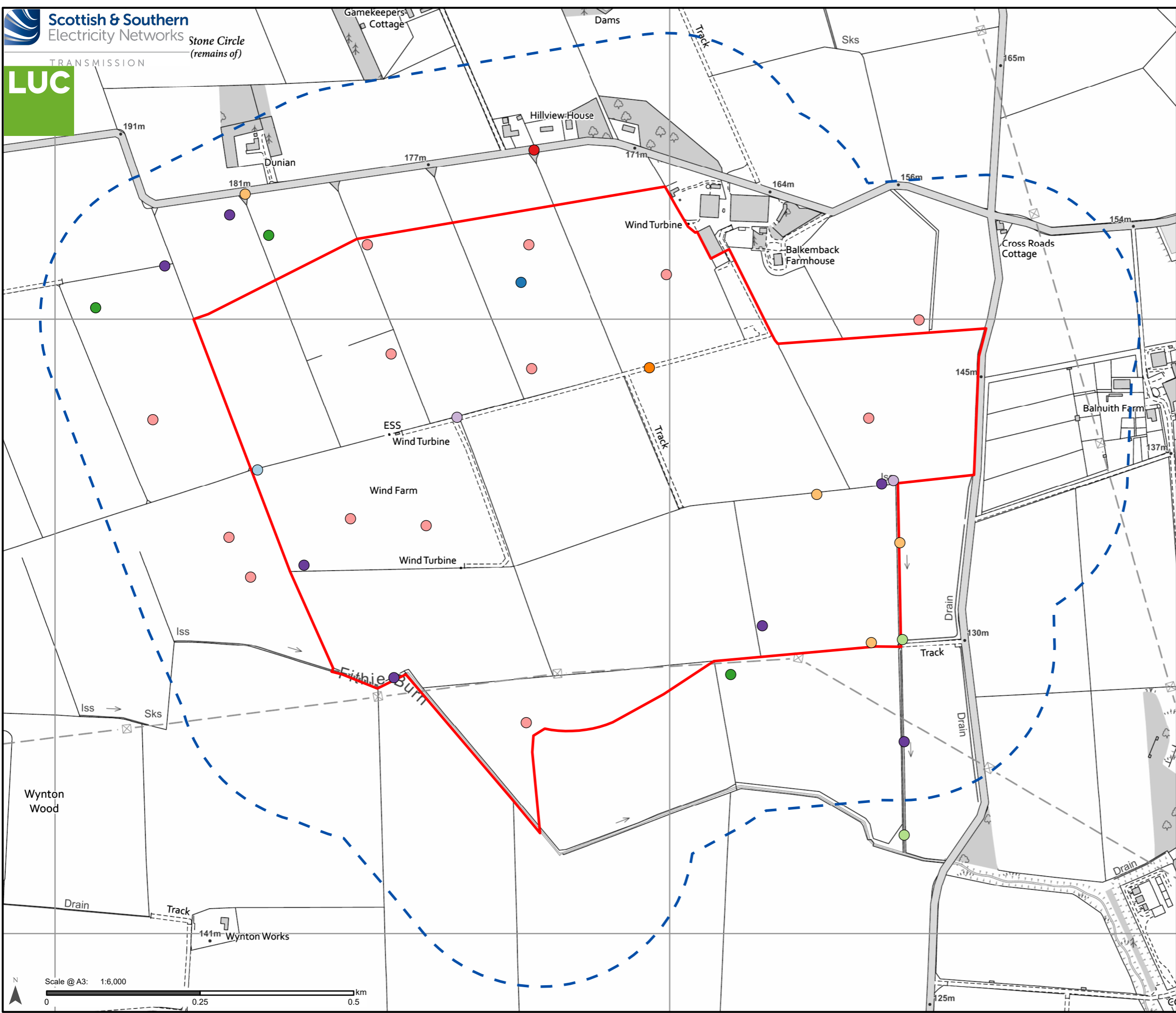
- 4.1.1 The study area did not represent important feeding grounds for SPA qualifying goose species in 2023/2024 with no birds recorded foraging within the Site, although birds were noted in fields immediately to the south. Flight activity of pink-footed geese was recorded over the Site Suitable mitigation (line-marking) has been suggested where this interaction has been recorded.
- 4.1.2 Herring gulls were not recorded as foraging during the winter and breeding bird surveys, although occasional birds were recorded as flying over the Site.

4.2 Schedule 1 Species

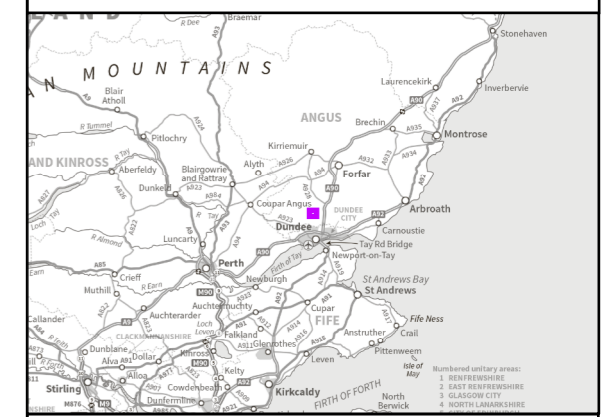
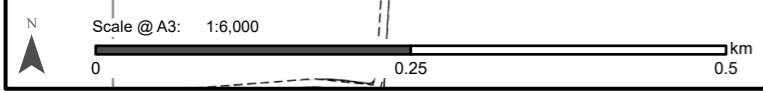
- 4.2.1 No breeding Schedule 1 species are present within the study areas (to 2 km from the Site with regards to target raptors).

4.3 BoCC species

- 4.3.1 Breeding Red-list species tree sparrow, skylark and yellowhammer were recorded holding territories within the Site. In addition, spotted flycatcher was recorded breeding in the BBS area, with house sparrow and linnet also likely out with the Site. The BBS area represents a small proportion of the Scottish populations of these species.
- 4.3.2 No Red-list waders were recorded breeding within the BBS area. Two breeding attempts by oystercatcher (Amber-listed BoCC species) was recorded in 2023 but they were not present in 2024 surveys.



- Emmock red line boundary
- Survey area (250m buffer from red line boundary)
- Breeding bird survey results**
- D. Dunnock
- OC - Oystercatcher
- RB - Reed bunting
- S. - Skylark
- S. Skylark
- SF - Spotted fly
- TS - Tree sparrow
- W. - Wheatear
- WR - Wren
- Y. - Yellowhammer



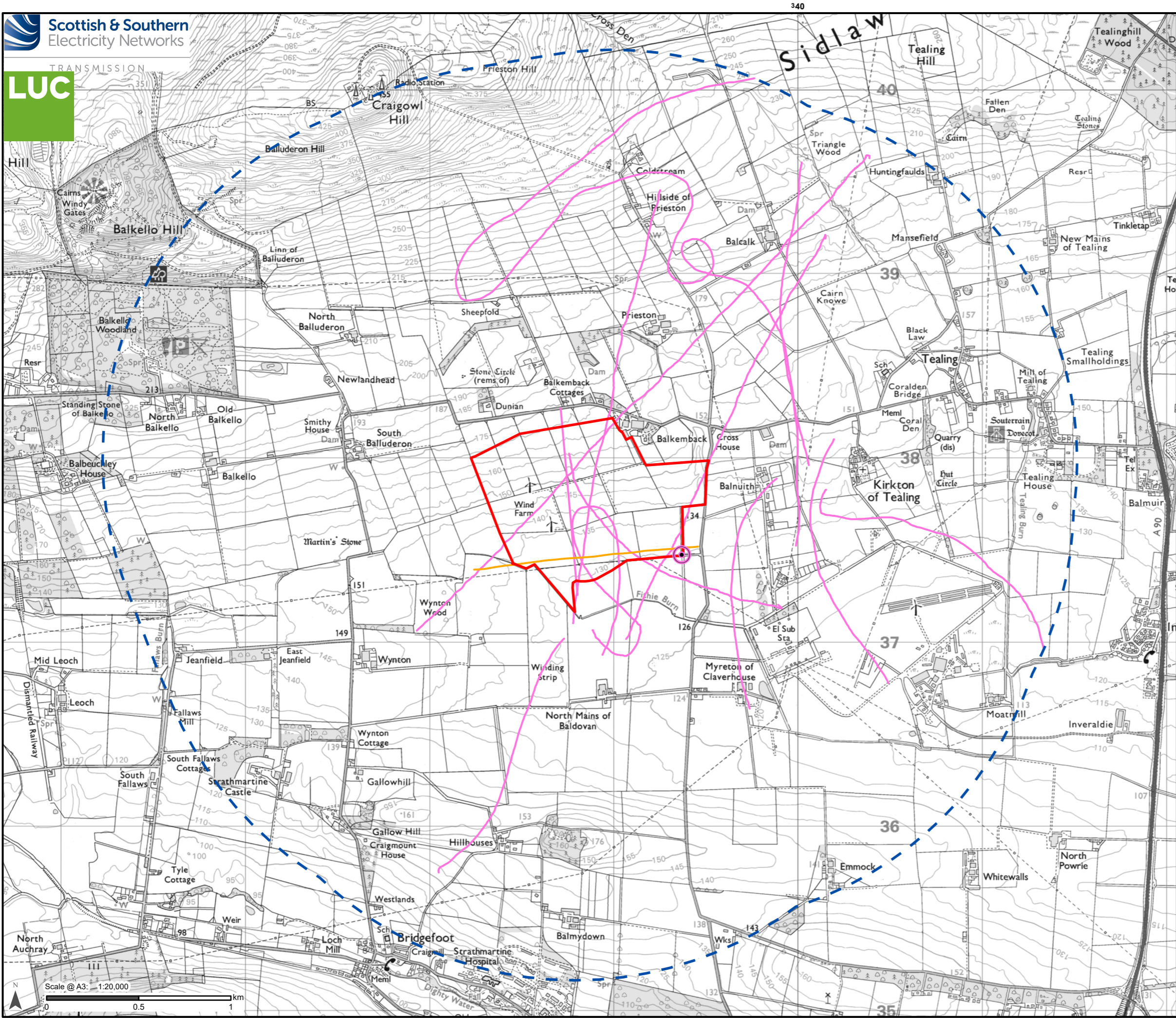
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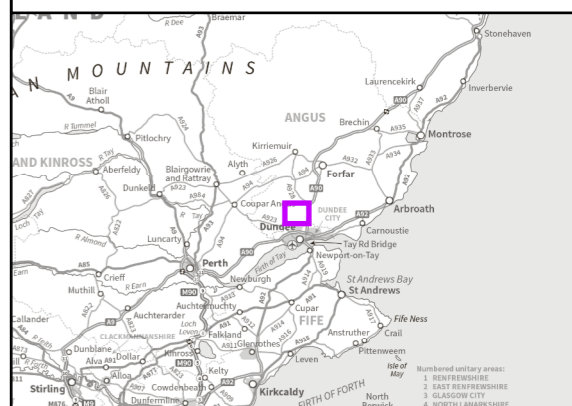
Title:
Breeding Bird Survey Results

Drawn by: IB Date: 16/09/2024

Figure: 10.2.1



- Emmock red line boundary
- Survey area (2km buffer from red line boundary)
- Goose viewpoint
- Flight survey results**
- PG - Pink footed goose
- WS - Whooper swan



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Title:
Flight Activity Survey Results

Drawn by: IB Date: 16/09/2024

Figure: 10.2.2

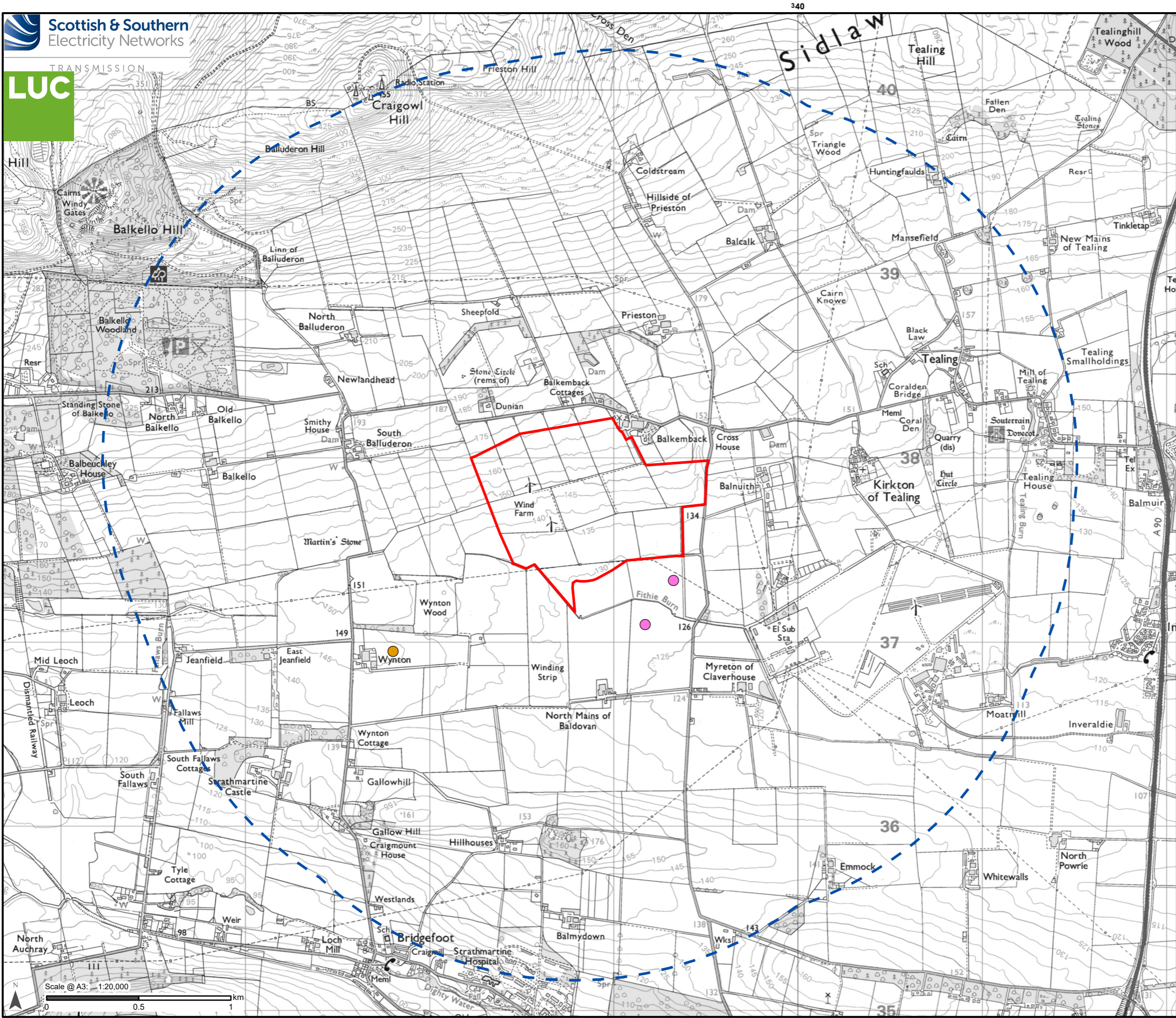
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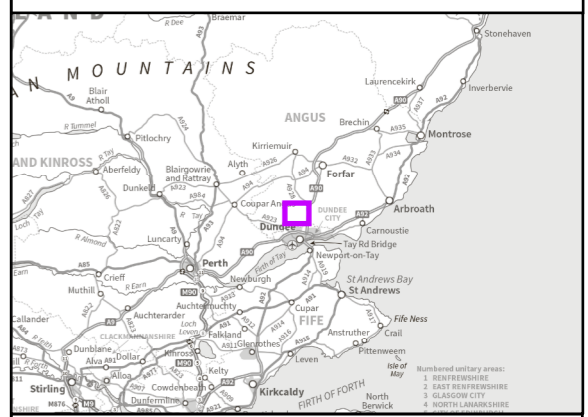
735000m.N

340000m.E

Scale @ A3: 1:20,000
0 0.5 1 km



- Emmock red line boundary
- Survey area (2km buffer from red line boundary)
- Goose species**
- Greylag goose
- Pink-footed goose



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Title:
Wintering Bird Foraging Results

Drawn by: IB Date: 16/09/2024

Figure: 10.2.3